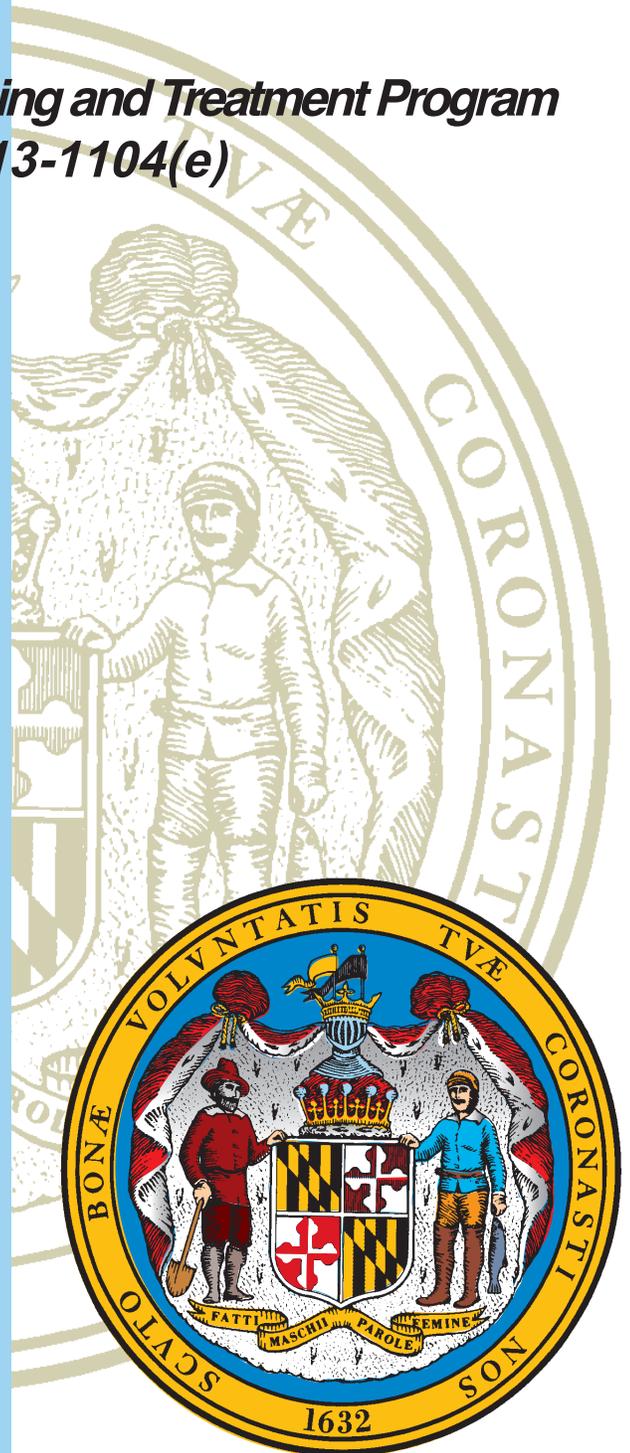**Maryland Department of Health**

2022 Cancer Report

Cigarette Restitution Fund Program

Cancer Prevention, Education, Screening and Treatment Program
Health-General Article, Section 13-1104(e)

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Maryland Department of Health

2022 Cancer Report

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

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Acknowledgments

The Maryland Department of Health, Center for Cancer Prevention and Control (CCPC) is pleased to present the Cigarette Restitution Fund Program 2022 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 in Maryland.

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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:

  o http://seer.cancer.gov/seerstat/tutorials/aarates/definition.html
  o 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 this method can be found at:

  https://surveillance.cancer.gov/help/joinpoint/setting-parameters/method-and-parameters-tab/apc-aapc-tau-confidence-intervals/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 2019. Cancer incidence data are also presented in aggregated form, as the average annual incidence for the 5-year period from 2015 through 2019.

- **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 2019. Cancer mortality data are also presented in an aggregated form, as the average annual mortality for the 5-year period from 2015 through 2019.

- **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 geographic areas in Maryland:

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

  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 U.S. Surveillance Epidemiology and End Results (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) 2022 Cancer Report which is required biennially by Health General Article §13-1104, Annotated Code of Maryland. The primary purpose of this 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 determine how to best 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. In Fiscal Year (FY) 2022, the CRFP provided approximately $27 million to combat cancer. §13-1104 also established the Cancer Prevention, Education, Screening, and Treatment Program (CPEST) within the Maryland Department of Health (MDH), whose primary goal is to reduce mortality and morbidity rates for cancer and tobacco-related diseases throughout Maryland.

§13-1104 further 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 that are presented individually: lung and bronchus, colon and rectum, female breast, prostate, oral, melanoma of the skin, and cervix. These seven cancers have been targeted as they can be prevented, detected early and treated, or are a major cause of cancer death.

Additionally, §13-1104 requires Maryland jurisdictions to develop plans to: 1) eliminate the higher incidence and mortality rates of cancer in minority populations (as defined in statute 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 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 the Centers for Disease Control and Prevention's Healthy People 2020 and the Maryland Comprehensive Cancer Control Plan (MCCCP) targets for cancer prevention and screening. Further efforts to prevent and control cancer in Maryland can be found in the 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 2019, a total of 34,365 new cases of cancer were diagnosed in Maryland.
- From 2010 to 2019, the annual overall cancer incidence rates in Maryland increased slightly by 0.3% per year, while the United States (U.S.) rates declined 0.4% per year. In 2019, the Maryland all sites cancer incidence rate was higher than the U.S. rate (462.8 vs. 440.1 per 100,000 population).
- In 2019, the incidence rate for all cancer sites among blacks in Maryland remained below the incidence rate for whites. Rates increased for both blacks and whites for the period from 2015 to 2019.
- In 2019, a total of 10,743 Maryland residents died from cancer.
- From 2010 to 2019, the annual overall cancer mortality rates decreased slightly more in the U.S. than in Maryland (-1.8% vs. -1.7% per year). In 2019, the Maryland (all cancer sites) mortality rate was lower than the U.S. rate (144.4 vs. 146.0 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 2015 to 2019; 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 22.2% of all 10,743 cancer deaths in 2019.
- From 2015 to 2019, overall lung cancer incidence and mortality rates decreased Statewide and declined for both whites and blacks after stratification by race.
- Tobacco use is the primary cause of lung cancer, with smoking causing an estimated 80% of lung cancer deaths in the U.S.[1]
- Smoking rates among Maryland adults continue to decline. In 2020, 10.9% of adults ages 18 years and older were current smokers. In 2020, Maryland attained the Healthy People 2020 goal of reducing the percentage of adult smokers to 12.0%.
- Smoking rates among Maryland youth have also declined. In 2021, only 7.0% of Maryland youth in grades 9 through 12 reported smoking cigarettes in the previous 30 days, meeting the Healthy People 2020 target of 16.0%.

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

- Incidence for colorectal cancer increased slightly in Maryland from 2015 to 2019 by 0.2% per year, while mortality rates decreased 0.7% per year. Over this period, incidence rates had a decrease per year among Maryland blacks, while incidence rates had a slight increase among Maryland whites.
- In 2020, 76.6% of Maryland adults ages 50 years and older reported being up-to-date with colorectal cancer screenings, surpassing the Healthy People 2020 target for up-to-date colorectal cancer screening (70.5%).

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[1] American Cancer Society. Cancer Facts & Figures 2020. Atlanta: American Cancer Society; 2020.

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 2015 to 2019, with the incidence rate increasing at a greater rate per year among white females than black females.
- From 2015 to 2019, 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 white females compared to black females (-2.6% vs. -1.4%, respectively).
- Maryland continues to meet the Healthy People 2020 target for mammography screening (81.1%); in 2020, 81.3% 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 increased from 2015 to 2019, while mortality rates decreased.
- 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 2015 to 2019.
- From 2015 to 2019, prostate cancer incidence rates increased at a greater rate per year among white men compared to black men (6.5% vs. 3.5%, respectively). During this 5-year period, mortality rates for prostate cancer decreased for both black men and white men.
- In 2020, the percentage of Maryland men that discussed the advantages and disadvantages of prostate-specific antigen (PSA) testing with their healthcare provider (14.7%) fell below the Healthy People 2020 target of 15.9%.

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

- From 2015 to 2019, the oral cancer incidence rate in Maryland increased overall.
- Oral cancer incidence rates decreased per year for blacks, while increased per year for whites (-4.3% vs. 0.9%, respectively).
- From 2015 to 2019, oral cancer mortality rates decreased among blacks at a rate of 4.1% per year and increased among whites at a rate of 0.1% per year.
- Marylanders were below the MCCCP 2020 target of 26.7% for oral cancer screening; in 2018, 24.1% 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 1.0% per year from 2015 to 2019. The annual incidence rate increased among both males and females. In 2019, males had incidence rates of melanoma that were 73.4% higher than females.
- From 2015 to 2019, overall melanoma mortality rates decreased among males and increased among females.
- In 2021, 53.3% 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%.

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

- Cervical cancer incidence rates among Maryland women decreased slightly at a rate of 0.5% per year from 2015 to 2019, while mortality rates increased at a rate of 4.0% per year during this same time period.
- Cervical cancer incidence rates increased among black females but decreased among white females.
- Mortality rates for cervical cancer increased for white females, while rates for black females remained steady from 2015 to 2019.
- In 2020, 79.3% 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 2020 Cancer Report

- This report presents Maryland and U.S. incidence and mortality data for 2019 and 5-year aggregate data for 2015 to 2019.
- The Maryland mortality data for 2019 was obtained from the National Center for Health Statistics (NCHS) Underlying Cause of Death file in CDC Wide-ranging Online Data for Epidemiologist Research (CDC WONDER), as opposed to the NCHS Compressed Mortality File (CMF) in CDC WONDER used in previous reports. The NCHS CMF was discontinued in CDC WONDER after 2016.
- The Maryland Behavioral Risk Factor Surveillance System (BRFSS) question regarding sun exposure was phrased differently starting in 2018 compared to previous years. The new question reads "when you go outside on a warm sunny day for more than one hour, how often do you protect yourself from the sun" as opposed to "how often do you limit your exposure to the sun between the hours of 10:00 am and 4:00 pm" used in 2016.
- For stage at diagnosis, SEER summary stage 2000 was used in 2016 through 2019, while the derived SEER summary stage 2000 was used in 2015.
- Prior to diagnosis year 2017, the North American Association of Central Cancer Registries' (NAACCR) Hispanic Identification Algorithm (NHIA) was run on all data. For diagnosis year 2017 through 2019, NHIA was only applied to data in local jurisdictions where at least 5% of the population was Hispanic/Latino ethnicity.

II. All Cancer Sites

Incidence (New Cases)

A total of 34,365 new cases of cancer diagnosed in 2019 in Maryland residents were reported to the Maryland Cancer Registry (MCR). The total age-adjusted cancer incidence rate for Maryland was 462.8 per 100,000 population (457.8-467.8, 95% CI) in 2019. The 2019 Maryland cancer incidence rate is statistically significantly higher than the 2019 U.S. SEER rate of 440.1 per 100,000 population (439.1-441.0, 95% CI).

Mortality (Deaths)

Cancer is the second leading cause of death in Maryland, accounting for 21.6% of all deaths in 2019. A total of 10,743 Maryland residents died from cancer in 2019. The Maryland mortality rate for all cancer sites was 144.4 per 100,000 population (141.6-147.2, 95% CI) for 2019. This rate is not statistically significantly different than the 2019 U.S. mortality rate for all cancer sites of 146.0 per 100,000 population (145.6-146.4, 95% CI). Maryland ranks 32nd highest among all states and the District of Columbia in total cancer mortality for the period from 2015 to 2019.

Table 1
All Cancer Sites Incidence and Mortality Rates
by Gender and Race, Maryland (MD) and the United States, 2019

Incidence 2019	*Total**	*Male*	*Female*	*White*	*Black*	*Other*
MD New Cases (count)	34,365	17,297	17,063	22,666	9,649	1,409
MD Incidence Rate	462.8	507.4	432.6	468.0	458.3	280.7
U.S. SEER Rate	440.1	476.5	416.4	445.8	438.3	289.7
Mortality 2019	*Total*	*Male*	*Female*	*White*	*Black*	*Other*
MD Deaths (count)	10,743	5,422	5,321	7,210	3,155	378
MD Mortality Rate	144.4	169.0	127.4	144.4	158.7	77.0
U.S. Mortality Rate	146.0	173.0	125.9	147.1	166.2	92.2

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 jurisdiction

Source: Maryland Cancer Registry
          U.S. SEER, SEER*Stat
          NCHS Underlying Cause of Death in CDC WONDER, 2019
          U.S. SEER, Cancer Statistics Review

Cancer Incidence Rates
All Cancer Sites
Maryland and U.S., 2010-2019
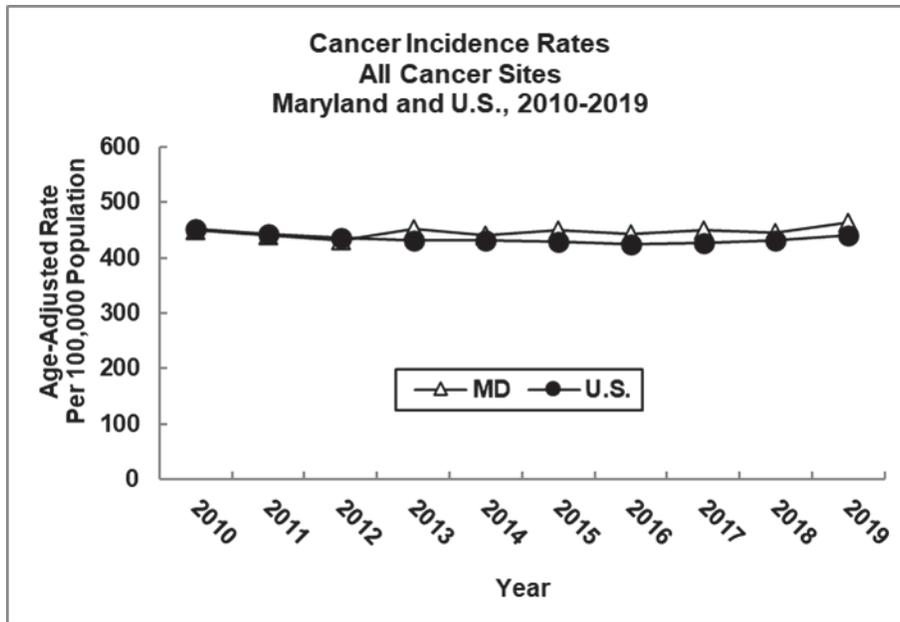
Maryland vs. U.S., All Cancer Sites Incidence Rates, All Age Groups

All cancer sites incidence rates declined in the U.S. and increased in Maryland over the 10-year period from 2010 to 2019. Incidence rates for all cancer sites decreased at a rate of 0.4% per year in the U.S. and increased at a rate of 0.3% in Maryland.

See Appendix J, Table 1.

Cancer Mortality Rates
All Cancer Sites
Maryland and U.S., 2010-2019
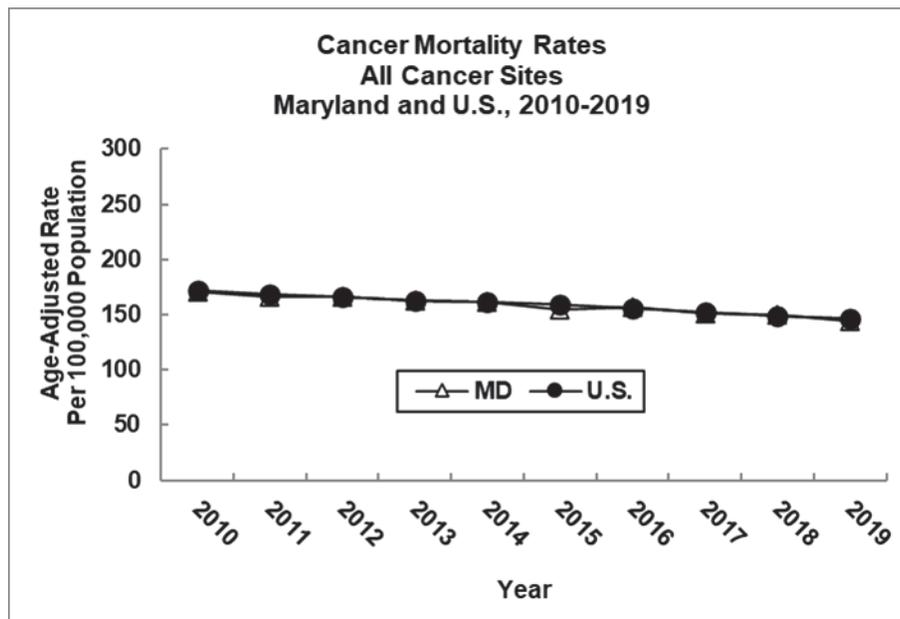
Maryland vs. U.S., All Cancer Sites Mortality Rates, All Age Groups

Maryland cancer mortality rates have declined since 2010. From 2010 to 2019, all cancer sites mortality rates in the U.S. decreased at a rate of 1.8% per year, a greater decrease than Maryland mortality rates, which decreased at a rate of 1.7% 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, 2015-2019

Year	Incidence	Mortality
2015	449.3	155.1
2016	443.6	156.5
2017	449.6	151.5
2018	445.9	149.9
2019	462.8	144.4

Age-Adjusted Rate Per 100,000 Population — Year of Diagnosis or Death

--□--- Incidence   —◇— Mortality

Source: Maryland Cancer Registry
NCHS Underlying Cause of Death in CDC WONDER, 2017-2019
NCHS Compressed Mortality File in CDC WONDER, 2015-2016
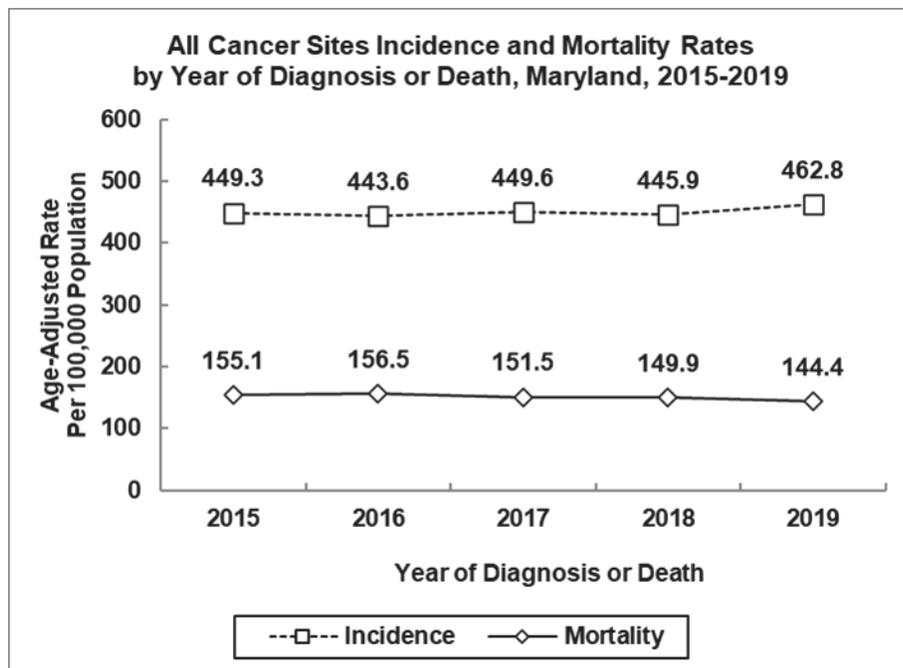
Incidence and Mortality Trends

In Maryland, the incidence rate for all cancer sites increased slightly at a rate of 0.6% per year from 2015 to 2019.

During this same timeframe, cancer mortality rates decreased at a rate of 1.8% per year.

See Appendix H, Tables 1 and 2.

All Cancer Sites Incidence Rates by Race Maryland, 2015-2019

Year	White	Black
2015	462.1	441.8
2016	453.0	430.4
2017	462.8	436.6
2018	454.6	441.9
2019	468.0	458.3

Age-Adjusted Rate Per 100,000 Population — Year of Diagnosis

—□—White   —■—Black

Source: Maryland Cancer Registry
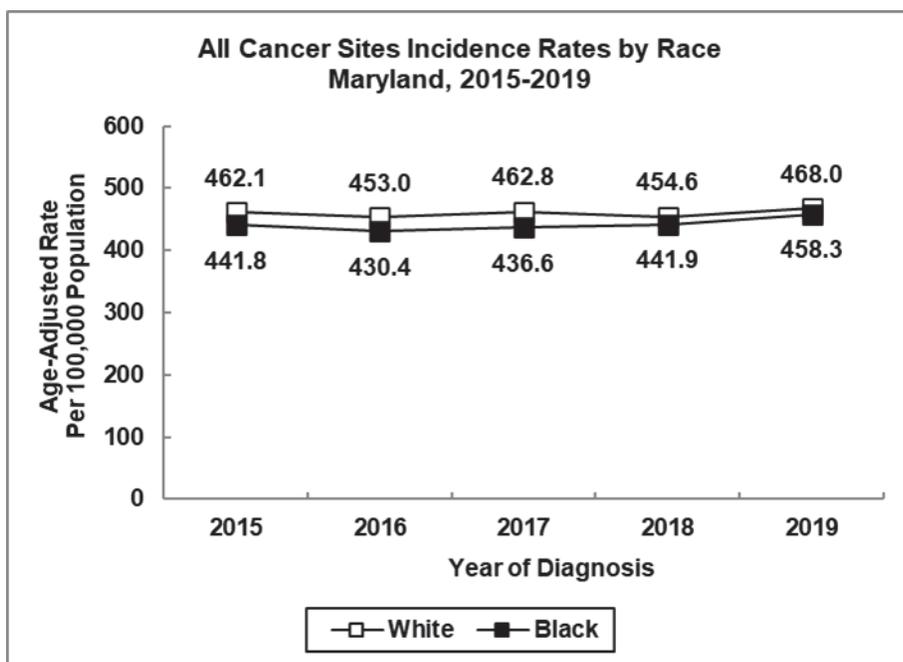
Incidence Trends by Race

From 2015 to 2019, the incidence rate for all cancer sites was lower among blacks compared to whites in Maryland. From 2015 to 2019, incidence rates for all cancer sites increased at a rate of 0.3% per year among whites and increased at a rate of 1.0% per year among blacks.

See Appendix H, Table 3.
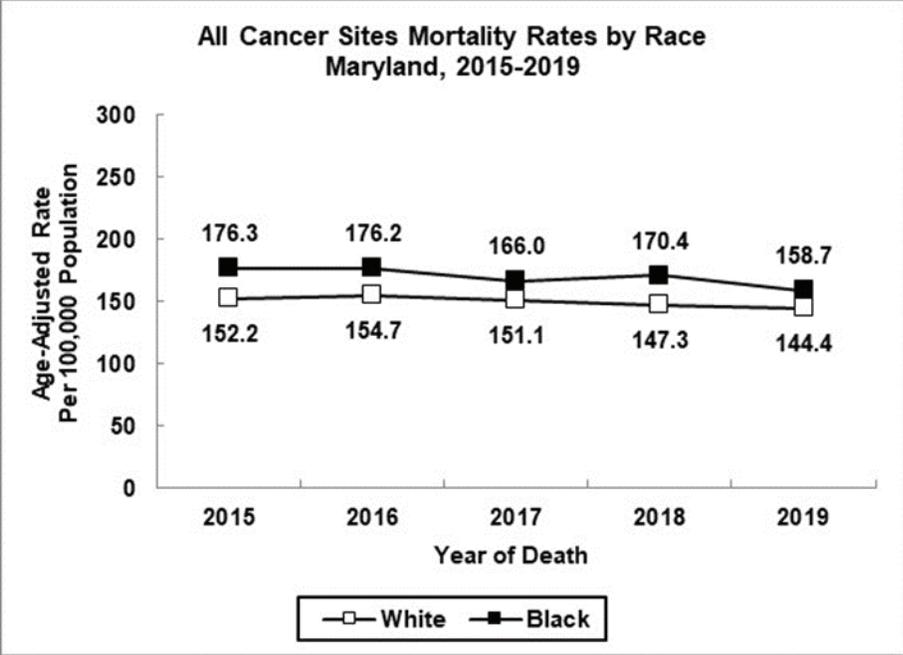
All Cancer Sites Mortality Rates by Race
Maryland, 2015-2019

Source: NCHS Underlying Cause of Death in CDC WONDER, 2017-2019
NCHS Compressed Mortality File in CDC WONDER, 2015-2016

Mortality Trends by Race

Both black and white Marylanders showed declines in cancer mortality from 2015 to 2019, with a decrease of 1.5% per year for whites and 2.4% per year for blacks.

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

See Appendix H, Table 5.
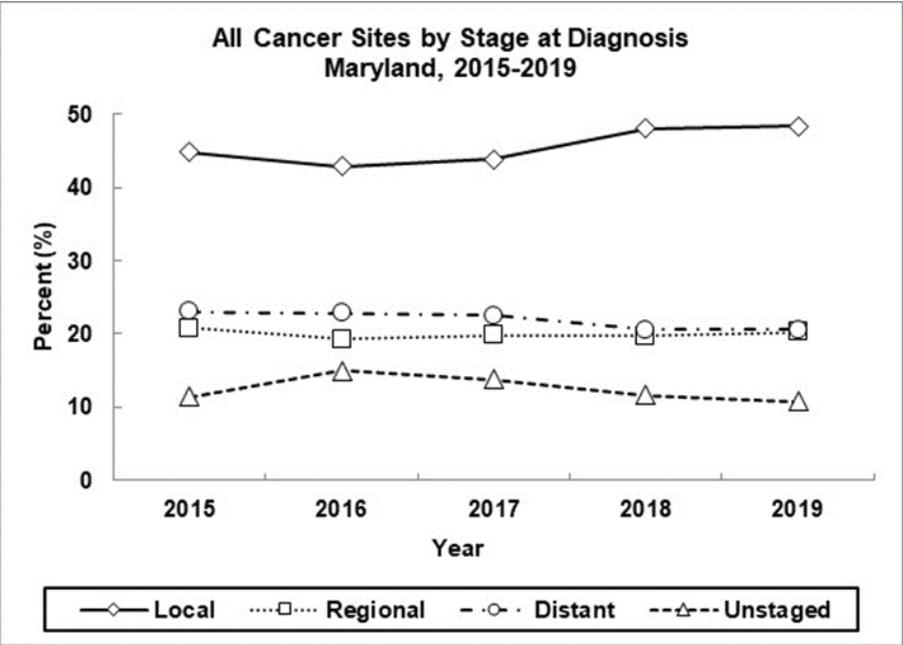
All Cancer Sites by Stage at Diagnosis
Maryland, 2015-2019

Source: Maryland Cancer Registry
Note: Due to a methodology change, SEER summary stage 2000 was used in 2016 to 2017, while the derived SEER summary stage 2000 was used in 2015, and Summary Stage 2018 (SS2018) was used in 2018 and 2019

Stage at Diagnosis

Of all cancers diagnosed in Maryland in 2019, 48.4% were found at the local (early) stage, 20.2% at the regional stage, and 20.6% at the distant (late) stage. In 2019, 10.8% of all cancers were reported as unstaged in Maryland. Since 2015, the proportion of all cancers reported as unstaged decreased by 3.6% per year.

See Appendix I, Table 1.

**All Cancer Sites Mortality Rates
Maryland and U.S., 2019
Compared to Healthy People 2020 Target**

	Age-Adjusted Rate Per 100,000 Population
HP 2020 Target	161.4
MD 2019	144.4
U.S. 2019	146.0
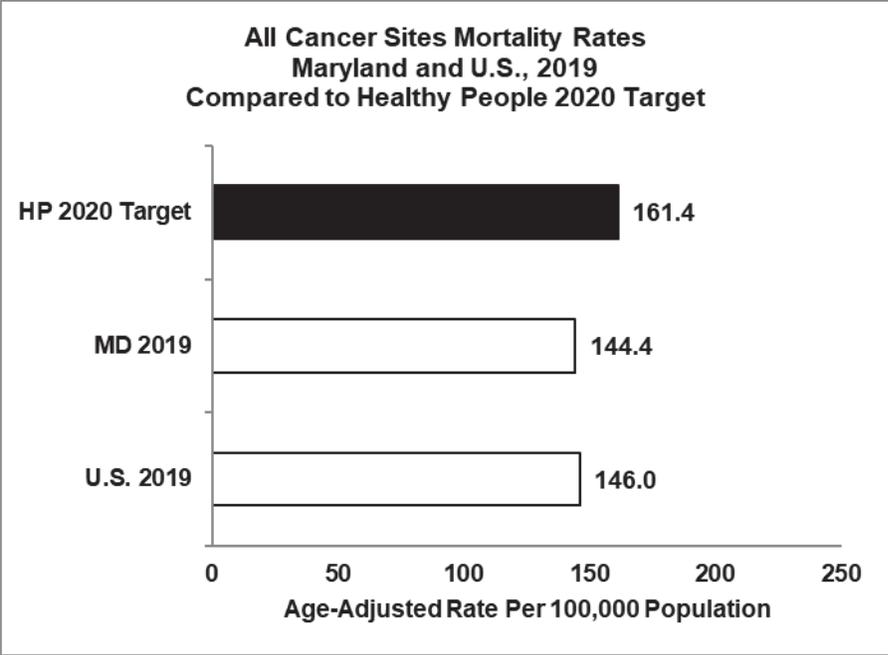
Mortality Rates Compared to Healthy People (HP) 2020 Target

In 2019, the mortality rate for all cancer sites in Maryland was 144.4 per 100,000 population, which was lower than the U.S. rate of 146.0 per 100,000 population and the HP 2020 target of 161.4 per 100,000 population.

Summary—Identification of Targeted Cancers

As aforementioned, the cancers targeted under the CRFP in 2019 include: lung and bronchus, colon and rectum, prostate, female breast, cervical, oral, and melanoma of the skin. These cancers were chosen due to the capability 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.   • For men, discussing the potential risks and benefits of prostate cancer screening with their healthcare provider.   Early detection (screening) of: • Colorectal cancer.   • Female breast cancer.   • Cervical cancer.   • Lung cancer.   • Oral cancer.

Table 2
Number of Cases for All Cancer Sites by Jurisdiction, Gender, and Race, Maryland, 2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	34,365	17,297	17,063	22,666	9,649	1,409
Allegany	570	299	271	538	27	<6
Anne Arundel	3,227	1,633	1,594	2,668	445	78
Baltimore City	3,327	1,633	1,694	1,041	2,210	44
Baltimore	5,203	2,522	2,677	3,798	1,210	160
Calvert	566	284	282	481	70	10
Caroline	208	114	94	180	25	<6
Carroll	1,158	621	537	1,111	31	13
Cecil	651	314	337	607	38	<6
Charles	825	420	405	428	360	24
Dorchester	237	120	117	172	63	0
Frederick	1,388	672	716	1,215	121	38
Garrett	176	97	79	s	0	<6
Harford	1,571	778	793	1,355	172	37
Howard	1,616	791	825	1,102	306	189
Kent	156	88	68	131	23	<6
Montgomery	5,075	2,424	2,650	3,448	815	608
Prince George's	4,292	2,106	2,186	961	3,027	127
Queen Anne's	361	206	155	328	26	<6
St. Mary's	599	329	270	463	112	17
Somerset	170	96	74	117	53	0
Talbot	331	157	174	297	32	0
Washington	915	446	469	836	68	10
Wicomico	611	323	288	455	140	9
Worcester	500	258	242	448	46	<6

Total includes cases reported as transexual, hermaphrodite, unknown gender, unknown race, and unknown jurisdiction

<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 March 4, 2022

Table 3
All Cancer Sites Age-Adjusted Incidence Rates* by Jurisdiction, Gender, and Race, Maryland, 2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	462.8	507.4	432.6	468.0	458.3	280.7
Allegany	571.2	624.9	538.6	564.2	814.9	**
Anne Arundel	470.0	506.3	445.5	480.1	441.2	265.6
Baltimore City	485.5	546.7	447.8	485.4	483.4	257.0
Baltimore	484.2	520.4	461.1	498.4	466.9	278.3
Calvert	478.9	514.2	453.7	487.7	415.1	**
Caroline	469.8	536.4	412.6	474.8	451.0	**
Carroll	513.9	588.7	458.4	521.0	396.6	**
Cecil	494.6	487.8	504.0	496.6	470.4	**
Charles	457.6	514.4	416.8	436.7	471.3	275.5
Dorchester	487.0	503.8	473.9	464.8	571.6	0.0
Frederick	449.2	471.3	440.9	448.3	531.0	266.3
Garrett	389.4	433.0	347.8	391.1	0.0	**
Harford	489.6	528.3	465.7	493.0	480.3	358.1
Howard	430.8	449.4	420.0	445.7	469.9	291.3
Kent	470.5	544.3	412.1	475.4	476.8	**
Montgomery	395.2	411.5	387.6	401.7	380.8	280.7
Prince George's	416.5	466.2	386.1	376.6	423.2	215.0
Queen Anne's	499.9	568.3	435.3	501.8	444.1	**
St. Mary's	467.2	525.3	413.3	440.3	603.2	396.2
Somerset	528.5	612.0	501.5	537.5	599.1	0.0
Talbot	491.4	491.3	495.2	498.6	464.6	0.0
Washington	458.3	470.9	455.7	457.8	520.6	**
Wicomico	496.8	566.2	445.2	500.8	497.3	**
Worcester	539.6	549.3	540.4	547.4	475.3	**

* 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 March 4, 2022

Table 4
All Cancer Sites and Age-Adjusted Incidence Rates*
Among Hispanics§ by Geographical Area in Maryland, 2019

Jurisdiction	Cases	Rate
Maryland	1,269	320.8
Allegany	0	0.0
Anne Arundel	80	295.3
Baltimore City	66	356.8
Baltimore	89	324.0
Calvert	<6	**
Caroline	<6	**
Carroll	8	**
Cecil	<6	**
Charles	13	**
Dorchester	<6	**
Frederick	52	348.7
Garrett	0	0.0
Harford	26	359.4
Howard	49	319.8
Kent	<6	**
Montgomery	532	331.2
Prince George's	286	327.4
Queen Anne's	<6	**
St. Mary's	12	**
Somerset	<6	**
Talbot	<6	**
Washington	12	**
Wicomico	8	**
Worcester	<6	**

Region	Cases	Rate
Baltimore Metropolitan Area^	318	323.5
Eastern Shore Region	28	197.6
National Capital Area	818	321.7
Northwest Region	64	318.2
Southern Region	28	314.3

* 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 A, Sectio

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

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

^ Area rate includes Baltimore City

Source: Maryland Cancer Registry

Table 5
Number of Deaths for All Cancer Sites by Jurisdiction, Gender, and Race, Maryland, 2019

Jurisdiction	Total	Gender		Race		
		Male	**Female**	**White**	**Black**	**Other**
Maryland	10,743	5,422	5,321	7,210	3,155	378
Allegany	160	81	79	155	<10	<10
Anne Arundel	1,000	507	493	822	149	29
Baltimore City	1,246	654	592	360	873	13
Baltimore	1,754	873	881	1,323	396	35
Calvert	188	90	98	169	s	<10
Caroline	64	33	31	54	<10	<10
Carroll	351	183	168	337	s	<10
Cecil	232	130	102	216	s	<10
Charles	279	136	143	173	s	<10
Dorchester	93	48	45	63	s	<10
Frederick	394	209	185	351	s	<10
Garrett	59	41	18	s	<10	<10
Harford	473	244	229	415	46	12
Howard	427	221	206	276	101	50
Kent	45	23	22	s	10	<10
Montgomery	1,379	656	723	1,000	215	164
Prince George's	1,392	654	738	363	984	45
Queen Anne's	124	59	65	117	<10	<10
St. Mary's	208	112	96	166	s	<10
Somerset	64	36	28	46	s	<10
Talbot	105	57	48	90	s	<10
Washington	337	179	158	312	s	<10
Wicomico	215	125	90	167	s	<10
Worcester	154	71	83	141	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, 2019, as of February 1, 2022

Table 6
All Cancer Sites Age-Adjusted Mortality Rates* by Jurisdiction, Gender, and Race, Maryland, 2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	144.4	169.0	127.4	144.4	158.7	77.0
Allegany	151.0	169.5	137.8	151.3	**	**
Anne Arundel	148.4	172.6	131.8	147.3	164.4	98.4
Baltimore City	184.4	234.9	150.8	171.3	194.6	**
Baltimore	156.2	185.4	137.4	159.9	163.9	69.0
Calvert	168.5	191.7	156.8	179.0	**	**
Caroline	143.6	170.0	119.8	144.2	**	**
Carroll	158.1	187.8	135.5	159.2	**	**
Cecil	180.7	217.4	150.0	180.0	**	**
Charles	164.1	183.9	150.1	175.4	154.4	**
Dorchester	187.0	214.1	165.8	167.6	265.0	**
Frederick	129.2	154.5	111.8	129.5	166.2	**
Garrett	120.5	182.5	**	122.0	**	**
Harford	145.8	171.4	127.7	147.2	145.5	**
Howard	119.8	139.6	104.1	117.1	169.6	84.9
Kent	121.4	138.2	109.9	107.9	**	**
Montgomery	104.3	115.4	97.2	109.9	106.0	75.2
Prince George's	141.7	160.2	130.3	141.7	148.2	74.8
Queen Anne's	170.7	174.8	170.9	176.8	**	**
St. Mary's	166.4	189.1	146.5	160.7	225.0	**
Somerset	187.1	222.9	158.1	190.9	**	**
Talbot	132.0	166.1	106.2	126.8	**	**
Washington	162.3	192.9	136.4	160.2	200.7	**
Wicomico	170.5	229.9	125.3	173.5	156.5	**
Worcester	150.0	159.8	142.7	156.2	**	**

* 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, 2019, as of February 1, 2022

Table 7
Number of Cases for All Cancer Sites by Jurisdiction, Gender, and Race, Maryland, 2015-2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	161,272	80,100	81,155	108,604	44,021	6,405
Allegany	2,598	1,355	1,242	2,478	104	13
Anne Arundel	15,135	7,572	7,563	12,560	2,044	407
Baltimore City	16,263	7,934	8,329	5,319	10,618	202
Baltimore	25,309	12,181	13,123	18,875	5,497	776
Calvert	2,439	1,263	1,176	2,078	319	31
Caroline	979	504	475	838	129	6
Carroll	5,271	2,746	2,525	5,031	158	65
Cecil	3,233	1,652	1,581	3,013	184	25
Charles	3,785	1,943	1,840	2,176	1,466	104
Dorchester	1,166	622	544	839	315	7
Frederick	6,548	3,264	3,284	5,782	536	165
Garrett	933	475	458	923	<6	<6
Harford	7,946	3,982	3,964	6,892	859	162
Howard	7,220	3,531	3,687	5,083	1,267	786
Kent	777	408	369	644	127	<6
Montgomery	23,484	11,222	12,259	16,160	3,733	2,755
Prince George's	20,049	9,601	10,446	4,839	13,993	692
Queen Anne's	1,639	879	760	1,487	134	10
St. Mary's	2,712	1,422	1,289	2,208	432	57
Somerset	806	420	386	597	206	<6
Talbot	1,554	813	741	1,375	166	6
Washington	4,533	2,242	2,291	4,163	309	33
Wicomico	3,075	1,571	1,504	2,332	674	46
Worcester	2,278	1,200	1,078	2,017	243	11

Total includes cases reported as transexual, hermaphrodite, unknown gender, unknown race, and unknown jurisdiction

<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 March 4, 2022

Table 8
All Cancer Sites Age-Adjusted Incidence Rates* by Jurisdiction, Gender, and Race, Maryland, 2015-2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	450.4	491.0	423.7	460.2	442.0	272.1
Allegany	521.0	568.5	495.6	522.5	627.2	**
Anne Arundel	457.1	493.6	433.2	464.3	436.6	303.9
Baltimore City	483.8	544.4	445.4	496.4	478.9	241.7
Baltimore	482.2	519.3	459.3	498.1	459.5	287.0
Calvert	441.9	484.6	412.4	450.3	407.7	228.8
Caroline	468.0	505.1	438.9	471.9	445.3	**
Carroll	487.7	538.3	451.8	490.4	440.1	309.3
Cecil	520.4	554.0	496.9	520.8	534.0	306.9
Charles	441.5	503.0	397.0	456.9	423.6	257.1
Dorchester	494.2	549.3	451.7	464.3	580.6	**
Frederick	449.0	483.5	428.0	449.9	493.5	261.7
Garrett	422.4	439.7	409.3	420.5	**	**
Harford	506.7	555.1	474.7	510.0	509.7	318.8
Howard	404.0	424.9	390.0	423.8	423.5	269.4
Kent	470.6	522.0	434.8	454.7	565.0	**
Montgomery	379.7	399.5	369.5	386.1	374.8	271.7
Prince George's	405.7	442.7	384.4	386.3	407.7	248.0
Queen Anne's	490.3	530.3	459.1	487.9	548.6	**
St. Mary's	440.8	475.0	411.4	434.5	499.7	274.7
Somerset	510.5	541.7	511.4	548.6	477.3	**
Talbot	467.7	523.8	423.1	467.1	470.9	**
Washington	471.9	489.0	466.5	471.6	480.2	185.1
Wicomico	513.3	573.1	471.4	524.0	496.8	253.4
Worcester	511.7	546.9	489.4	513.2	532.4	**

* 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 March 4, 2022

Table 9
Number of Deaths for All Cancer Sites by Jurisdiction, Gender, and Race, Maryland, 2015-2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	53,945	27,352	26,593	36,369	15,792	1,784
Allegany	852	445	407	830	s	<10
Anne Arundel	4,917	2,581	2,336	4,091	705	121
Baltimore City	6,504	3,329	3,175	1,880	4,571	53
Baltimore	8,947	4,398	4,549	6,873	1,884	190
Calvert	844	447	397	723	s	<10
Caroline	350	182	168	295	s	<10
Carroll	1,647	856	791	1,586	48	13
Cecil	1,130	638	492	1,060	s	<10
Charles	1,295	650	645	789	478	28
Dorchester	464	249	215	331	s	<10
Frederick	2,023	1,079	944	1,830	150	43
Garrett	328	191	137	326	<10	<10
Harford	2,454	1,285	1,169	2,155	259	40
Howard	1,991	1,005	986	1,400	393	198
Kent	253	129	124	210	s	<10
Montgomery	7,172	3,363	3,809	5,158	1,214	800
Prince George's	6,962	3,389	3,573	1,841	4,898	223
Queen Anne's	511	269	242	466	s	<10
St. Mary's	985	542	443	816	153	16
Somerset	297	168	129	222	s	<10
Talbot	472	251	221	406	s	<10
Washington	1,602	851	751	1,507	82	13
Wicomico	1,156	631	525	874	270	12
Worcester	789	424	365	700	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, 2015-2019, as of February 1, 2022

Table 10
All Cancer Sites Age-Adjusted Mortality Rates* by Jurisdiction, Gender, and Race, Maryland, 2015-2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	151.3	178.2	132.6	149.8	169.4	81.1
Allegany	161.4	189.6	140.7	163.4	**	**
Anne Arundel	151.9	182.3	130.1	151.5	168.4	96.8
Baltimore City	196.3	243.2	164.9	175.3	211.0	71.6
Baltimore	164.0	191.9	146.1	167.1	169.0	80.6
Calvert	158.1	188.9	137.0	160.6	157.3	**
Caroline	166.2	195.1	143.4	163.2	184.5	**
Carroll	151.9	179.5	131.4	153.5	147.7	**
Cecil	185.5	228.1	150.4	185.3	233.0	**
Charles	160.8	186.6	142.9	166.2	160.0	73.9
Dorchester	187.6	222.3	161.1	177.6	227.0	**
Frederick	141.9	173.1	120.6	143.4	156.6	73.2
Garrett	140.0	182.5	106.4	140.4	**	**
Harford	158.2	191.6	135.4	158.3	175.2	88.7
Howard	118.5	136.1	105.2	121.6	144.0	75.6
Kent	137.9	159.3	122.2	131.9	174.3	**
Montgomery	113.9	125.2	106.9	117.1	130.4	81.4
Prince George's	149.4	175.0	133.0	147.7	155.1	84.8
Queen Anne's	148.4	168.7	133.2	148.5	171.6	**
St. Mary's	166.3	192.9	143.5	166.0	185.5	**
Somerset	184.3	218.0	157.3	191.2	179.9	**
Talbot	123.7	148.4	105.3	116.5	177.3	**
Washington	161.6	191.4	138.1	162.3	157.8	**
Wicomico	190.3	237.7	156.1	187.4	209.0	**
Worcester	164.0	196.8	138.3	163.1	185.1	**

* 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, 2015-2019, as of February 1, 2022

Maryland All Sites Cancer Incidence Rates by Geographical Area: Comparison to U.S. Rate, 2015-2019

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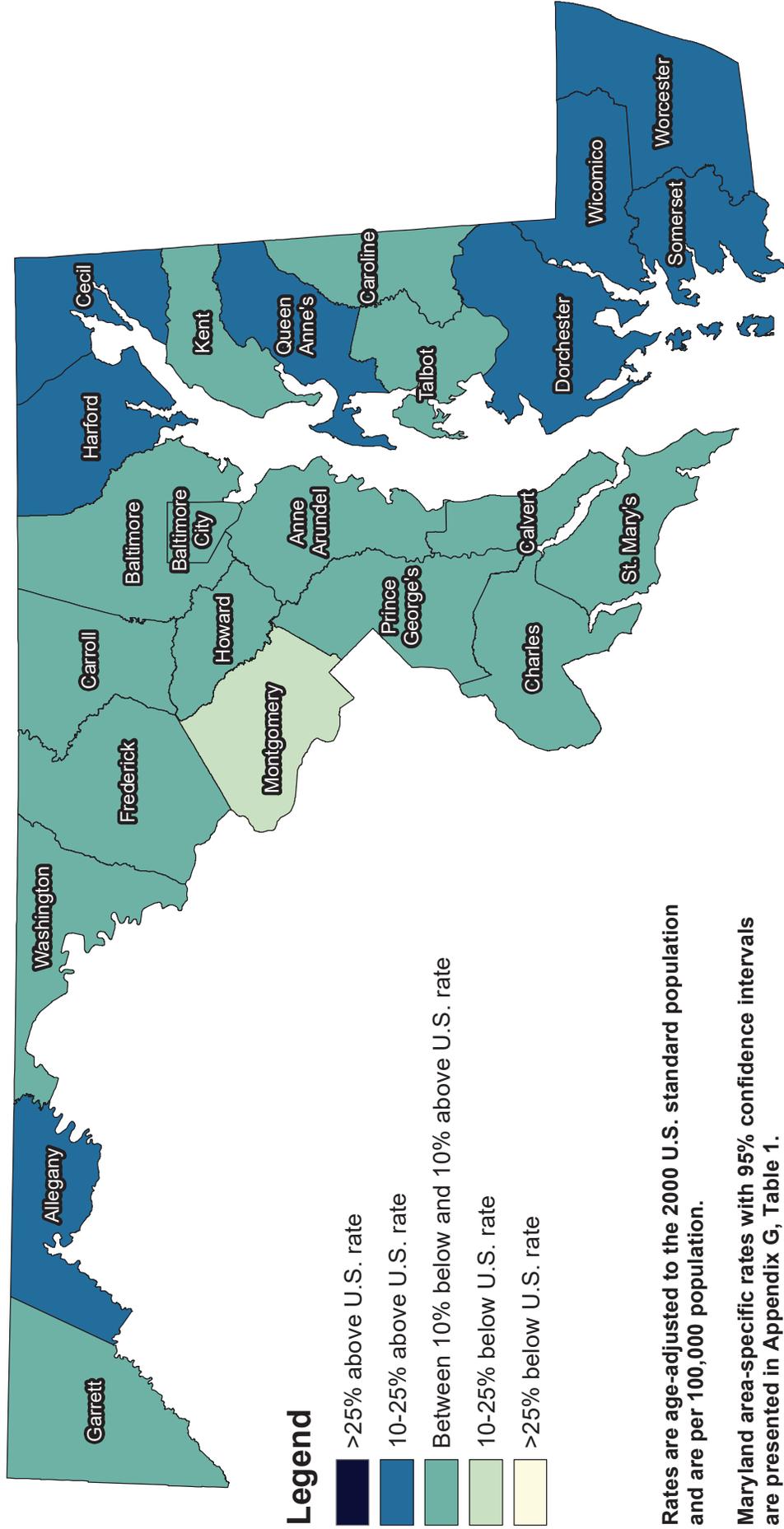
Rates are age-adjusted to the 2000 U.S. standard population and are per 100,000 population.

Maryland area-specific rates with 95% confidence intervals are presented in Appendix G, Table 1.

U.S. all sites cancer incidence rate, 2015-2019: 445.5 / 100,000

Maryland all sites cancer incidence rate, 2015-2019: 450.4 / 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, 2015-2019

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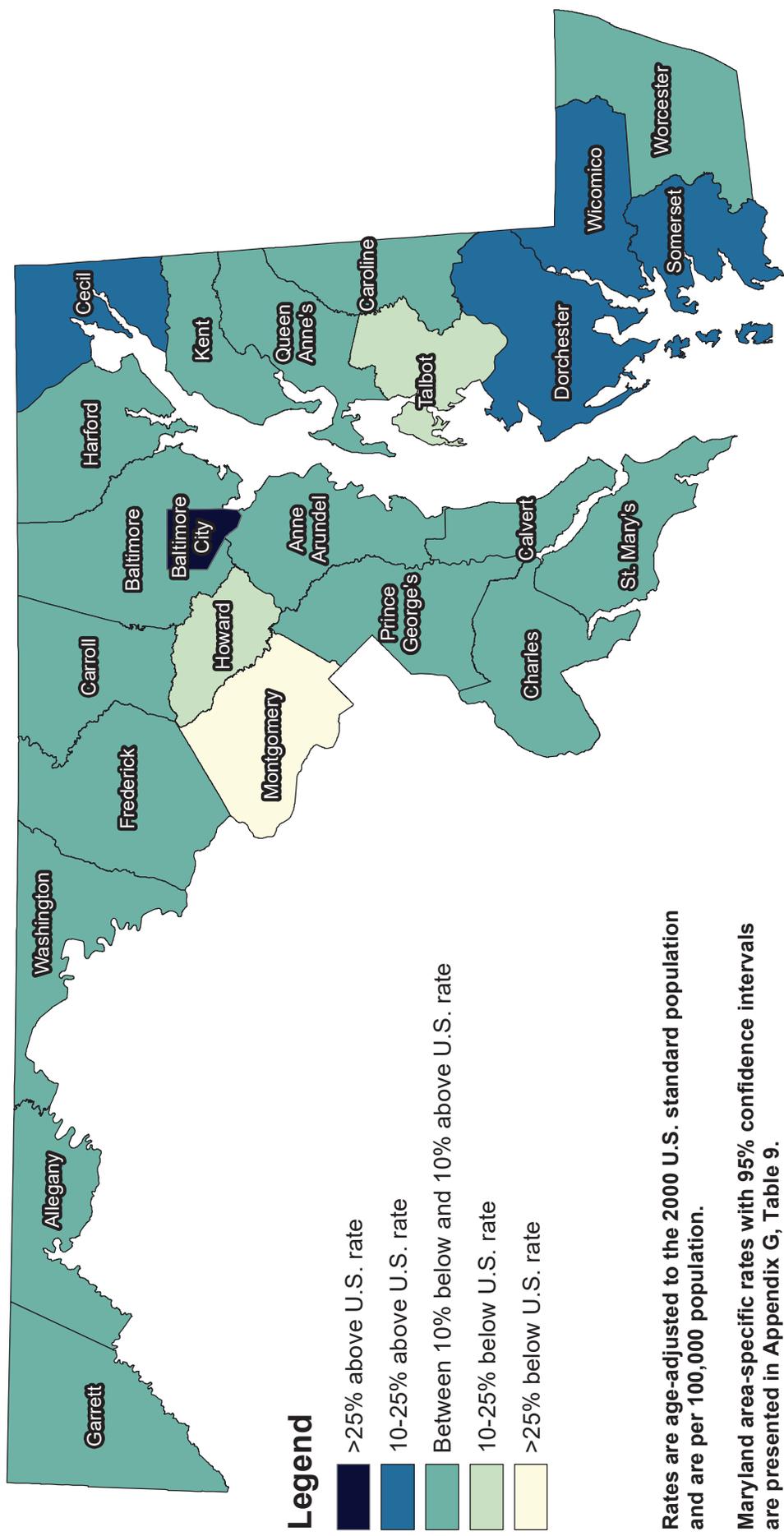
Rates are age-adjusted to the 2000 U.S. standard population and are per 100,000 population.

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

U.S. all sites cancer mortality rate, 2015-2019: 152.4 / 100,000

Maryland all sites cancer mortality rate, 2015-2019: 151.3 / 100,000

Sources: CDC WONDER
U.S. SEER, Cancer Statistics Review

III.   Targeted Cancers

A. Lung and Bronchus Cancer

Incidence (New Cases)

There were 3,923 new cases of lung and bronchus cancer (collectively called lung cancer) reported among Maryland residents in 2019. The 2019 Maryland age-adjusted lung cancer incidence rate was 51.2 per 100,000 population (49.6-52.9, 95% CI), which is statistically significantly higher than the 2019 U.S. SEER lung cancer incidence rate of 49.0 per 100,000 population (48.7-49.3, 95% CI).

Mortality (Deaths)

There were 2,384 lung cancer deaths among Maryland residents in 2019. In 2019, lung cancer accounted for 22.2% of all cancer deaths in Maryland and was the leading cause of cancer death in both men and women. The 2019 age-adjusted lung cancer mortality rate was 31.7 per 100,000 population (30.4-33.0, 95% CI) in Maryland. This rate is statistically significantly lower than the 2019 U.S. mortality rate for lung and bronchus cancer of 33.4 per 100,000 population (33.2-33.5, 95% CI). Maryland had the 32nd highest lung cancer mortality rate among the states and the District of Columbia for the period from 2015 to 2019.

Table 11
Lung Cancer Incidence and Mortality Rates
by Gender and Race, Maryland (MD) and the United States, 2019

Incidence 2019	Total[*]	Male	Female	White	Black	Other
MD New Cases (count)	3,923	1,871	2,050	2,725	1,037	140
MD Incidence Rate	51.2	55.6	48.1	53.2	50.4	28.5
U.S. SEER Rate	49.0	54.4	44.9	50.1	50.9	33.0
Mortality 2019	Total	Male	Female	White	Black	Other
MD Deaths (count)	2,384	1,159	1,225	1,711	603	70
MD Mortality Rate	31.7	35.5	28.9	33.8	30.3	14.4
U.S. Mortality Rate	33.4	40.1	28.1	34.2	34.6	19.5

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 jurisdiction

Source: Maryland Cancer Registry
U.S. SEER, SEER*Stat
NCHS Underlying Cause of Death in CDC WONDER, 2019
U.S. SEER, Cancer Statistics Review

Lung Cancer Incidence and Mortality Rates by Year of Diagnosis or Death, Maryland, 2015-2019

Source: Maryland Cancer Registry
          NCHS Underlying Cause of Death in CDC WONDER, 2017-2019
          NCHS Compressed Mortality File in CDC WONDER, 2015-2016
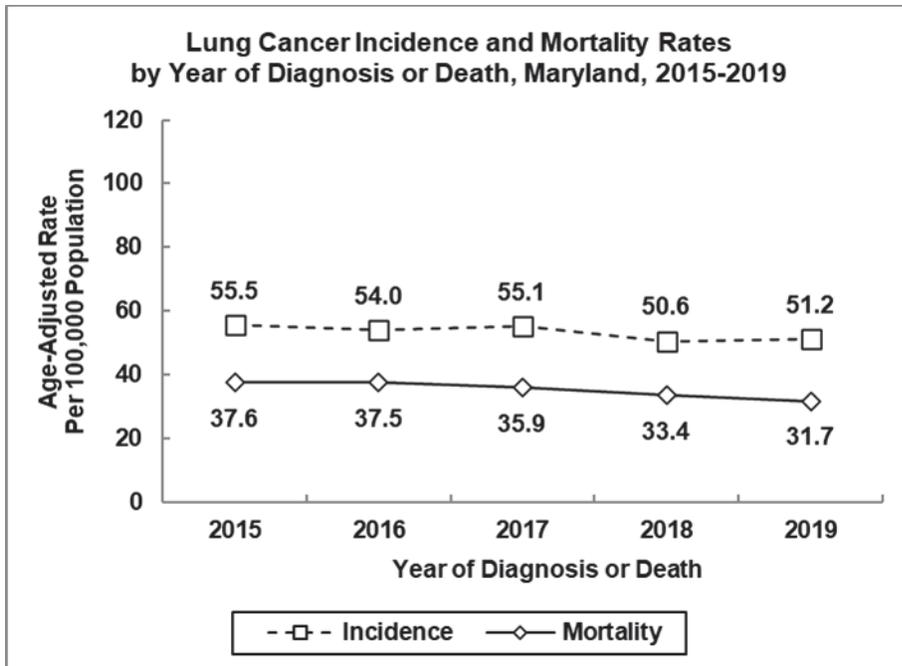
Incidence and Mortality Trends

Lung cancer incidence rates in Maryland decreased at a rate of 2.2% per year from 2015 to 2019.

Lung cancer mortality rates decreased at a rate of 4.5% per year from 2015 to 2019.

See Appendix H, Tables 1 and 2.

Lung Cancer Incidence Rates by Race Maryland, 2015-2019

Source: Maryland Cancer Registry
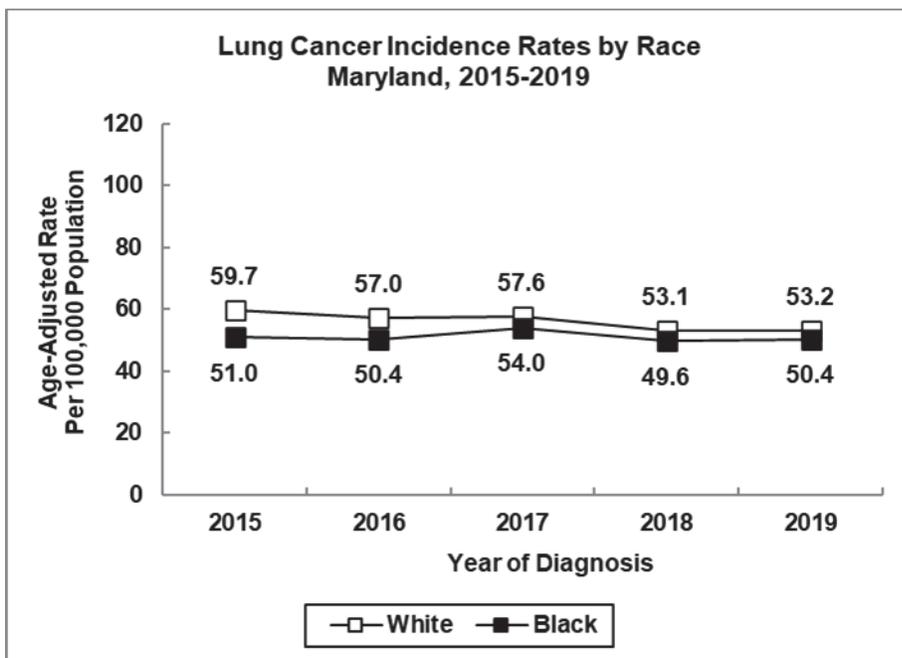
Incidence Trends by Race

From 2015 to 2019, lung cancer incidence rates for white Marylanders decreased at a rate of 3.0% per year, compared to a decline of only 0.4% per year among black Marylanders.

See Appendix H, Table 3.
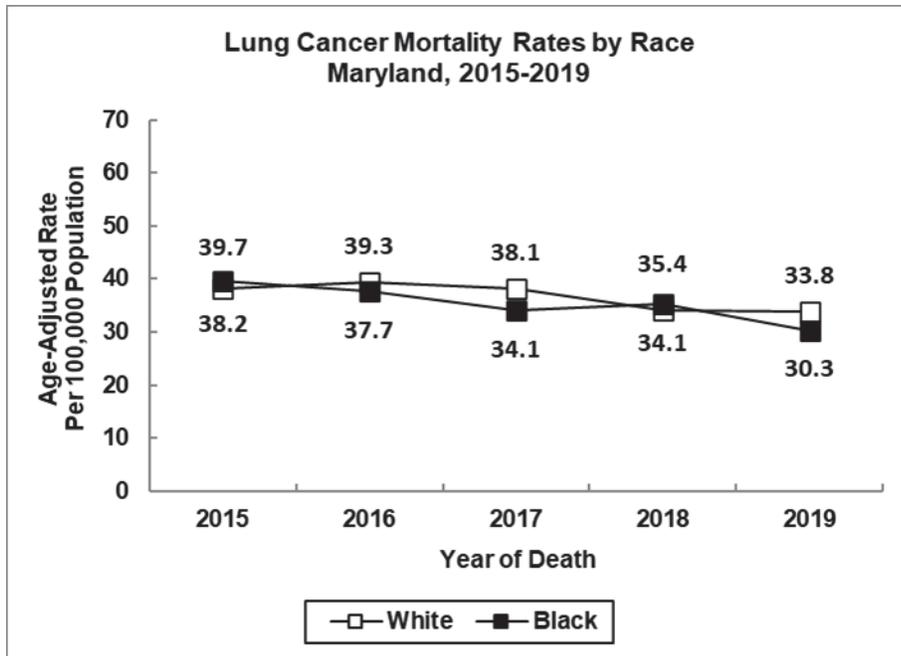
Lung Cancer Mortality Rates by Race
Maryland, 2015-2019

Age-Adjusted Rate Per 100,000 Population

39.7   39.3   38.1   35.4   33.8
38.2   37.7   34.1   34.1   30.3

White   Black

Year of Death

Source: NCHS Underlying Cause of Death in CDC WONDER, 2017-2019
        NCHS Compressed Mortality File in CDC WONDER, 2015-2016

Mortality Trends by Race

Lung cancer mortality rates are declining for both black and white Marylanders. From 2015 to 2019, rates decreased at a rate of 3.8% per year for whites and 5.9% per year for blacks.
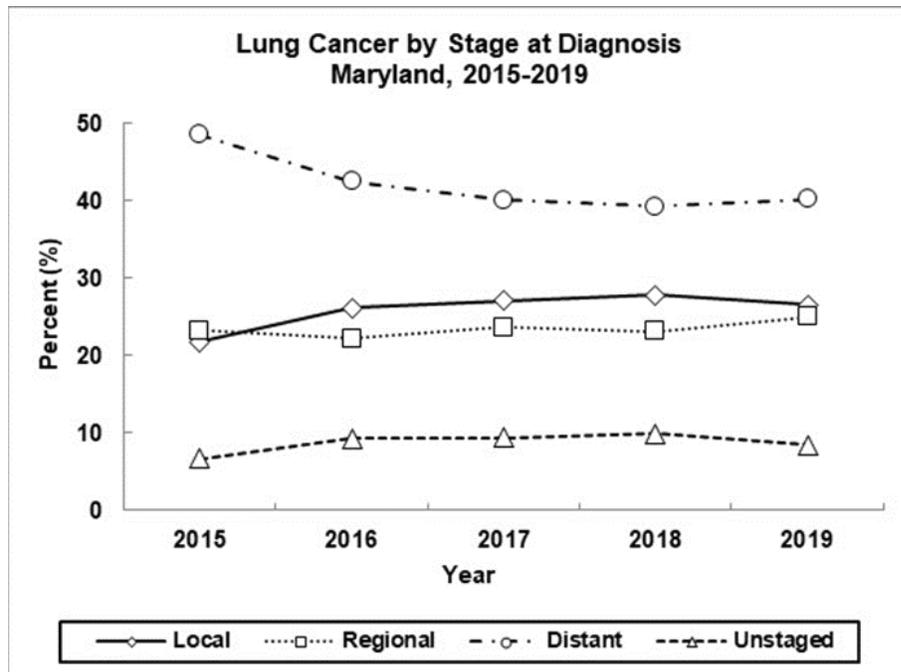
See Appendix H, Table 5.

Lung Cancer by Stage at Diagnosis
Maryland, 2015-2019

Percent (%)

Year

Local   Regional   Distant   Unstaged

Source: Maryland Cancer Registry
Note: Due to a methodology change, SEER summary stage 2000 was used in 2016 to 2017, while the derived SEER summary stage 2000 was used in 2015, and SS2018 was used in 2018 and 2019

Stage at Diagnosis

A higher proportion of lung cancer cases were diagnosed at the distant stage than at the local or regional stage. In 2019, 26.5% of lung cancer cases in Maryland were diagnosed at the local stage, 25.0% at the regional stage, and 40.1% at the distant stage. The proportion of lung cancers reported as unstaged increased 5.3% per year from 2015 to 2019.

See Appendix I, Table 2.

Current Smokers* Among Maryland Adults Ages 18 Years and Older, 2015-2020, Compared to Healthy People 2020 Target
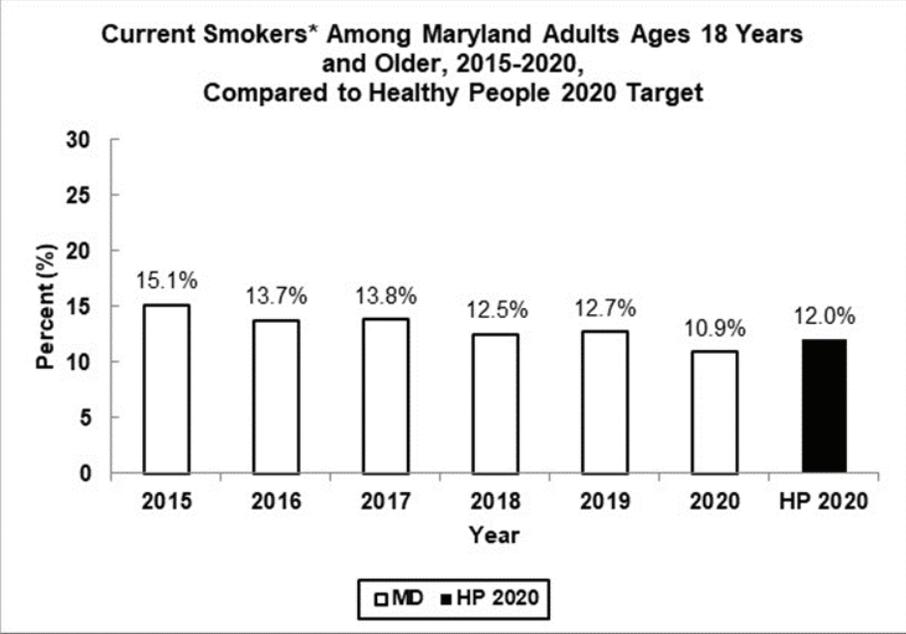
Smoking Prevalence Among Maryland Adults

One Healthy People 2020 target was to reduce the percentage of adults who are current smokers to 12.0%. In 2020, Maryland attained this goal. The percentage of adult smokers has decreased from 15.1% in 2015 to 10.9% in 2020.

Source: Maryland BRFSS, 2015-2020
 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

Current Use of Cigarettes* by Maryland Underage Youth in Grades 9 to 12, 2015-2021, Compared to Healthy People 2020 Target
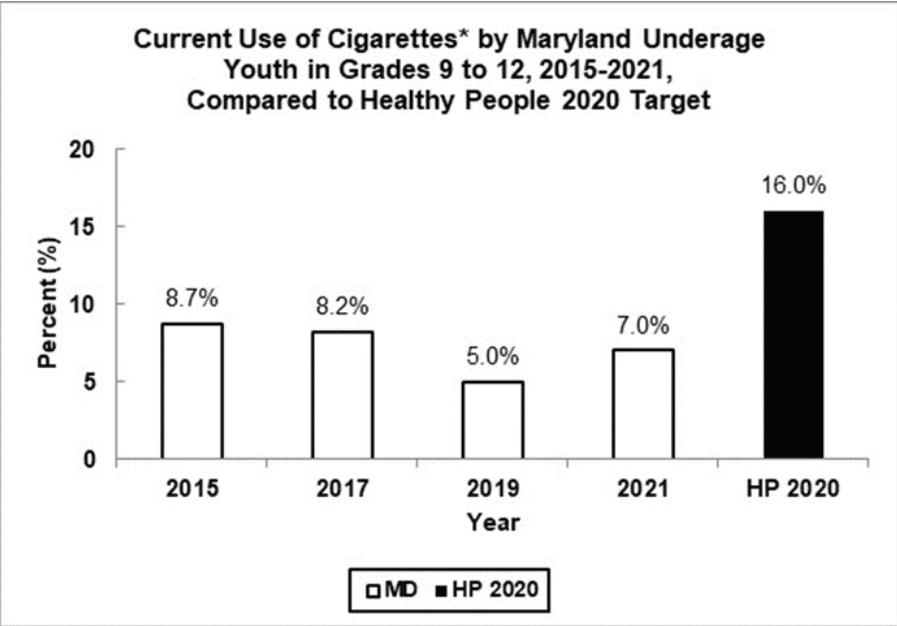
Cigarette Use by Maryland Youth

Another Healthy People 2020 target was 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 2021, only 7.0% of Maryland youth in grades 9 to 12 reported smoking cigarettes in the previous 30 days.

Source: Maryland Youth Tobacco and Risk Behavior Survey, 2014/2015, 2016/2017, 2018/2019
 Maryland Youth Pandemic Behavior Survey, 2021
 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

Public Health Evidence (adapted from the National Cancer Institute Physician Data Query [PDQ] and the United States Preventive Services Task Force [USPSTF])

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.
- 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.
- Lower exposure to radon.

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

The following do not decrease the risk of lung cancer:
- Nonsmokers taking beta carotene supplements.
- 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. The USPSTF recommends annual screening for lung cancer with LDCT in adults ages 50 to 80 years old who have a 20 pack-year* or more 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 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 from screening than to be spared death from lung cancer.
- Screening may not improve a person's health or help a person live longer if the person has lung cancer that has already spread to other places in the body. Overdiagnosis can occur (the screening test results lead to the diagnosis and treatment of a disease that may have never caused symptoms or become life-threatening). It is unknown if the treatment of these cancers would help a person live longer than if no treatment were given, and treatments for cancer may have serious side effects. Harms of treatment may happen more often in people who have medical problems caused by heavy or long-term smoking.

Maryland Department of Health Medical Advisory Committee Public Health Intervention for Lung Cancer
- Annual screening for lung cancer with LDCT in adults ages 50 to 80 years old who have ≥ 20 pack-year smoking history and currently smoke or have quit within the past 15 years.

Individuals should discuss the 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 Cases for Lung and Bronchus Cancer by Jurisdiction, Gender, and Race, Maryland, 2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	3,923	1,871	2,050	2,725	1,037	140
Allegany	92	53	39	85	7	0
Anne Arundel	384	179	205	333	43	8
Baltimore City	520	257	263	172	341	6
Baltimore	663	296	365	500	148	12
Calvert	77	32	45	71	<6	<6
Caroline	23	16	7	20	<6	0
Carroll	133	69	64	130	<6	0
Cecil	111	57	54	107	<6	0
Charles	109	56	53	74	29	<6
Dorchester	24	11	13	17	7	0
Frederick	140	68	72	130	8	<6
Garrett	24	15	9	24	0	0
Harford	175	78	97	163	12	0
Howard	130	55	75	91	24	15
Kent	23	10	13	20	<6	<6
Montgomery	394	174	220	260	55	67
Prince George's	425	212	213	130	276	16
Queen Anne's	28	17	11	24	<6	0
St. Mary's	75	37	38	58	14	<6
Somerset	24	12	12	17	7	0
Talbot	40	11	29	33	7	0
Washington	131	67	64	119	s	<6
Wicomico	98	57	41	77	19	<6
Worcester	70	27	43	62	8	0

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

<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 March 4, 2022

Table 13
Lung and Bronchus Cancer Age-Adjusted Incidence Rates* by Jurisdiction, Gender, and Race, Maryland, 2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	51.2	55.6	48.1	53.2	50.4	28.5
Allegany	83.6	103.0	68.0	79.9	**	0.0
Anne Arundel	54.5	56.2	53.6	56.8	48.9	**
Baltimore City	74.1	89.0	64.9	78.0	73.0	**
Baltimore	57.9	60.4	55.9	59.8	58.3	**
Calvert	66.0	65.0	70.2	72.5	**	**
Caroline	49.9	75.1	**	48.4	**	0.0
Carroll	55.6	63.3	50.2	57.4	**	0.0
Cecil	81.4	91.0	74.7	84.1	**	0.0
Charles	63.0	75.8	53.9	75.2	40.8	**
Dorchester	43.4	**	**	40.9	**	0.0
Frederick	44.4	50.9	41.3	46.2	**	**
Garrett	46.0	**	**	46.5	0.0	0.0
Harford	51.5	51.8	50.4	54.3	**	0.0
Howard	36.3	35.0	37.6	36.7	42.4	**
Kent	63.5	**	**	66.8	**	**
Montgomery	29.8	30.2	29.6	28.5	28.1	30.6
Prince George's	42.2	50.4	36.7	51.5	39.6	27.8
Queen Anne's	37.3	47.3	**	35.3	**	0.0
St. Mary's	57.1	58.1	55.6	53.5	**	**
Somerset	70.4	**	**	67.2	**	0.0
Talbot	50.7	**	66.5	47.9	**	0.0
Washington	63.2	71.1	57.2	61.8	**	**
Wicomico	78.6	103.0	60.4	81.7	72.9	**
Worcester	65.4	51.5	78.3	65.2	**	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 March 4, 2022

Table 14
Number of Deaths for Lung and Bronchus Cancer by
Jurisdiction, Gender, and Race, Maryland, 2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	2,384	1,159	1,225	1,711	603	70
Allegany	45	23	22	42	<10	<10
Anne Arundel	248	121	127	218	s	<10
Baltimore City	306	162	144	s	205	<10
Baltimore	422	195	227	334	s	<10
Calvert	51	19	32	49	<10	<10
Caroline	12	<10	<10	10	<10	<10
Carroll	84	41	43	81	<10	<10
Cecil	69	37	32	67	<10	<10
Charles	74	37	37	52	s	<10
Dorchester	20	<10	s	12	<10	<10
Frederick	73	37	36	68	<10	<10
Garrett	13	<10	<10	s	<10	<10
Harford	121	60	61	113	<10	<10
Howard	65	35	30	48	s	<10
Kent	12	<10	<10	<10	<10	<10
Montgomery	236	106	130	167	36	33
Prince George's	237	112	125	s	166	<10
Queen Anne's	22	10	12	20	<10	<10
St. Mary's	44	21	23	39	<10	<10
Somerset	18	s	<10	13	<10	<10
Talbot	23	<10	s	21	<10	<10
Washington	87	42	45	83	<10	<10
Wicomico	57	38	19	49	<10	<10
Worcester	45	16	29	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, 2019, as of February 1, 2022

Table 15
Lung and Bronchus Cancer Age-Adjusted Mortality Rates* by Jurisdiction, Gender, and Race, Maryland, 2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	31.7	35.5	28.9	33.8	30.3	14.4
Allegany	41.2	45.4	37.0	39.7	**	**
Anne Arundel	36.3	40.7	33.6	38.4	26.7	**
Baltimore City	44.6	59.5	35.3	46.1	45.2	**
Baltimore	37.3	40.6	34.9	39.7	32.7	**
Calvert	46.6	**	51.3	53.0	**	**
Caroline	**	**	**	**	**	**
Carroll	37.3	42.0	34.4	38.0	**	**
Cecil	51.5	61.1	44.0	53.1	**	**
Charles	44.0	51.3	39.2	53.4	31.2	**
Dorchester	41.0	**	**	**	**	**
Frederick	23.7	26.8	20.9	24.7	**	**
Garrett	**	**	**	**	**	**
Harford	37.6	42.3	33.5	39.6	**	**
Howard	17.9	20.8	15.3	19.9	**	**
Kent	**	**	**	**	**	**
Montgomery	17.7	18.4	16.7	18.1	18.4	15.1
Prince George's	24.5	27.8	22.2	24.3	25.5	**
Queen Anne's	29.5	**	**	29.4	**	**
St. Mary's	34.3	33.6	34.7	36.3	**	**
Somerset	**	**	**	**	**	**
Talbot	28.2	**	**	29.3	**	**
Washington	42.3	45.3	39.6	43.3	**	**
Wicomico	45.1	68.4	**	51.0	**	**
Worcester	40.7	**	49.7	41.4	**	**

* 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, 2019, as of February 1, 2022

Table 16
Number of Cases for Lung and Bronchus Cancer by Jurisdiction, Gender, and Race, Maryland, 2015-2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	19,329	9,330	9,996	13,765	4,893	604
Allegany	426	235	191	409	17	0
Anne Arundel	1,915	922	993	1,665	206	43
Baltimore City	2,652	1,286	1,366	903	1,722	24
Baltimore	3,457	1,562	1,893	2,742	640	69
Calvert	291	132	159	266	23	<6
Caroline	127	70	57	110	17	0
Carroll	605	325	280	589	15	0
Cecil	552	299	253	532	18	<6
Charles	434	225	208	305	116	13
Dorchester	147	81	66	104	s	<6
Frederick	702	353	349	647	43	12
Garrett	103	64	39	s	<6	0
Harford	1,028	494	534	919	94	15
Howard	595	276	319	448	81	63
Kent	101	43	58	81	s	<6
Montgomery	1,866	855	1,011	1,315	244	275
Prince George's	1,960	935	1,025	580	1,297	68
Queen Anne's	197	103	94	175	22	0
St. Mary's	395	203	192	337	51	7
Somerset	130	72	58	98	32	0
Talbot	167	68	99	145	22	0
Washington	657	312	345	611	42	<6
Wicomico	490	247	243	392	90	6
Worcester	304	155	149	271	s	<6

Total includes cases reported as transexual, hermaphrodite, unknown gender, unknown race, and unknown jurisdiction

<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 March 4, 2022

Table 17
Lung and Bronchus Cancer Age-Adjusted Incidence Rates* by Jurisdiction, Gender, and Race, Maryland, 2015-2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	53.2	58.4	49.4	56.0	51.1	27.1
Allegany	78.9	95.0	65.7	78.5	119.4	0.0
Anne Arundel	57.4	61.9	54.4	59.7	48.0	35.8
Baltimore City	78.0	90.7	69.7	82.8	76.8	32.3
Baltimore	63.7	67.0	61.6	68.1	56.5	27.4
Calvert	53.5	56.4	53.5	58.2	29.8	**
Caroline	58.1	69.7	49.2	58.8	59.8	0.0
Carroll	53.8	63.4	46.1	55.1	**	0.0
Cecil	86.2	100.6	74.4	88.5	59.4	**
Charles	52.3	62.7	44.8	62.0	38.7	**
Dorchester	57.6	69.3	48.6	54.0	71.9	**
Frederick	47.3	53.9	42.7	48.5	47.3	**
Garrett	41.8	53.1	30.8	41.8	**	0.0
Harford	64.6	71.3	59.7	65.9	60.5	**
Howard	34.9	36.0	34.2	37.5	30.7	24.8
Kent	58.6	56.1	59.7	54.4	78.3	**
Montgomery	29.7	31.1	28.7	29.9	27.3	27.3
Prince George's	41.2	46.1	37.6	46.9	39.5	26.5
Queen Anne's	55.8	61.5	51.1	53.9	93.1	0.0
St. Mary's	65.5	68.8	62.4	67.4	60.2	**
Somerset	77.7	88.4	70.4	80.2	78.4	0.0
Talbot	45.9	38.5	52.0	44.6	60.8	0.0
Washington	66.3	69.1	63.8	66.1	80.8	**
Wicomico	79.6	89.9	72.0	83.4	69.6	**
Worcester	60.8	67.4	56.3	60.5	68.8	**

* 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 March 4, 2022

Table 18
Number of Deaths for Lung and Bronchus Cancer by Jurisdiction, Gender, and Race, Maryland, 2015-2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	12,645	6,438	6,207	8,986	3,297	362
Allegany	252	135	117	249	<10	<10
Anne Arundel	1,240	630	610	1,097	118	25
Baltimore City	1,728	900	828	538	1,174	16
Baltimore	2,234	1,071	1,163	1,795	399	40
Calvert	197	90	107	176	s	<10
Caroline	87	48	39	76	s	<10
Carroll	416	232	184	408	<10	<10
Cecil	365	201	164	348	s	<10
Charles	286	147	139	194	s	<10
Dorchester	114	67	47	86	s	<10
Frederick	433	241	192	407	s	<10
Garrett	72	45	27	71	<10	<10
Harford	621	332	289	549	61	11
Howard	352	171	181	278	43	31
Kent	64	29	35	50	s	<10
Montgomery	1,255	588	667	930	169	156
Prince George's	1,386	696	690	395	939	52
Queen Anne's	139	73	66	123	s	<10
St. Mary's	274	150	124	232	s	<10
Somerset	104	54	50	80	s	<10
Talbot	94	46	48	81	s	<10
Washington	411	203	208	388	s	<10
Wicomico	312	177	135	247	s	<10
Worcester	209	112	97	188	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, 2015-2019, as of February 1, 2022

Table 19
Lung and Bronchus Cancer Age-Adjusted Mortality Rates* by Jurisdiction, Gender, and Race, Maryland, 2015-2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	35.1	41.3	30.6	36.7	35.3	16.8
Allegany	47.0	55.9	39.1	48.1	**	**
Anne Arundel	38.1	43.7	34.0	40.2	28.2	22.1
Baltimore City	51.5	65.1	42.3	49.6	53.5	**
Baltimore	40.9	46.5	37.1	43.8	35.1	16.0
Calvert	37.3	38.6	36.7	39.6	**	**
Caroline	40.9	49.9	32.7	41.8	**	**
Carroll	37.6	47.6	30.0	38.6	**	**
Cecil	59.0	71.3	49.3	59.8	**	**
Charles	35.1	41.3	31.0	40.1	29.9	**
Dorchester	44.9	58.1	34.8	45.1	47.8	**
Frederick	30.2	37.8	24.4	31.5	24.9	**
Garrett	29.8	38.0	21.7	29.7	**	**
Harford	40.2	50.8	32.8	40.2	41.9	**
Howard	21.0	22.6	19.7	23.8	16.5	12.5
Kent	35.7	34.7	36.4	32.9	**	**
Montgomery	19.8	21.8	18.2	20.8	18.9	16.0
Prince George's	29.6	35.3	25.5	31.4	29.6	20.0
Queen Anne's	39.0	43.6	35.3	37.7	**	**
St. Mary's	45.6	52.0	39.8	46.4	45.4	**
Somerset	62.6	67.8	58.1	65.3	59.3	**
Talbot	24.8	25.8	24.4	23.5	**	**
Washington	41.1	44.8	38.0	41.5	42.9	**
Wicomico	50.9	65.3	39.8	52.5	49.4	**
Worcester	41.6	49.5	35.6	41.8	42.0	**

* 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, 2015-2019, as of February 1, 2022

Maryland Lung Cancer Incidence Rates by Geographical Area: Comparison to U.S. Rate, 2015-2019

Worcester

Wicomico

Somerset

Cecil

Caroline

Kent

Queen Anne's

Talbot

Dorchester

Harford

Baltimore

Baltimore City

Anne Arundel

Calvert

St. Mary's

Howard

Carroll

Prince George's

Charles

Montgomery

Frederick

Washington

Allegany

Garrett

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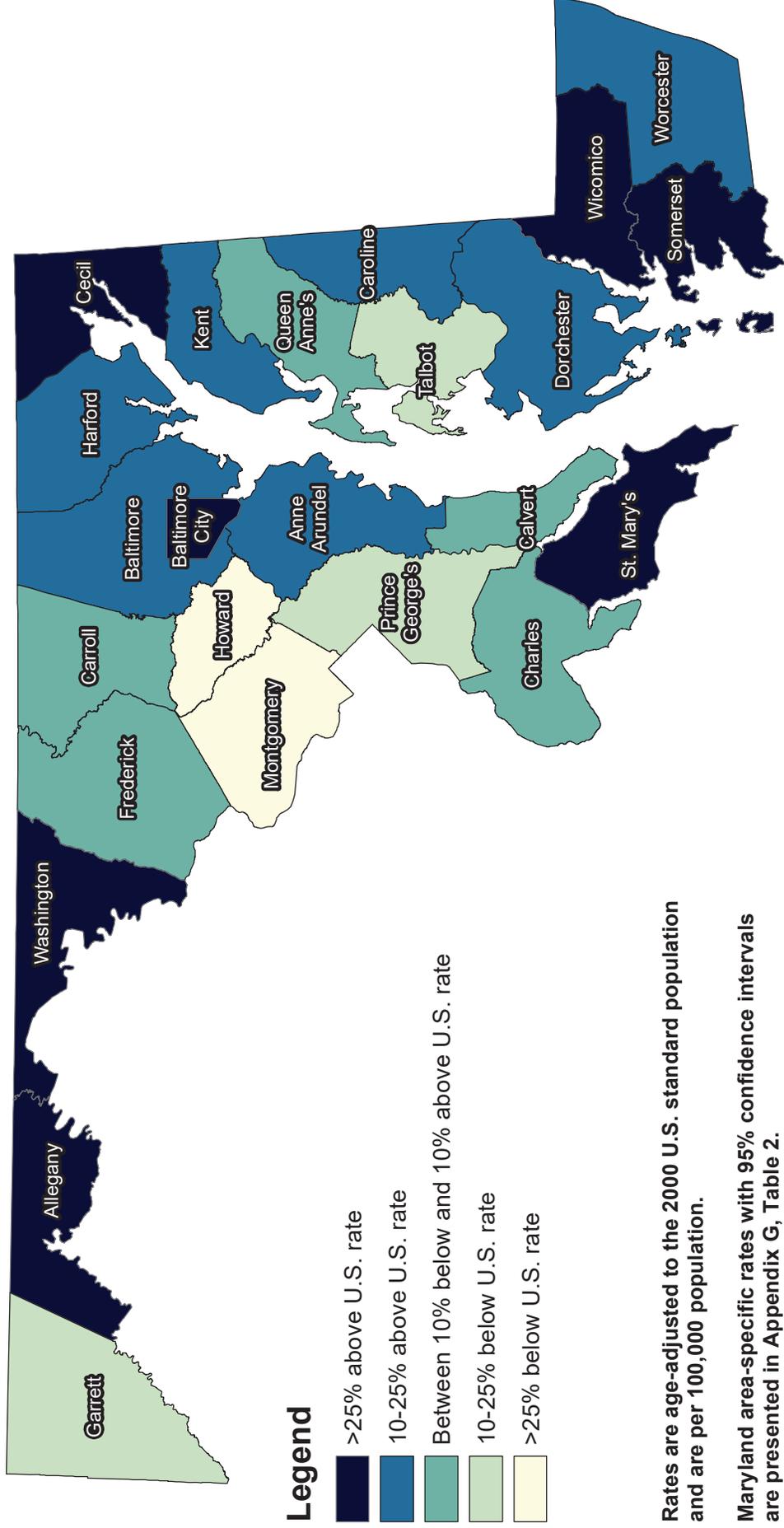
Rates are age-adjusted to the 2000 U.S. standard population and are per 100,000 population.

Maryland area-specific rates with 95% confidence intervals are presented in Appendix G, Table 2.

U.S. lung cancer incidence rate, 2015-2019: 52.0 / 100,000

Maryland lung cancer incidence rate, 2015-2019: 53.2 / 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, 2015-2019

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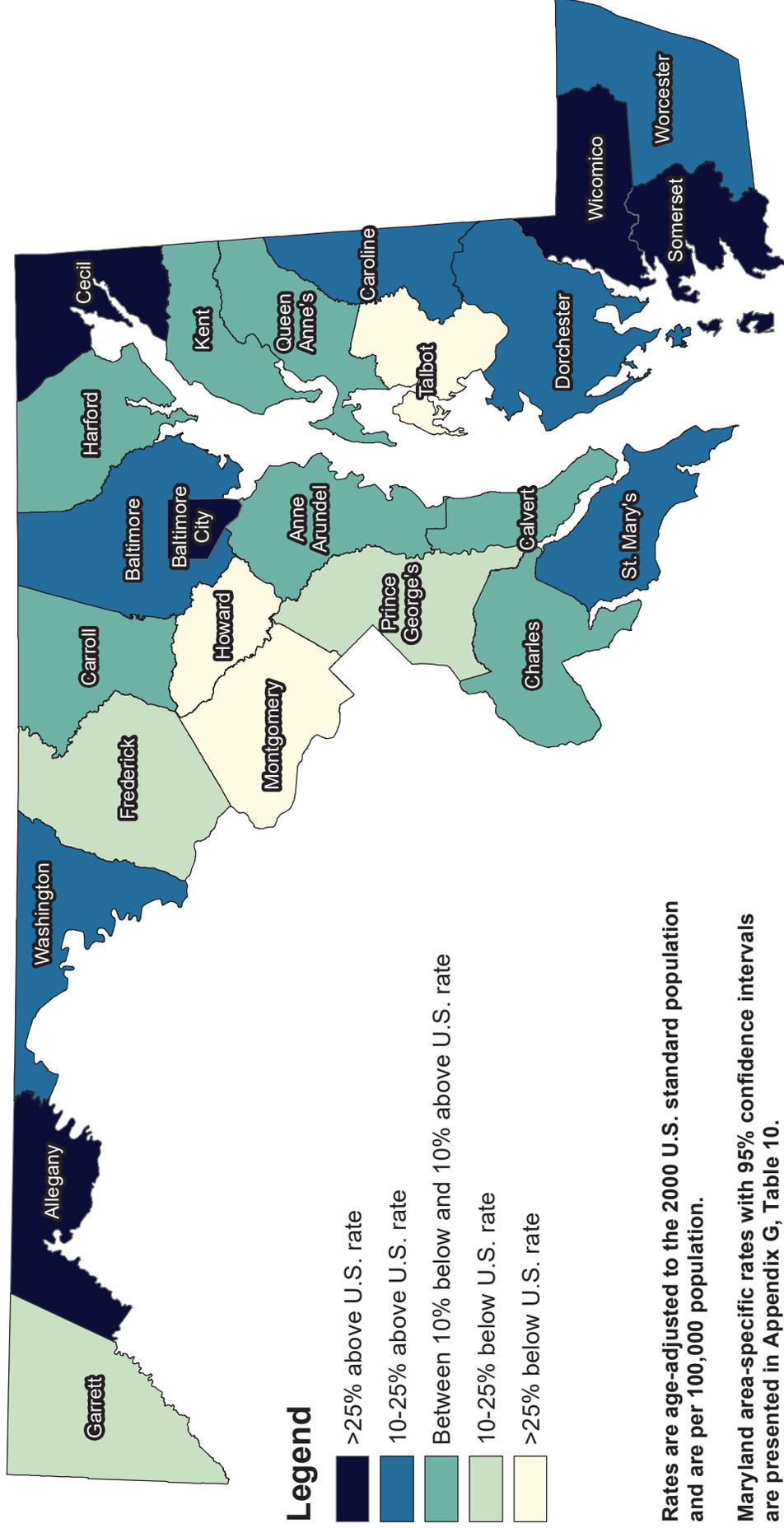
Rates are age-adjusted to the 2000 U.S. standard population and are per 100,000 population.

Maryland area-specific rates with 95% confidence intervals are presented in Appendix G, Table 10.

U.S. lung cancer mortality rate, 2015-2019: 36.7 / 100,000

Maryland lung cancer mortality rate, 2015-2019: 35.1 / 100,000

Sources: CDC WONDER
U.S. SEER, Cancer Statistics Review

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B. Colorectal Cancer

Incidence (New Cases)

In 2019, there were 2,608 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 2019 was 35.7 per 100,000 population (34.3-37.1, 95% CI), which is not statistically significantly lower than the 2019 U.S. SEER age-adjusted colorectal cancer incidence rate of 36.7 per 100,000 population (36.4-37.0, 95% CI).

Mortality (Deaths)

A total of 967 persons died of colorectal cancer in 2019 in Maryland. In 2019, colorectal cancer accounted for 9.0% 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 13.1 per 100,000 population (12.3-13.9, 95% CI). This rate is similar to the 2019 U.S. colorectal cancer mortality rate of 12.8 per 100,000 population (12.7-12.9, 95% CI). Maryland had the 26th highest colorectal cancer mortality rate among the states and the District of Columbia for the period from 2015 to 2019.

Table 20
Colorectal Cancer Incidence and Mortality Rates
by Gender and Race, Maryland (MD) and the United States, 2019

Incidence 2019	*Total*[*]	*Male*	*Female*	*White*	*Black*	*Other*
MD New Cases (count)	2,608	1,281	1,327	1,683	748	137
MD Incidence Rate	35.7	38.7	33.3	35.7	36.0	27.2
U.S. SEER Rate	36.7	42.4	31.8	36.3	41.4	28.4
Mortality 2019	*Total*	*Male*	*Female*	*White*	*Black*	*Other*
MD Deaths (count)	967	473	494	612	318	37
MD Mortality Rate	13.1	14.6	11.8	12.5	15.8	7.4
U.S. Mortality Rate	12.8	15.2	10.8	12.6	16.4	9.0

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 jurisdiction

Source: Maryland Cancer Registry
       U.S. SEER, SEER*Stat
       NCHS Underlying Cause of Death in CDC WONDER, 2019
       U.S. SEER, Cancer Statistics Review

**Colorectal Cancer Incidence and Mortality Rates
by Year of Diagnosis or Death, Maryland, 2015-2019**
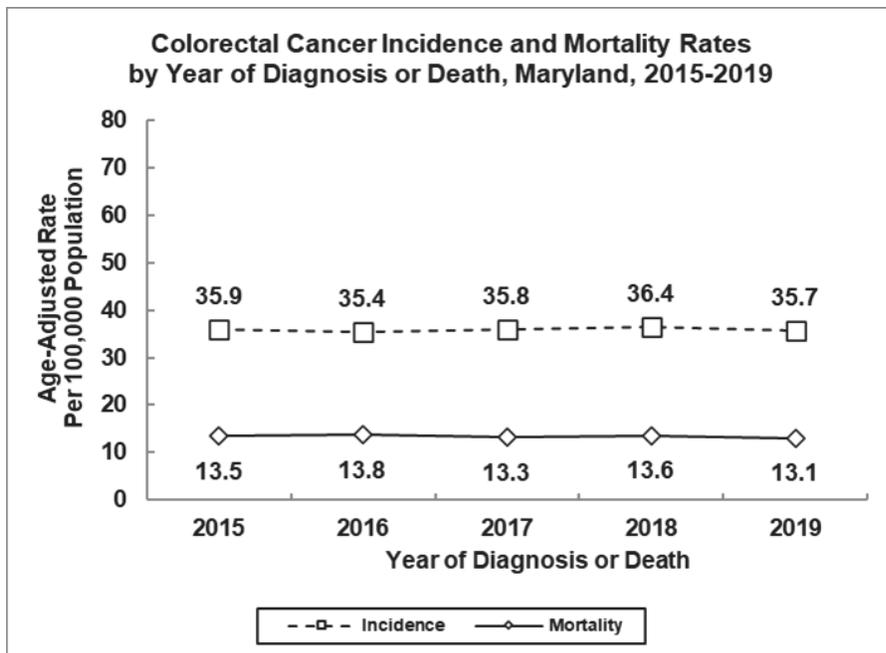
Source: Maryland Cancer Registry
NCHS Underlying Cause of Death in CDC WONDER, 2017-2019
NCHS Compressed Mortality File in CDC WONDER, 2015-2016

Incidence and Mortality Trends

Incidence rates for colorectal cancer have remained relatively stagnant in Maryland. From 2015 to 2019, incidence rates increased at a rate of 0.2% per year.

Colorectal cancer mortality rates declined at a rate of 0.7% per year from 2015 to 2015.
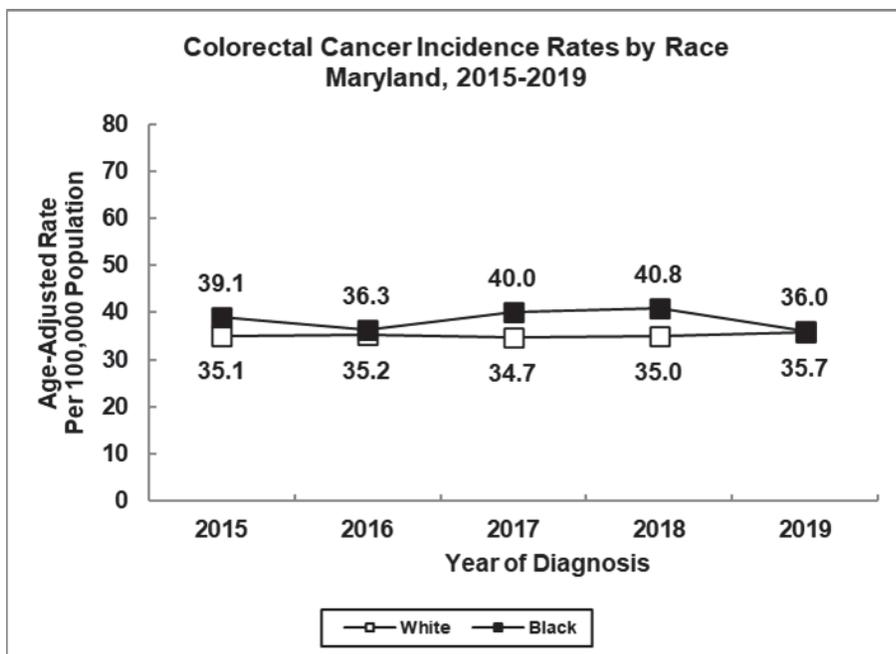
See Appendix H, Tables 1 and 2.

**Colorectal Cancer Incidence Rates by Race
Maryland, 2015-2019**

Source: Maryland Cancer Registry

Incidence Trends by Race

From 2015 to 2019 colorectal cancer incidence rates declined for black Marylanders at a rate of 0.5% per year, but increased slightly for white Marylanders at a rate of 0.3% per year. In 2019, the incidence rate for colorectal cancer was 35.7 per 100,000 population for whites and 36.0 per 100,000 population for blacks in Maryland.

See Appendix H, Table 3.
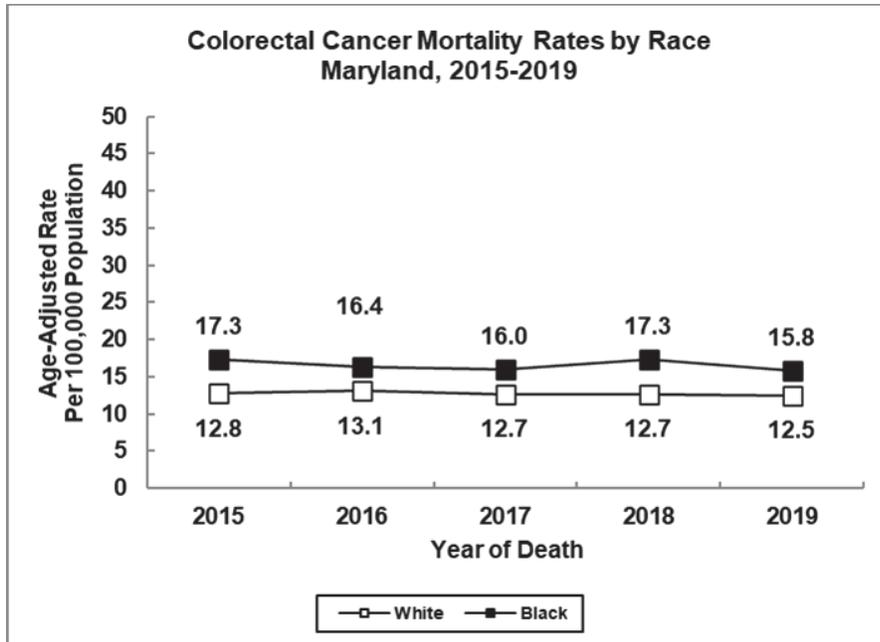
Colorectal Cancer Mortality Rates by Race
Maryland, 2015-2019

Source: NCHS Underlying Cause of Death in CDC WONDER, 2017-2019
NCHS Compressed Mortality File in CDC WONDER, 2015-2016

Mortality Trends by Race

From 2015 to 2019, colorectal cancer mortality rates declined at a rate of 0.8% per year for white Marylanders and a rate of 1.3% per year for black Marylanders. In 2019, the age-adjusted colorectal cancer mortality rate was 15.8 per 100,000 for blacks and 12.5 per 100,000 for whites.

See Appendix H, Table 5.
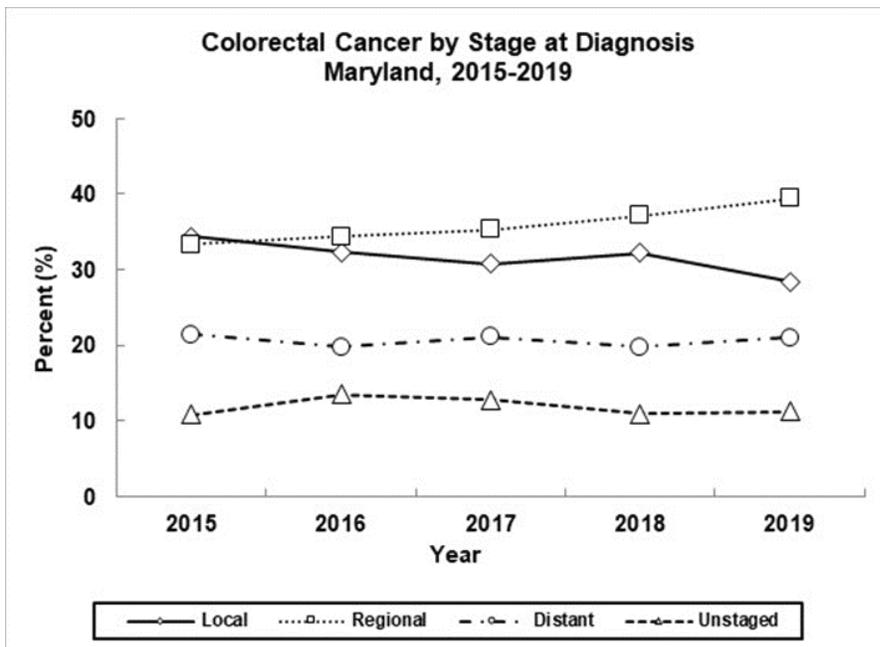
Colorectal Cancer by Stage at Diagnosis
Maryland, 2015-2019

Source: Maryland Cancer Registry
Note: Due to a methodology change, SEER summary stage 2000 was used in 2016 to 2017, while the derived SEER summary stage 2000 was used in 2015, and SS2018 was used in 2018 and 2019

Stage at Diagnosis

In 2019, 28.4% of colorectal cancers diagnosed in Maryland were detected at the local stage, 39.4% at the regional stage, and 21.0% at the distant stage. In 2019, 11.2% of colorectal cancers diagnosed were reported as unstaged. The proportion of colorectal cancers reported as unstaged decreased 1.4% per year from 2015 to 2019.

See Appendix I, Table 3.

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, 2016-2020, Compared to Healthy People 2020 Target

Year	Percent
2016	69.6%
2018	72.5%
2020	76.6%
HP 2020	70.5%

Legend: □ MD ■ HP 2020

Source: Maryland BRFSS 2016, 2018, 2020
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 aimed 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 2020 (76.6%) met and exceeded the Healthy People target of 70.5%.

Public Health Evidence (adapted from the National Cancer Institute Physician Data Query [PDQ] and the United States Preventive Services Task Force [USPSTF])

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.
- 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 gene changes linked to familial adenomatous polyposis, or hereditary nonpolyposis colon cancer.
- Alcohol use.
- Cigarette smoking.
- Race, as African Americans have an increased risk of cancer and death from colorectal cancer compared to other races.
- 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 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.
- Diet.

The following factors do not affect the risk of colorectal cancer:
- HRT with estrogen only.
- 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 (FOBT), which are guaiac FOBT or immunochemical FOBT/fecal immunochemical test (FIT).
- Sigmoidoscopy.
- Colonoscopy.
- Virtual colonoscopy, or computed tomography colonography (CT colonography).
- DNA stool test.

Studies have shown that screening for colorectal cancer using digital rectal exam does not decrease the number of deaths from the disease.

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, but 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 45 years old and continuing until age 75 years old. The USPSTF recommends that clinicians selectively offer screening for colorectal cancer in adults aged 76 to 85 years. In determining whether colorectal cancer screening is appropriate in individual cases, patients and clinicians should consider the patient's overall health, prior screening history, and preferences.

Maryland Department of Health Medical Advisory Committee Public Health Intervention for Colorectal Cancer
• Colorectal cancer screening is recommended for individuals ages 45 to 75 years old. Screening may begin earlier for individuals with certain risk factors for colorectal cancer. Individuals ages 76 to 85 years may be screened if the health care provider recommends screening after taking into account comorbidities, longevity, and past colorectal cancer screening results.

Individuals should discuss the 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 Cases for Colorectal Cancer by Jurisdiction, Gender, and Race, Maryland, 2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	2,608	1,281	1,327	1,683	748	137
Allegany	49	28	21	s	<6	0
Anne Arundel	242	105	137	204	31	6
Baltimore City	239	113	126	80	155	<6
Baltimore	420	205	215	298	107	14
Calvert	36	13	23	34	<6	0
Caroline	16	7	9	s	<6	0
Carroll	82	43	39	78	<6	<6
Cecil	43	21	22	41	0	<6
Charles	54	28	26	18	34	<6
Dorchester	21	10	11	17	<6	0
Frederick	104	49	55	94	8	<6
Garrett	19	12	7	19	0	0
Harford	147	76	71	127	14	<6
Howard	132	61	71	77	25	27
Kent	11	9	<6	7	<6	0
Montgomery	388	205	183	249	71	56
Prince George's	346	168	178	69	246	16
Queen Anne's	21	13	8	s	<6	0
St. Mary's	49	25	24	34	12	<6
Somerset	12	10	<6	9	<6	0
Talbot	24	10	14	s	<6	0
Washington	70	25	45	62	8	0
Wicomico	41	19	22	27	s	<6
Worcester	32	19	13	29	<6	0

Total includes cases reported as transexual, hermaphrodite, unknown gender, unknown race, and unknown jurisdiction

<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 March 4, 2022

Table 22
Colorectal Cancer Age-Adjusted Incidence Rates* by
Jurisdiction, Gender, and Race, Maryland, 2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	35.7	38.7	33.3	35.7	36.0	27.2
Allegany	50.7	60.5	42.4	51.7	**	0.0
Anne Arundel	35.5	32.8	38.0	37.7	30.8	**
Baltimore City	35.2	39.1	32.9	38.4	34.1	**
Baltimore	39.7	44.0	35.8	40.0	41.0	**
Calvert	29.9	**	34.4	33.5	**	0.0
Caroline	38.8	**	**	**	**	0.0
Carroll	35.8	41.6	29.6	36.0	**	**
Cecil	35.4	36.0	35.4	36.2	0.0	**
Charles	29.2	30.5	26.7	18.4	45.3	**
Dorchester	48.2	**	**	49.9	**	0.0
Frederick	34.2	34.7	32.7	35.7	**	**
Garrett	40.4	**	**	40.9	0.0	0.0
Harford	46.4	52.2	42.3	46.8	**	**
Howard	35.8	36.7	35.5	34.6	37.3	40.4
Kent	**	**	**	**	**	0.0
Montgomery	30.5	35.2	26.3	29.8	32.9	26.6
Prince George's	34.2	39.4	31.1	27.6	35.3	27.1
Queen Anne's	29.1	**	**	30.5	**	0.0
St. Mary's	40.0	42.0	38.8	33.2	**	**
Somerset	**	**	**	**	**	0.0
Talbot	41.0	**	**	46.4	**	0.0
Washington	35.1	26.0	43.5	33.7	**	0.0
Wicomico	39.0	40.7	38.0	38.0	**	**
Worcester	34.3	43.7	**	36.0	**	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 March 4, 2022

Table 23
Number of Deaths for Colorectal Cancer by Jurisdiction, Gender, and Race, Maryland, 2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	967	473	494	612	318	37
Allegany	18	s	<10	s	<10	<10
Anne Arundel	85	42	43	66	s	<10
Baltimore City	95	47	48	s	66	<10
Baltimore	165	74	91	117	s	<10
Calvert	13	<10	<10	<10	<10	<10
Caroline	<10	<10	<10	<10	<10	<10
Carroll	30	14	16	s	<10	<10
Cecil	19	s	<10	16	<10	<10
Charles	20	s	<10	11	<10	<10
Dorchester	10	<10	<10	<10	<10	<10
Frederick	31	12	19	29	<10	<10
Garrett	<10	<10	<10	<10	<10	<10
Harford	53	29	24	49	<10	<10
Howard	36	16	20	18	s	<10
Kent	<10	<10	<10	<10	<10	<10
Montgomery	132	65	67	89	25	18
Prince George's	155	78	77	s	112	<10
Queen Anne's	<10	<10	<10	<10	<10	<10
St. Mary's	17	s	<10	13	<10	<10
Somerset	<10	<10	<10	<10	<10	<10
Talbot	<10	<10	<10	<10	<10	<10
Washington	23	11	12	19	<10	<10
Wicomico	20	10	10	16	<10	<10
Worcester	13	<10	s	11	<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, 2019, as of February 1, 2022

Table 24
Colorectal Cancer Age-Adjusted Mortality Rates* by Jurisdiction, Gender, and Race, Maryland, 2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	13.1	14.6	11.8	12.5	15.8	7.4
Allegany	**	**	**	**	**	**
Anne Arundel	12.9	14.7	11.8	12.2	**	**
Baltimore City	15.0	17.6	12.8	14.8	15.7	**
Baltimore	15.2	16.2	14.5	15.4	17.0	**
Calvert	**	**	**	**	**	**
Caroline	**	**	**	**	**	**
Carroll	13.5	**	**	14.2	**	**
Cecil	**	**	**	**	**	**
Charles	10.7	**	**	**	**	**
Dorchester	**	**	**	**	**	**
Frederick	10.1	**	**	10.4	**	**
Garrett	**	**	**	**	**	**
Harford	16.2	19.2	13.7	17.6	**	**
Howard	10.5	**	10.6	**	**	**
Kent	**	**	**	**	**	**
Montgomery	9.9	11.1	8.8	9.9	11.8	**
Prince George's	15.5	18.2	13.4	15.0	16.6	**
Queen Anne's	**	**	**	**	**	**
St. Mary's	**	**	**	**	**	**
Somerset	**	**	**	**	**	**
Talbot	**	**	**	**	**	**
Washington	10.3	**	**	**	**	**
Wicomico	16.6	**	**	**	**	**
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, 2019, as of February 1, 2022

Table 25
Number of Cases for Colorectal Cancer by Jurisdiction, Gender, and Race, Maryland, 2015-2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	12,633	6,346	6,285	8,155	3,713	590
Allegany	221	122	99	214	s	<6
Anne Arundel	1,135	545	590	898	195	38
Baltimore City	1,300	649	651	421	849	19
Baltimore	1,936	969	967	1,386	474	69
Calvert	209	107	102	182	26	0
Caroline	93	50	43	77	12	<6
Carroll	428	205	223	404	15	9
Cecil	241	118	123	227	12	<6
Charles	309	153	156	158	141	9
Dorchester	114	60	54	84	28	0
Frederick	487	275	212	424	42	18
Garrett	92	54	38	s	0	<6
Harford	649	332	317	554	82	9
Howard	541	262	279	341	123	70
Kent	56	30	26	43	12	0
Montgomery	1,857	915	940	1,190	335	260
Prince George's	1,685	837	848	412	1,157	68
Queen Anne's	119	60	59	107	12	0
St. Mary's	218	112	106	169	42	<6
Somerset	62	36	26	45	17	0
Talbot	96	48	48	84	s	<6
Washington	363	194	169	326	32	<6
Wicomico	225	107	118	163	54	6
Worcester	154	78	76	129	25	0

Total includes cases reported as transexual, hermaphrodite, unknown gender, unknown race, and unknown jurisdiction

<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 March 4, 2022

Table 26
Colorectal Cancer Age-Adjusted Incidence Rates* by Jurisdiction, Gender, and Race, Maryland, 2015-2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	35.8	39.9	32.5	35.1	38.4	25.2
Allegany	45.4	52.8	40.9	46.5	**	**
Anne Arundel	35.0	36.3	33.9	34.1	41.4	28.4
Baltimore City	39.4	46.2	34.8	39.4	39.4	23.4
Baltimore	37.2	42.7	32.8	36.7	40.6	25.0
Calvert	38.1	40.6	35.7	39.3	35.5	0.0
Caroline	48.0	55.3	40.6	46.4	**	**
Carroll	39.6	41.2	38.6	39.2	**	**
Cecil	40.4	40.0	40.5	40.5	**	**
Charles	36.8	40.0	34.1	33.5	43.6	**
Dorchester	52.1	59.3	45.9	51.2	50.3	0.0
Frederick	33.3	39.7	27.3	33.0	34.6	26.6
Garrett	42.6	52.5	34.8	42.5	0.0	**
Harford	42.4	47.7	38.6	41.8	55.4	**
Howard	30.7	32.4	29.2	29.7	41.3	24.5
Kent	32.4	39.7	26.2	28.9	**	0.0
Montgomery	30.1	32.6	27.9	28.7	33.9	25.8
Prince George's	35.0	40.1	31.3	33.1	35.1	25.2
Queen Anne's	37.8	37.8	37.5	37.7	**	0.0
St. Mary's	35.5	38.6	33.1	33.7	47.6	**
Somerset	40.6	50.0	35.2	42.8	42.2	0.0
Talbot	32.5	38.1	27.5	33.0	**	**
Washington	37.7	43.4	32.7	36.5	53.2	**
Wicomico	39.2	42.1	37.2	38.6	40.1	32.8
Worcester	35.6	38.6	33.6	33.7	54.7	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 March 4, 2022

Table 27
Number of Deaths for Colorectal Cancer by Jurisdiction, Gender, and Race, Maryland, 2015-2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	4,760	2,437	2,323	3,062	1,534	164
Allegany	83	48	35	80	<10	<10
Anne Arundel	402	204	198	313	71	18
Baltimore City	571	288	283	s	399	<10
Baltimore	793	392	401	590	s	<10
Calvert	67	35	32	52	s	<10
Caroline	28	16	12	22	<10	<10
Carroll	155	69	86	150	<10	<10
Cecil	92	47	45	81	s	<10
Charles	117	65	52	60	s	<10
Dorchester	44	26	18	30	s	<10
Frederick	168	85	83	150	s	<10
Garrett	39	24	15	s	<10	<10
Harford	226	130	96	193	s	<10
Howard	192	94	98	111	55	26
Kent	28	15	13	25	<10	<10
Montgomery	624	295	329	417	136	71
Prince George's	637	335	302	166	453	18
Queen Anne's	31	17	14	25	<10	<10
St. Mary's	80	49	31	69	s	<10
Somerset	16	<10	s	13	<10	<10
Talbot	22	s	s	17	<10	<10
Washington	157	95	62	146	s	<10
Wicomico	113	54	59	83	s	<10
Worcester	75	36	39	61	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, 2015-2019, as of February 1, 2022

Table 28
Colorectal Cancer Age-Adjusted Mortality Rates* by Jurisdiction, Gender, and Race, Maryland, 2015-2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	13.4	15.8	11.6	12.8	16.6	7.3
Allegany	16.7	21.6	12.7	16.8	**	**
Anne Arundel	12.5	14.4	11.1	11.8	16.7	**
Baltimore City	17.7	22.1	14.6	15.8	18.9	**
Baltimore	14.6	17.0	12.7	14.5	17.2	**
Calvert	12.6	14.3	11.1	11.9	**	**
Caroline	14.3	**	**	13.2	**	**
Carroll	14.1	14.2	14.4	14.4	**	**
Cecil	15.4	16.8	14.4	14.4	**	**
Charles	14.3	17.1	11.8	12.9	16.5	**
Dorchester	18.5	24.4	**	16.4	**	**
Frederick	11.7	13.2	10.5	11.7	**	**
Garrett	17.5	25.5	**	17.6	**	**
Harford	14.7	18.7	11.4	14.4	21.4	**
Howard	11.4	12.5	10.3	9.5	20.2	9.9
Kent	17.6	**	**	19.0	**	**
Montgomery	9.9	10.7	9.3	9.5	14.8	7.1
Prince George's	13.5	16.7	11.3	13.4	14.3	**
Queen Anne's	9.6	**	**	8.5	**	**
St. Mary's	13.5	17.5	9.8	13.9	**	**
Somerset	**	**	**	**	**	**
Talbot	5.8	**	**	**	**	**
Washington	15.4	21.3	10.5	15.4	**	**
Wicomico	18.9	20.9	17.5	18.3	21.8	**
Worcester	15.3	16.3	14.5	13.7	**	**

* 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, 2015-2019, as of February 1, 2022

Maryland Colorectal Cancer Incidence Rates by Geographical Area: Comparison to U.S. Rate, 2015-2019

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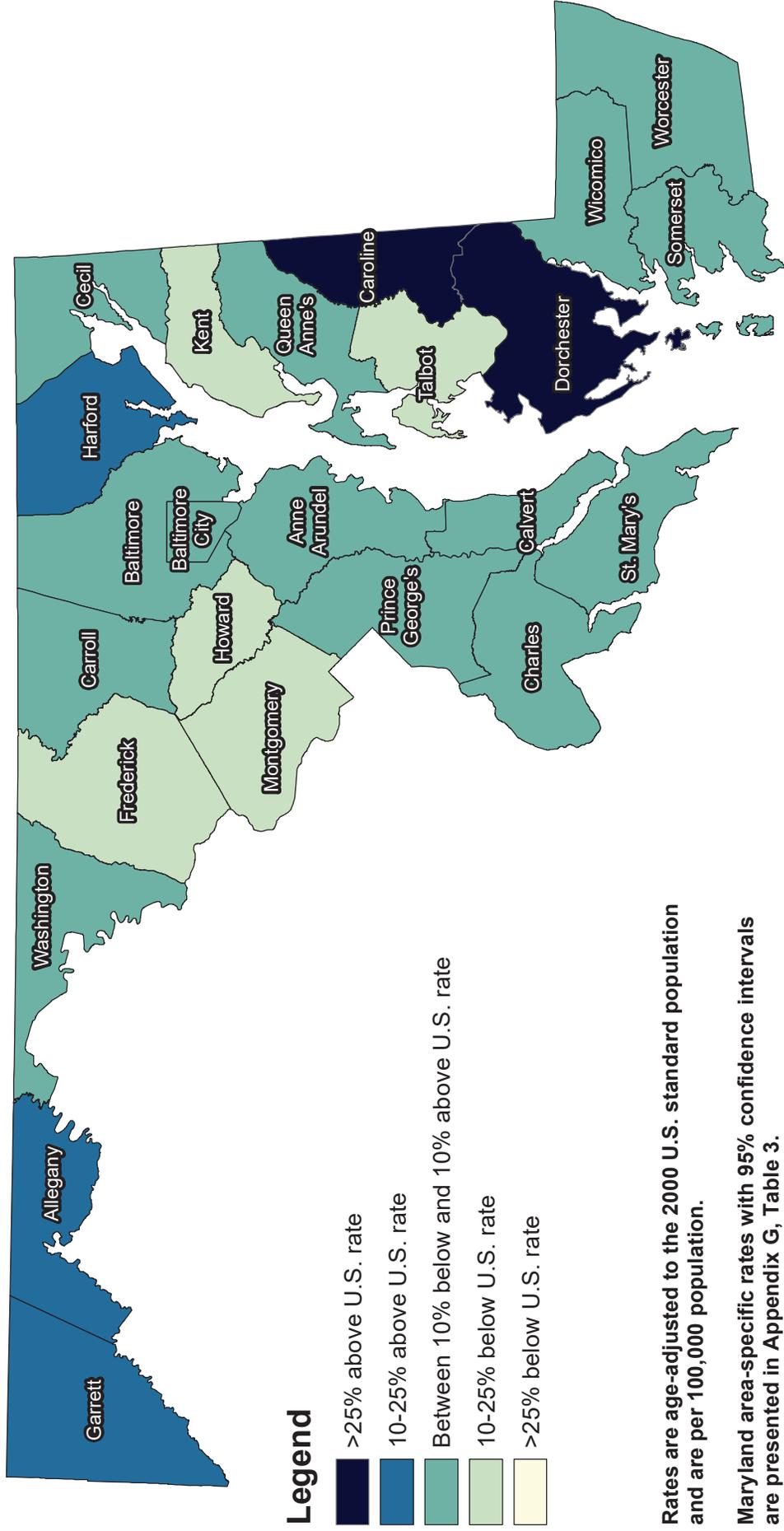
Rates are age-adjusted to the 2000 U.S. standard population and are per 100,000 population.

Maryland area-specific rates with 95% confidence intervals are presented in Appendix G, Table 3.

U.S. colorectal cancer incidence rate, 2015-2019: 37.7 / 100,000

Maryland colorectal cancer incidence rate, 2015-2019: 35.8 / 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, 2015-2019
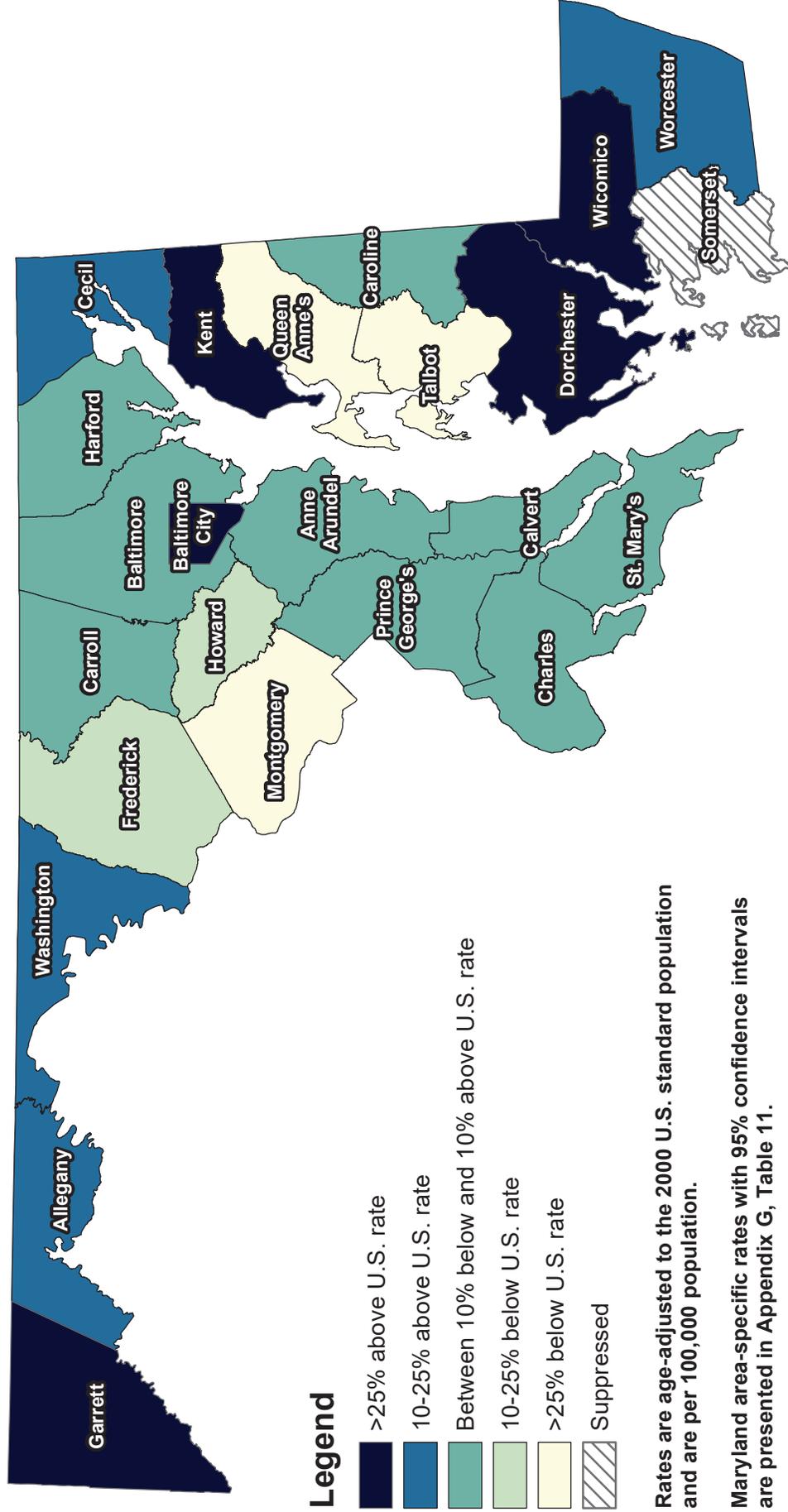
Legend

- >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, 2015-2019: 13.4 / 100,000

Maryland colorectal cancer mortality rate, 2015-2019: 13.4 / 100,000

Sources: CDC WONDER
  U.S. SEER, Cancer Statistics Review

Note: Rates based on case counts of 0-19 are suppressed per MDH/CCPC Data Use Policy and Procedures.

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C. Female Breast Cancer

Incidence (New Cases)

In 2019, a total of 5,395 cases of breast cancer were reported among Maryland women. The 2019 age-adjusted incidence rate in Maryland was 139.8 per 100,000 women (136.0-143.7, 95% CI), which is statistically significantly higher than the 2017 U.S. SEER age-adjusted female breast cancer incidence rate of 131.0 per 100,000 women (130.4-131.9, 95% CI).

Mortality (Deaths)

In 2019, a total of 789 women died of breast cancer in Maryland. Female breast cancer accounted for 14.8% of cancer deaths among women and 7.3% of all cancer deaths in Maryland in 2019. Breast cancer is the second leading cause of cancer death among women in Maryland after lung cancer. The 2018 age-adjusted mortality rate for female breast cancer in Maryland was 19.4 per 100,000 women (18.1-20.8, 95% CI). This rate is similar to the U.S. female breast cancer mortality rate of 19.4 per 100,000 women (19.2-19.6, 95% CI). Maryland had the 15th highest female breast cancer mortality rate among the states and the District of Columbia for the period from 2015 to 2019.

Table 29
Female Breast Cancer Incidence and Mortality Rates
by Race, Maryland (MD) and the United States, 2019

Incidence 2019	Total*	White	Black	Other
MD New Cases (count)	5,395	3,394	1,605	318
MD Incidence Rate	139.8	140.3	136.1	112.3
U.S. SEER Rate	131.0	132.3	129.3	103.4
Mortality 2019	Total	White	Black	Other
MD Deaths (count)	789	476	289	24
MD Mortality Rate	19.4	17.9	24.7	8.3
U.S. Mortality Rate	19.4	18.8	26.8	11.4

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

* Total includes unknown race and unknown jurisdiction

** 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 Underlying Cause of Death in CDC WONDER, 2019
U.S. SEER, Cancer Statistics Review

Female Breast Cancer Incidence and Mortality Rates by Year of Diagnosis or Death, Maryland, 2015-2019

Incidence: 131.4 (2015), 128.9 (2016), 133.3 (2017), 129.9 (2018), 139.8 (2019)

Mortality: 21.7 (2015), 21.3 (2016), 21.6 (2017), 21.2 (2018), 19.4 (2019)

Source: Maryland Cancer Registry
NCHS Underlying Cause of Death in CDC WONDER, 2017-2019
NCHS Compressed Mortality File in CDC WONDER, 2015-2016

Female Breast Cancer Incidence Rates by Race Maryland, 2015-2019

White: 133.4 (2015), 131.8 (2016), 135.5 (2017), 132.3 (2018), 140.3 (2019)

Black: 130.6 (2015), 127.4 (2016), 128.9 (2017), 126.5 (2018), 136.1 (2019)

Source: Maryland Cancer Registry
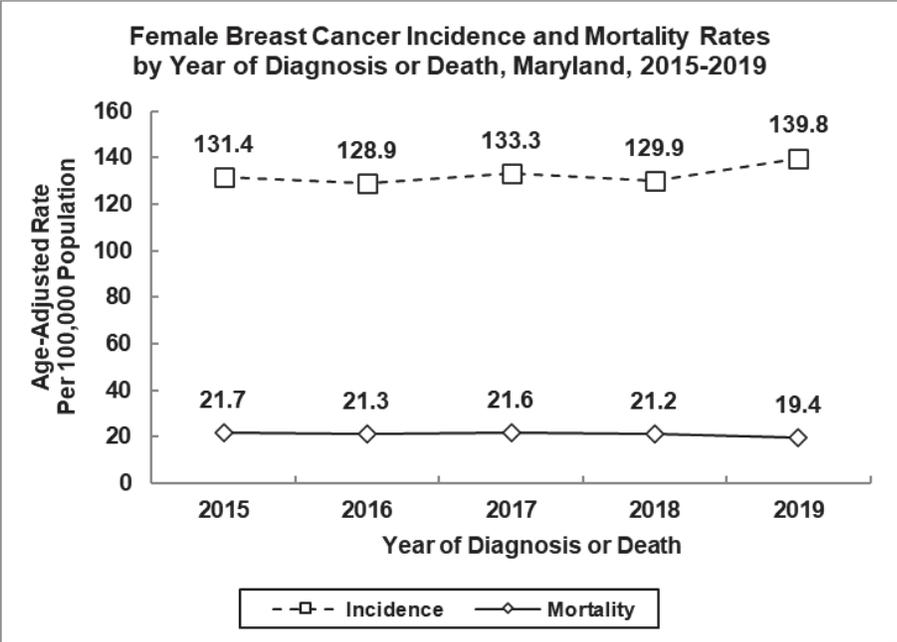
Incidence and Mortality Trends

From 2015 to 2019, incidence rates for female breast cancer increased in Maryland at a rate of 1.3% annually.

Breast cancer mortality rates for females decreased at a rate of 2.3% per year.

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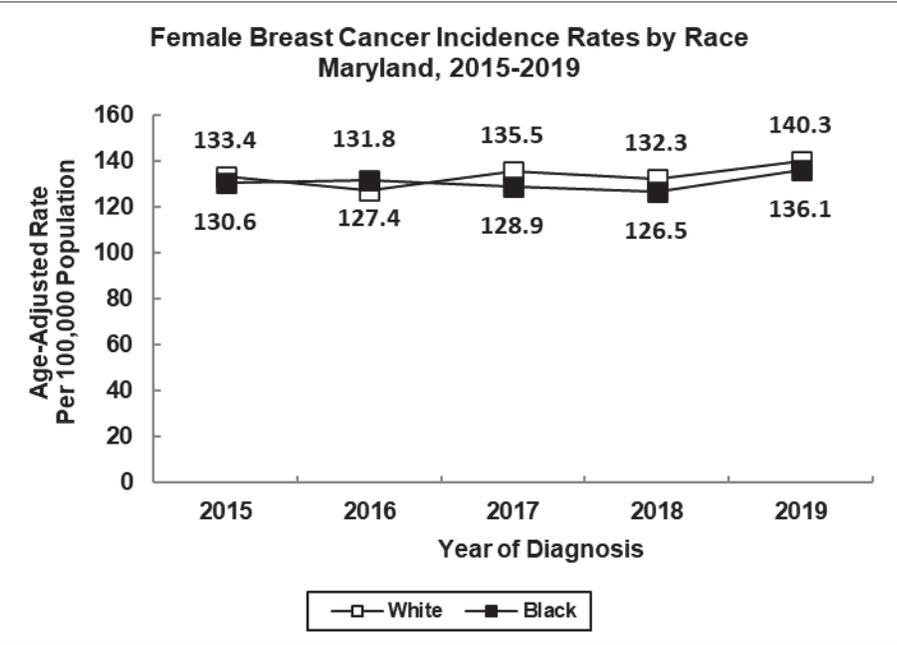
Incidence Trends by Race

Female breast cancer incidence rates increased at a rate of 0.4% per year among black females and at a rate of 1.4% among white females in Maryland from 2015 to 2019.

See Appendix H, Table 3.

**Female Breast Cancer Mortality Rates by Race
Maryland, 2015-2019**

Age-Adjusted Rate Per 100,000 Population

Year	2015	2016	2017	2018	2019
Black	26.5	27.8	28.1	27.7	24.7
White	20.5	19.0	19.3	19.1	17.9

Year of Death

—□— White —■— Black

Source: NCHS Underlying Cause of Death in CDC WONDER, 2017-2019
NCHS Compressed Mortality File in CDC WONDER, 2015-2016
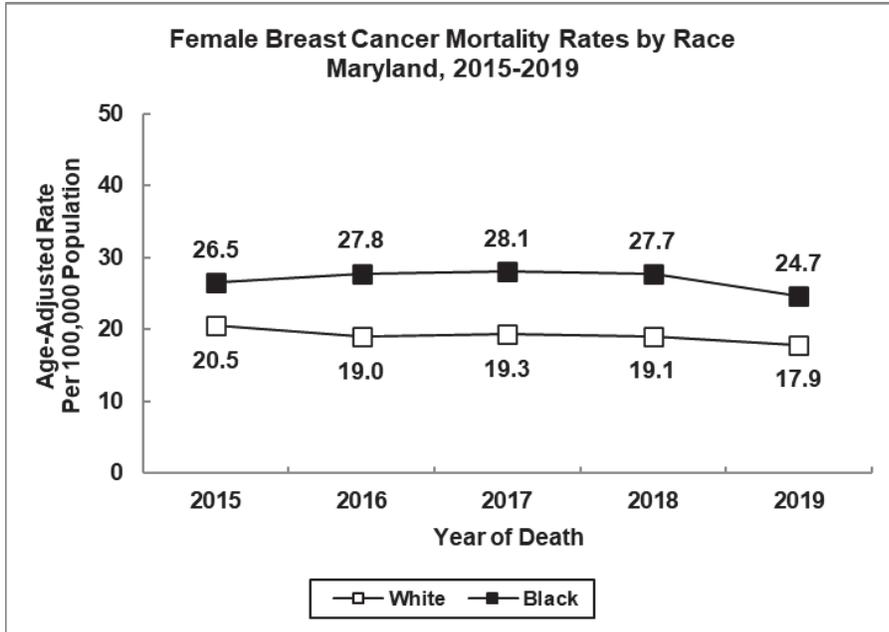
Mortality Trends by Race

Female breast cancer mortality rates decreased for both black and white women from 2015 to 2019 in Maryland. The mortality rate among black females decreased at a rate of 1.4% per year between 2015 and 2019 and decreased at a rate of 2.6% per year among white females during the same time period.

See Appendix H, Table 5.

**Female Breast Cancer by Stage at Diagnosis
Maryland, 2015-2019**

Percent (%)

Year

—◇— Local   ····□···· Regional   – ·○· – Distant   – –△– – Unstaged

Source: Maryland Cancer Registry
Note: Due to a methodology change, SEER summary stage 2000 was used in 2016 to 2017, while the derived SEER summary stage 2000 was used in 2015, and SS2018 was used in 2018 and 2019
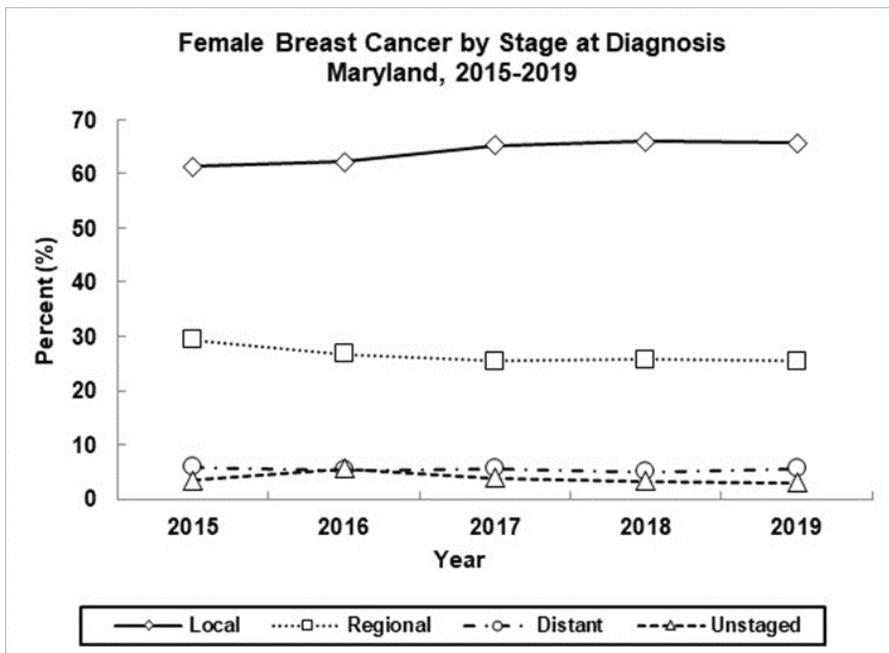
Stage at Diagnosis

In 2019, 65.7% of all female breast cancer cases in Maryland were diagnosed at the local stage, 25.7% were found at the regional stage, and 5.6% were diagnosed at the distant stage. The proportion of female breast cancers reported as unstaged in 2019 was 3.0%. Unstaged breast cancer diagnoses decreased 7.5% per year from 2015 to 2019.

See Appendix I, Table 4.

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

Year	Percent (%)
2016	81.1%
2018	81.2%
2020	81.3%
HP 2020	81.1%

Legend: □ MD ■ HP 2020

Source: Maryland BRFSS 2016, 2018, 2020
Healthy People 2020, U.S. Department of Health and Human Services
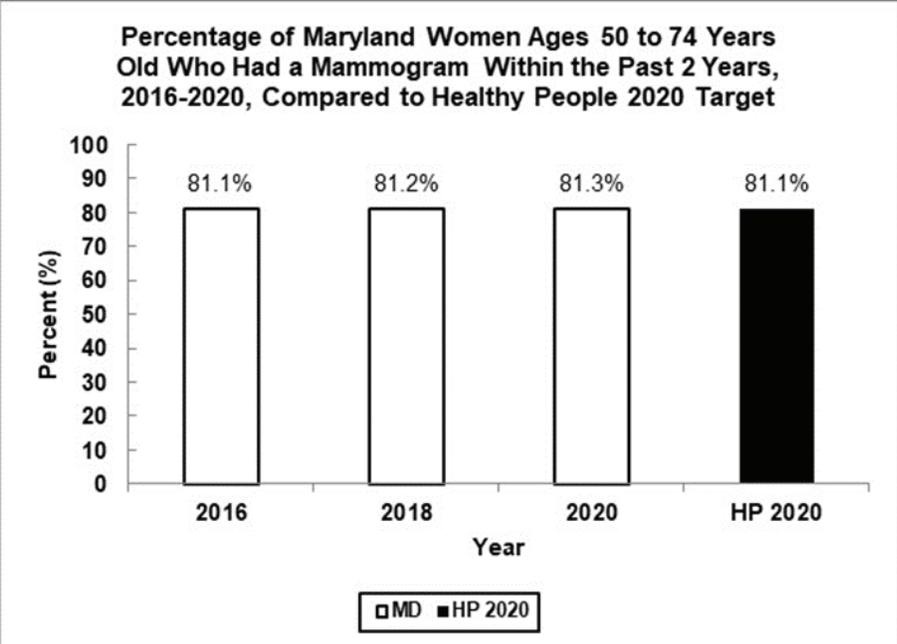
Breast Cancer Screening

The Healthy People 2020 target for the proportion of women who had a breast cancer screening based on the most recent guidelines was 81.1%. Maryland women have consistently met or surpassed the Healthy People 2020 target. In 2020, 81.3% of Maryland women ages 50 to 74 years reported receiving a mammogram within the past two years.

Public Health Evidence (quoted from the National Cancer Institute Physician Data Query [PDQ] and the United States Preventive Services Task Force [USPSTF])

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 breast tissue.
- Reproductive history resulting in greater exposure of breast tissue to estrogen (e.g., starting menstruation before age 12, 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.
- Radiation therapy to the breast or chest.
- Obesity.
- Drinking alcohol.

Increasing protective factors may help prevent cancer. The following are protective factors for breast cancer:
- Reproductive history resulting in less exposure of breast tissue to estrogen (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 or prophylactic 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).
- Getting enough exercise.

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

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.

- Changes in 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. About one in five cancers are missed by mammography.
- 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 aged 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. An update by the USPSTF is currently in progress at the time of writing this report.

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. Screening mammograms for those aged 66 to 79 years may find cancer in a very small percentage of women, but most of these cancers are low risk.
- In women with an average risk of developing breast cancer, screening mammography before age 40 has not shown any benefit.
- 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 in women ages 40 years and older, screen using mammography and clinical breast examination by a health professional.

Individuals should discuss the 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 Cases for Female Breast Cancer by Jurisdiction and Race, Maryland, 2019

Jurisdiction	Total	Race		
		White	Black	Other
Maryland	5,395	3,394	1,605	318
Allegany	68	s	0	<6
Anne Arundel	498	406	75	14
Baltimore City	494	157	318	13
Baltimore	822	556	230	32
Calvert	87	70	13	<6
Caroline	29	25	<6	<6
Carroll	170	163	<6	<6
Cecil	88	83	<6	0
Charles	140	60	71	9
Dorchester	35	26	9	0
Frederick	241	201	26	11
Garrett	25	s	0	<6
Harford	248	205	31	10
Howard	282	186	52	41
Kent	14	14	0	0
Montgomery	924	587	161	145
Prince George's	739	147	553	22
Queen Anne's	56	51	<6	<6
St. Mary's	79	63	12	<6
Somerset	13	8	<6	0
Talbot	63	56	7	0
Washington	143	132	7	<6
Wicomico	66	51	13	<6
Worcester	59	53	6	0

Total includes cases reported as unknown race and unknown jurisdiction

<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 March 4, 2022

Table 31
Female Breast Cancer Age-Adjusted Incidence Rates* by Jurisdiction and Race, Maryland, 2019

Jurisdiction	Total	Race		
		White	**Black**	**Other**
Maryland	139.8	140.3	136.1	112.3
Allegany	144.8	145.8	0.0	**
Anne Arundel	140.1	145.0	126.9	**
Baltimore City	136.4	145.9	128.2	**
Baltimore	147.9	147.5	153.3	101.1
Calvert	139.3	136.3	**	**
Caroline	123.2	122.7	**	**
Carroll	145.5	148.5	**	**
Cecil	130.3	134.3	**	0.0
Charles	143.1	123.3	158.1	**
Dorchester	138.3	135.8	**	0.0
Frederick	153.1	147.7	198.0	**
Garrett	118.1	113.4	0.0	**
Harford	153.2	151.4	143.7	168.7
Howard	143.6	148.7	131.7	111.1
Kent	68.5	**	0.0	0.0
Montgomery	136.3	136.1	129.5	116.8
Prince George's	131.3	112.2	137.1	69.3
Queen Anne's	160.9	161.6	**	**
St. Mary's	120.8	119.3	**	**
Somerset	**	**	**	0.0
Talbot	185.4	192.4	**	0.0
Washington	143.0	142.6	**	**
Wicomico	101.6	103.6	**	**
Worcester	144.6	152.0	**	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 March 4, 2022

Table 32
Number of Deaths for Female Breast Cancer by Jurisdiction and Race, Maryland, 2019

Jurisdiction	Total	Race		
		White	Black	Other
Maryland	789	476	289	24
Allegany	<10	<10	<10	<10
Anne Arundel	76	59	s	<10
Baltimore City	75	s	52	<10
Baltimore	117	78	s	<10
Calvert	19	17	<10	<10
Caroline	<10	<10	<10	<10
Carroll	19	s	<10	<10
Cecil	11	<10	<10	<10
Charles	19	11	<10	<10
Dorchester	<10	<10	<10	<10
Frederick	29	23	<10	<10
Garrett	<10	<10	<10	<10
Harford	33	26	<10	<10
Howard	25	14	<10	<10
Kent	<10	<10	<10	<10
Montgomery	120	81	28	11
Prince George's	137	s	110	<10
Queen Anne's	13	s	<10	<10
St. Mary's	17	14	<10	<10
Somerset	<10	<10	<10	<10
Talbot	<10	<10	<10	<10
Washington	19	17	<10	<10
Wicomico	15	12	<10	<10
Worcester	11	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, 2019, as of February 1, 2022

Table 33
Female Breast Cancer Age-Adjusted Mortality Rates* by
Jurisdiction and Race, Maryland, 2019

Jurisdiction	Total	Race		
		White	Black	Other
Maryland	19.4	17.9	24.7	8.3
Allegany	**	**	**	**
Anne Arundel	19.9	19.2	**	**
Baltimore City	20.1	21.4	20.0	**
Baltimore	18.9	17.2	25.8	**
Calvert	**	**	**	**
Caroline	**	**	**	**
Carroll	**	**	**	**
Cecil	**	**	**	**
Charles	**	**	**	**
Dorchester	**	**	**	**
Frederick	17.9	16.2	**	**
Garrett	**	**	**	**
Harford	17.7	16.7	**	**
Howard	13.0	**	**	**
Kent	**	**	**	**
Montgomery	17.4	17.1	23.8	**
Prince George's	24.4	17.6	28.4	**
Queen Anne's	**	**	**	**
St. 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, 2019, as of February 1, 2022

Table 34
Number of Cases for Female Breast Cancer by Jurisdiction and Race, Maryland, 2015-2019

Jurisdiction	Total	Race		
		White	Black	Other
Maryland	25,098	16,021	7,442	1,296
Allegany	332	326	<6	<6
Anne Arundel	2,336	1,890	357	71
Baltimore City	2,297	756	1,481	43
Baltimore	4,000	2,805	1,028	148
Calvert	363	293	57	11
Caroline	126	103	s	<6
Carroll	756	722	17	16
Cecil	386	354	28	<6
Charles	580	280	275	22
Dorchester	151	108	s	<6
Frederick	1,017	878	100	31
Garrett	141	s	<6	<6
Harford	1,206	1,037	126	38
Howard	1,314	881	234	183
Kent	101	85	16	0
Montgomery	4,112	2,720	689	543
Prince George's	3,549	672	2,664	145
Queen Anne's	219	203	10	<6
St. Mary's	383	308	64	10
Somerset	110	82	27	0
Talbot	224	192	29	<6
Washington	657	601	44	8
Wicomico	398	301	85	8
Worcester	298	262	31	<6

Total includes cases reported as unknown race and unknown jurisdiction

<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 March 4, 2022

Table 35
Female Breast Cancer Age-Adjusted Incidence Rates* by
Jurisdiction and Race, Maryland, 2015-2019

Jurisdiction	Total	Race		
		White	Black	Other
Maryland	132.7	133.8	130.8	96.9
Allegany	137.2	138.9	**	**
Anne Arundel	133.6	135.0	131.8	86.6
Baltimore City	125.9	141.3	118.3	90.9
Baltimore	144.3	146.1	145.0	99.3
Calvert	127.5	123.6	145.0	**
Caroline	113.7	110.6	140.8	**
Carroll	136.5	137.9	86.4	130.4
Cecil	121.8	121.6	145.2	**
Charles	123.1	117.9	131.0	84.4
Dorchester	124.6	110.3	151.8	**
Frederick	134.7	133.6	166.9	78.8
Garrett	124.5	123.0	**	**
Harford	145.6	147.1	125.4	130.4
Howard	138.1	144.2	131.1	109.5
Kent	128.5	128.8	130.7	0.0
Montgomery	125.5	127.8	117.5	94.1
Prince George's	129.0	105.6	135.0	95.7
Queen Anne's	133.6	135.9	**	**
St. Mary's	120.1	118.0	141.3	**
Somerset	149.6	159.8	128.4	0.0
Talbot	138.3	132.6	169.1	**
Washington	137.5	134.8	147.7	**
Wicomico	125.9	128.5	115.0	**
Worcester	140.5	142.0	127.3	**

* 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 March 4, 2022

Table 36
**Number of Deaths for Female Breast Cancer by Jurisdiction and
Race, Maryland, 2015-2019**

Jurisdiction	Total	Race		
		White	Black	Other
Maryland	4,138	2,509	1,501	128
Allegany	49	48	<10	<10
Anne Arundel	354	270	s	<10
Baltimore City	456	s	330	<10
Baltimore	655	441	198	16
Calvert	69	58	s	<10
Caroline	26	20	<10	<10
Carroll	111	103	<10	<10
Cecil	58	53	<10	<10
Charles	109	60	s	<10
Dorchester	27	17	s	<10
Frederick	152	125	s	<10
Garrett	24	s	<10	<10
Harford	180	150	s	<10
Howard	153	103	s	<10
Kent	10	<10	<10	<10
Montgomery	655	455	151	49
Prince George's	679	141	514	24
Queen Anne's	27	s	<10	<10
St. Mary's	72	55	s	<10
Somerset	11	<10	<10	<10
Talbot	33	26	<10	<10
Washington	111	101	<10	<10
Wicomico	72	52	s	<10
Worcester	45	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, 2015-2019, as of February 1, 2022

Table 37
Female Breast Cancer Age-Adjusted Mortality Rates* by Jurisdiction and Race, Maryland, 2015-2019

Jurisdiction	Total	Race		
		White	Black	Other
Maryland	21.0	19.2	26.9	10.0
Allegany	15.8	15.8	**	**
Anne Arundel	19.4	17.9	29.5	**
Baltimore City	24.5	21.7	26.2	
Baltimore	22.1	20.3	28.5	**
Calvert	24.0	23.9	**	**
Caroline	22.4	19.7	**	**
Carroll	19.3	19.0	**	**
Cecil	17.5	17.0	**	**
Charles	24.3	24.2	25.5	**
Dorchester	22.0	**	**	**
Frederick	19.9	18.6	37.5	**
Garrett	19.5	19.7	**	**
Harford	20.9	19.9	28.3	**
Howard	15.9	15.8	22.7	**
Kent	**	**	**	**
Montgomery	18.8	19.1	26.7	8.5
Prince George's	25.1	20.7	27.1	16.5
Queen Anne's	15.1	16.6	**	**
St. Mary's	23.8	21.9	**	**
Somerset	**	**	**	**
Talbot	15.0	13.5	**	**
Washington	21.8	20.7	**	**
Wicomico	21.9	20.7	25.8	**
Worcester	17.7	18.8	**	**

* 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, 2015-2019, as of February 1, 2022

Maryland Female Breast Cancer Incidence Rates by Geographical Area: Comparison to U.S. Rate, 2015-2019

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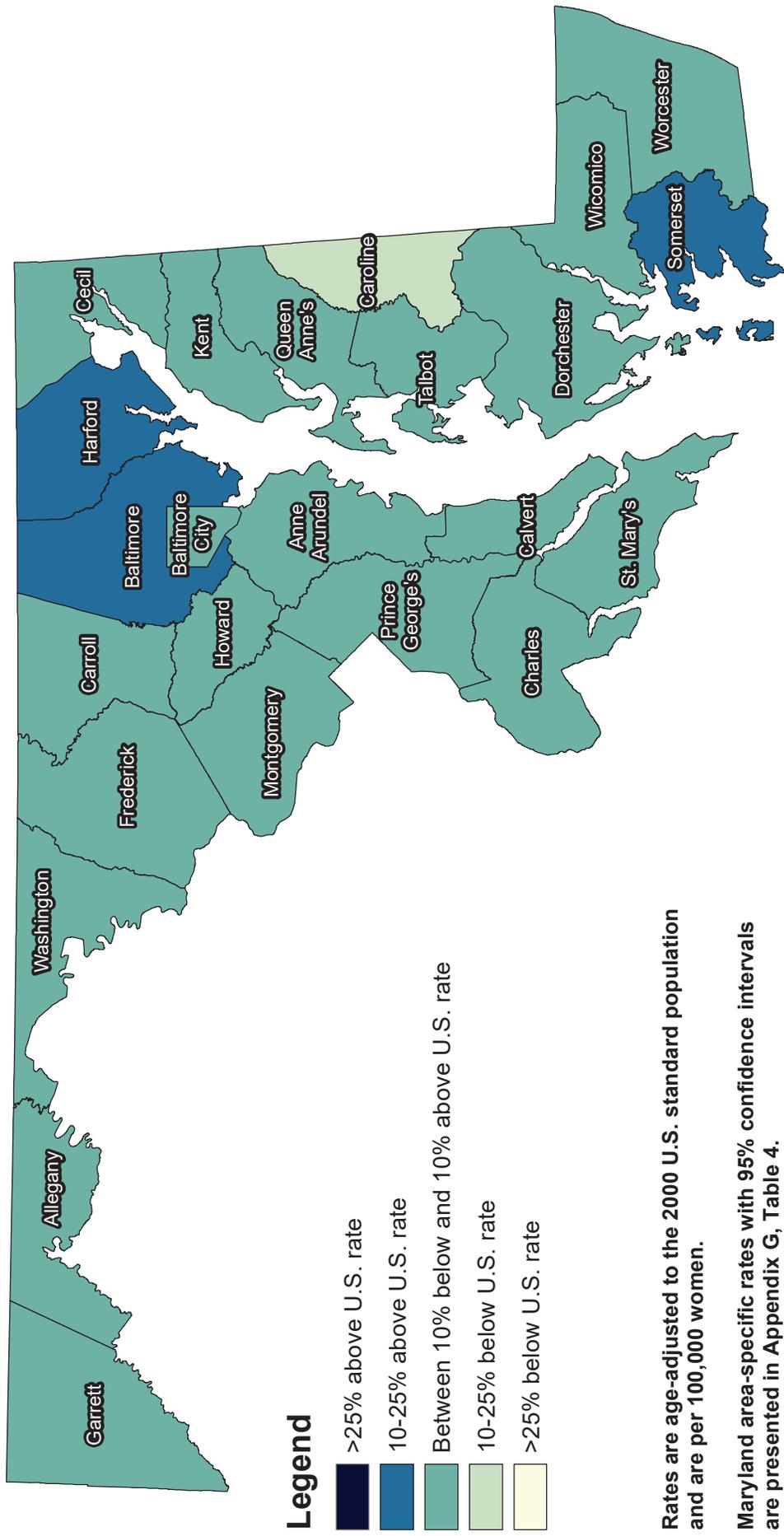
Rates are age-adjusted to the 2000 U.S. standard population and are per 100,000 women.

Maryland area-specific rates with 95% confidence intervals are presented in Appendix G, Table 4.

U.S. female breast cancer incidence rate, 2015-2019: 128.3 / 100,000

Maryland female breast cancer incidence rate, 2015-2019: 132.7 / 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, 2015-2019

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, 2015-2019: 19.9 / 100,000

Maryland female breast cancer mortality rate, 2015-2019: 21.0 / 100,000

Sources: CDC WONDER
U.S. SEER, Cancer Statistics Review

Note: Rates based on case counts of 0-19 are suppressed per MDH/CCPC Data Use Policy and Procedures.

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D. Prostate Cancer

Incidence (New Cases)

In 2019, a total of 5,575 cases of prostate cancer were reported among men in Maryland. The age-adjusted prostate cancer incidence rate in Maryland for 2019 was 152.2 per 100,000 men (148.1-156.3, 95% CI), which is statistically significantly higher than the 2019 U.S. SEER age-adjusted prostate cancer incidence rate of 116.6 per 100,000 men (115.9-117.3, 95% CI).

Mortality (Deaths)

Prostate cancer is the second leading cause of cancer death among men in Maryland after lung cancer. In 2019, 623 men died of prostate cancer in Maryland, accounting for 5.8% of all cancer deaths and 11.5% of cancer deaths among men in Maryland. The 2019 age-adjusted mortality rate for prostate cancer in Maryland was 20.7 per 100,000 men (19.1-22.4, 95% CI). This rate is statistically significantly higher than the 2019 U.S. prostate cancer mortality rate of 18.4 per 100,000 men (18.2-18.6, 95% CI). Maryland had the 13th highest prostate cancer mortality rate among the states and the District of Columbia for the period from 2015 to 2019.

Table 38

Prostate Cancer Incidence and Mortality Rates

by Race, Maryland (MD) and the United States, 2019

Incidence 2019	Total[*]	White	Black	Other
MD New Cases (count)	5,575	3,187	2,068	163
MD Incidence Rate	152.2	128.0	218.1	70.1
U.S. SEER Rate	116.6	107.8	180.0	58.3
Mortality 2019	Total	White	Black	Other
MD Deaths (count)	623	346	263	14
MD Mortality Rate	20.7	16.2	39.0	**
U.S. Mortality Rate	18.4	17.3	35.6	8.4

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

* Total includes unknown race and unknown jurisdiction

<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)
** 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 Underlying Cause of Death in CDC WONDER, 2019
        U.S. SEER, Cancer Statistics Review

Prostate Cancer Incidence and Mortality Rates by Year of Diagnosis or Death, Maryland, 2015-2019
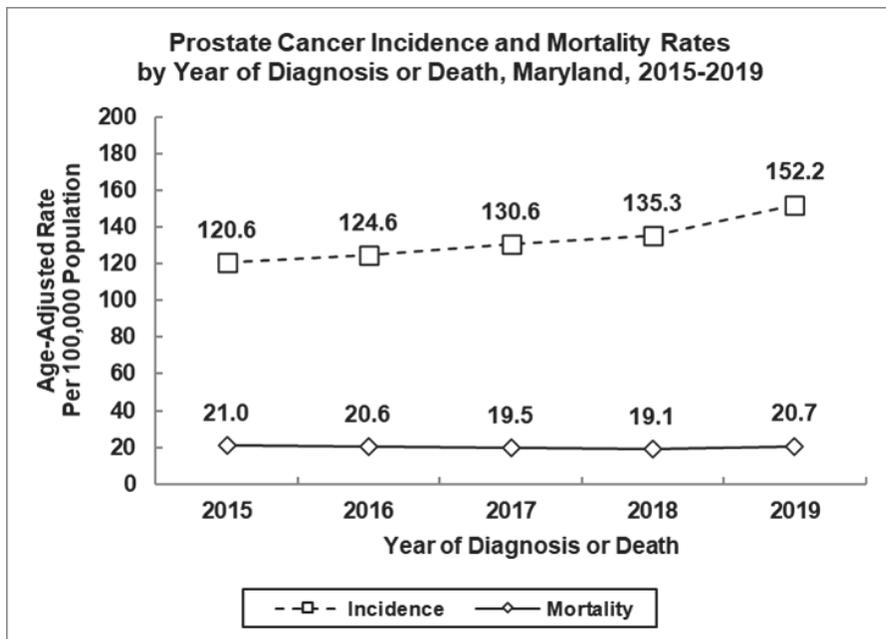
Incidence and Mortality Trends

The prostate cancer incidence rate in Maryland increased at a rate of 5.6% per year from 2015 to 2019.

Prostate cancer mortality rates decreased from 2015 to 2019, with a yearly decrease of 1.0%.

See Appendix H, Tables 1 and 2.

Source: Maryland Cancer Registry
NCHS Underlying Cause of Death in CDC WONDER, 2017-2019
NCHS Compressed Mortality File in CDC WONDER, 2015-2016

Prostate Cancer Incidence Rates by Race Maryland, 2015-2019
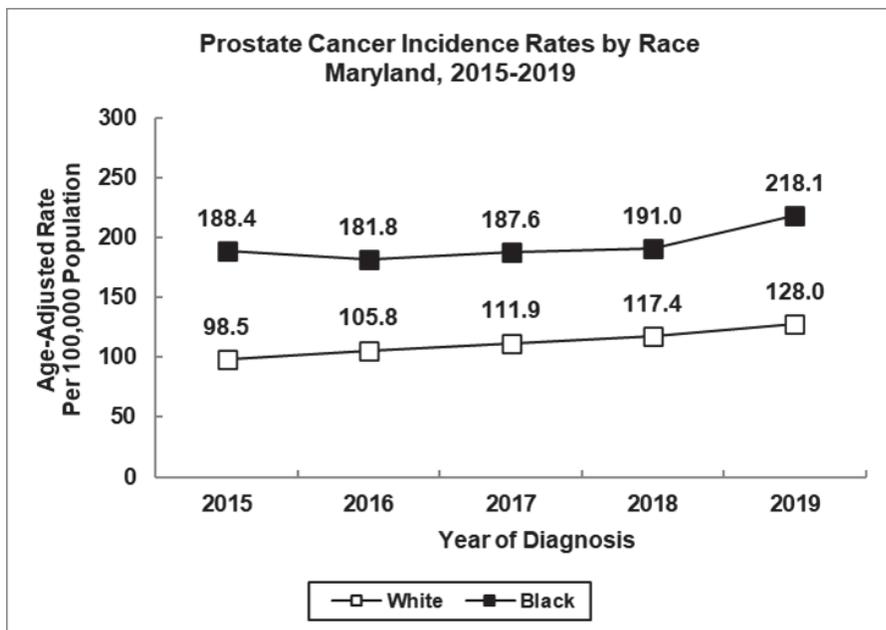
Incidence Trends by Race

From 2015 to 2019, black men consistently had higher prostate cancer incidence rates than white men.

During this 5-year period, incidence rates increased 3.5% per year among black men and 6.5% per year among white men.

See Appendix H, Table 3.

Source: Maryland Cancer Registry
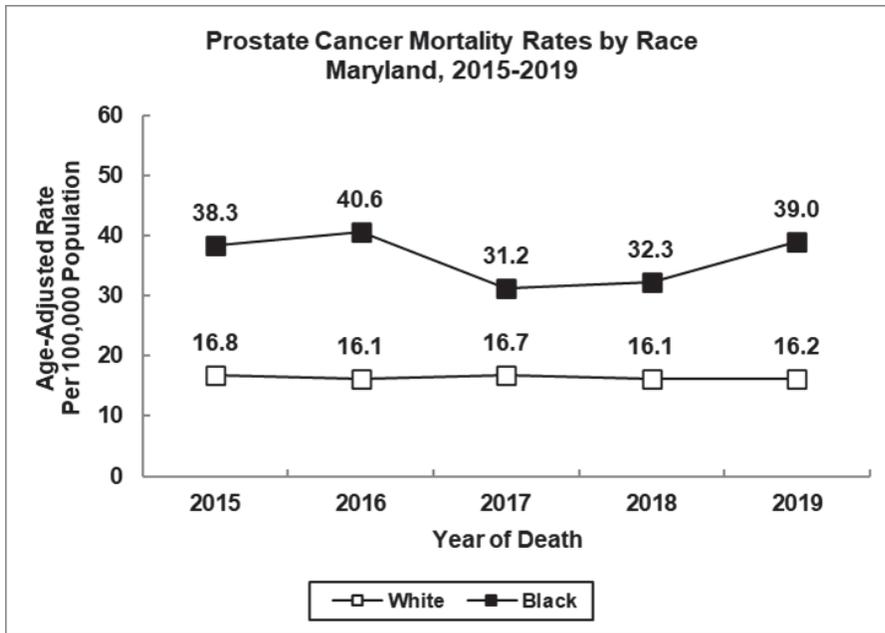
Prostate Cancer Mortality Rates by Race
Maryland, 2015-2019

Chart: Age-Adjusted Rate Per 100,000 Population by Year of Death

White: 2015: 16.8, 2016: 16.1, 2017: 16.7, 2018: 16.1, 2019: 16.2
Black: 2015: 38.3, 2016: 40.6, 2017: 31.2, 2018: 32.3, 2019: 39.0

Legend: —□— White —■— Black

Source: NCHS Underlying Cause of Death in CDC WONDER, 2017-2019
NCHS Compressed Mortality File in CDC WONDER, 2015-2016

Mortality Trends by Race

From 2015 to 2019, black men consistently had higher prostate cancer mortality rates than white men.

During this 5-year period, mortality rates decreased 1.9% per year among black men and 0.7% per year among white men.
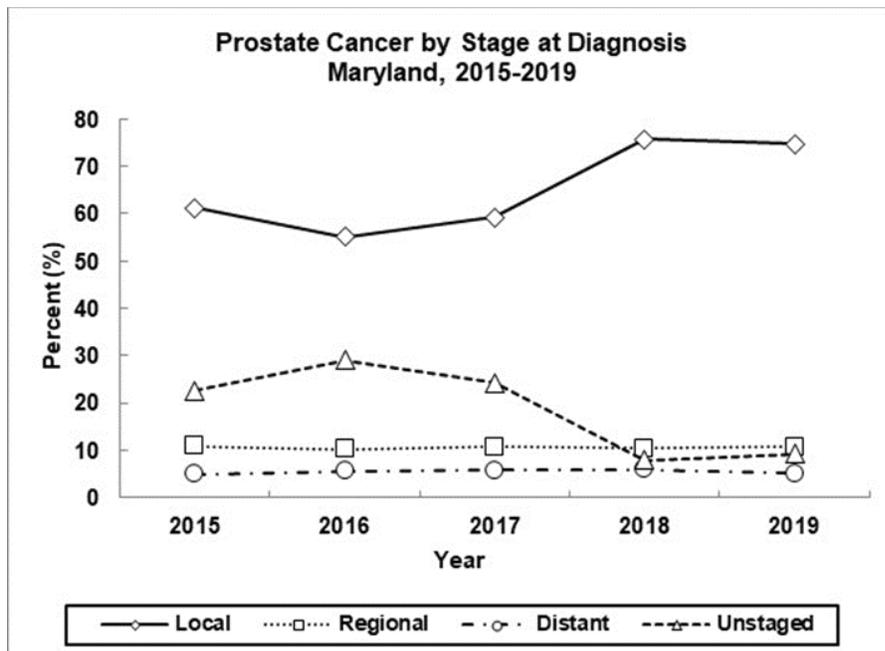
See Appendix H, Table 5.

Prostate Cancer by Stage at Diagnosis
Maryland, 2015-2019

Chart: Percent (%) by Year

Legend: —◇— Local ····□···· Regional – ·○· – Distant – –△– – Unstaged

Stage at Diagnosis

Of prostate cancers diagnosed in Maryland in 2019, most (74.7%) were detected at the local stage, 10.8% were found at the regional stage, and 5.2% were diagnosed at the distant stage. In 2019, 9.3% of prostate cancers were reported as unstaged.

See Appendix I, Table 5.

Source: Maryland Cancer Registry
Note: Due to a methodology change, SEER summary stage 2000 was used in 2016 to 2017, while the derived SEER summary stage 2000 was used in 2015, and SS2018 was used in 2018 and 2019

Percentage of Maryland Men Ages 40 Years and Older Who Have Ever Discussed the Advantages and Disadvantages of Prostate-Specific Antigen (PSA) Testing, 2014-2020, Compared to Healthy People 2020 Target

Year	Percent
2014	31.4%
2016	32.0%
2018	20.1%
2020	14.7%
HP 2020	15.9%

□ MD ■ HP 2020

Prostate-Specific Antigen Test

In 2020, only 14.7% of 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 fell below the Healthy People 2020 target of 15.9%.

Source: Maryland BRFSS 2014, 2016, 2018, 2020
        Healthy People 2020, U.S. Department of Health and Human Services

Public Health Evidence (quoted from the National Cancer Institute Physician Data Query [PDQ] and the United States Preventive Services Task Force [USPSTF])

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.
- Family history of prostate cancer.
- Race, as prostate cancer occurs more often in African American men than in white men.
- Hormones (dihydrotestosterone).
- Vitamin E taken alone.
- Taking 1 mg supplements of folic acid.
- A diet high in dairy foods and calcium.

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.

The following have been proven not to affect the risk of prostate cancer, or their effects on prostate cancer risk are unknown:

- Selenium and vitamin E.
- Diet.
- Multivitamins.
- Lycopene.

Screening

There is no standard or routine screening test for prostate cancer. Digital rectal exams and prostate-specific antigen (PSA) are currently being used or studied to screen for prostate cancer. Studies are being done 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 the 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 Cases for Prostate Cancer by Jurisdiction and Race, Maryland, 2019

Jurisdiction	Total	Race		
		White	**Black**	**Other**
Maryland	5,575	3,187	2,068	163
Allegany	51	47	<6	0
Anne Arundel	434	325	95	10
Baltimore City	500	116	374	<6
Baltimore	717	481	213	20
Calvert	96	68	25	<6
Caroline	37	29	8	0
Carroll	178	166	12	0
Cecil	90	82	6	0
Charles	142	62	77	0
Dorchester	36	25	10	0
Frederick	191	160	27	<6
Garrett	17	17	0	0
Harford	192	148	39	<6
Howard	294	188	79	22
Kent	26	20	6	0
Montgomery	769	498	182	58
Prince George's	788	108	591	18
Queen Anne's	62	52	8	0
St. Mary's	84	55	26	<6
Somerset	29	13	16	0
Talbot	57	50	7	0
Washington	101	88	s	<6
Wicomico	100	70	s	<6
Worcester	69	62	7	0

Total includes cases reported as unknown race and unknown jurisdiction

<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 March 4, 2022

Table 40
Prostate Cancer Age-Adjusted Incidence Rates* by Jurisdiction and Race, Maryland, 2019

Jurisdiction	Total	Race		
		White	Black	Other
Maryland	152.2	128.0	218.1	70.1
Allegany	98.1	95.0	**	0.0
Anne Arundel	125.5	112.5	212.7	**
Baltimore City	160.4	112.0	187.0	**
Baltimore	139.2	126.6	186.7	74.3
Calvert	154.2	128.1	298.4	**
Caroline	153.5	140.7	**	0.0
Carroll	152.4	148.6	**	0.0
Cecil	124.2	119.0	**	0.0
Charles	156.6	123.9	220.6	0.0
Dorchester	147.9	141.5	**	0.0
Frederick	123.3	114.0	287.5	**
Garrett	68.4	69.2	0.0	0.0
Harford	119.0	105.9	211.7	**
Howard	151.0	140.1	280.5	69.6
Kent	140.7	122.4	**	0.0
Montgomery	121.9	114.0	192.0	58.2
Prince George's	161.3	86.0	178.5	69.4
Queen Anne's	153.8	140.5	**	0.0
St. Mary's	125.2	98.2	286.5	**
Somerset	162.4	99.1	322.0	0.0
Talbot	177.3	176.3	**	0.0
Washington	99.1	93.5	**	**
Wicomico	164.4	150.3	205.7	**
Worcester	130.7	129.3	**	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 March 4, 2022

Table 41
Number of Deaths for Prostate Cancer by Jurisdiction and Race, Maryland, 2019

Jurisdiction	Total	Race		
		White	Black	Other
Maryland	623	346	263	14
Allegany	<10	<10	<10	<10
Anne Arundel	64	48	s	<10
Baltimore City	84	s	71	<10
Baltimore	81	48	s	<10
Calvert	12	10	<10	<10
Caroline	<10	<10	<10	<10
Carroll	12	11	<10	<10
Cecil	12	10	<10	<10
Charles	19	12	<10	<10
Dorchester	<10	<10	<10	<10
Frederick	31	23	<10	<10
Garrett	<10	<10	<10	<10
Harford	29	15	s	<10
Howard	21	10	<10	<10
Kent	<10	<10	<10	<10
Montgomery	81	54	s	<10
Prince George's	85	s	63	<10
Queen Anne's	<10	<10	<10	<10
St. Mary's	12	<10	<10	<10
Somerset	<10	<10	<10	<10
Talbot	10	<10	<10	<10
Washington	16	14	<10	<10
Wicomico	12	<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, 2019, as of February 1, 2022

Table 42
Prostate Cancer Age-Adjusted Mortality Rates* by Jurisdiction and Race, Maryland, 2019

Jurisdiction	Total	Race		
		White	Black	Other
Maryland	20.7	16.2	39.0	**
Allegany	**	**	**	**
Anne Arundel	23.2	20.1	**	**
Baltimore City	32.0	**	44.0	**
Baltimore	17.8	13.6	41.5	**
Calvert	**	**	**	**
Caroline	**	**	**	**
Carroll	**	**	**	**
Cecil	**	**	**	**
Charles	**	**	**	**
Dorchester	**	**	**	**
Frederick	27.0	22.3	**	**
Garrett	**	**	**	**
Harford	22.6	**	**	**
Howard	15.5	**	**	**
Kent	**	**	**	**
Montgomery	14.7	13.9	31.6	**
Prince George's	23.2	18.3	28.0	**
Queen Anne's	**	**	**	**
St. 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, 2019, as of February 1, 2022

Table 43
**Number of Cases for Prostate Cancer by Jurisdiction and Race,
Maryland, 2015-2019**

Jurisdiction	Total	Race		
		White	Black	Other
Maryland	23,351	13,524	8,699	707
Allegany	304	274	28	<6
Anne Arundel	1,883	1,426	396	45
Baltimore City	2,163	523	1,586	25
Baltimore	3,295	2,153	1,016	97
Calvert	355	266	84	<6
Caroline	132	112	20	0
Carroll	711	655	42	<6
Cecil	385	342	38	<6
Charles	653	304	326	13
Dorchester	161	100	59	<6
Frederick	791	654	117	13
Garrett	110	108	<6	0
Harford	973	767	182	20
Howard	1,167	780	286	86
Kent	107	81	25	0
Montgomery	3,451	2,229	817	277
Prince George's	3,555	546	2,824	71
Queen Anne's	239	200	36	<6
St. Mary's	320	234	76	9
Somerset	99	54	s	<6
Talbot	233	206	27	0
Washington	511	448	59	<6
Wicomico	397	245	143	6
Worcester	296	247	s	<6

Total includes cases reported as unknown race and unknown jurisdiction

<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 March 4, 2022

Table 44
Prostate Cancer Age-Adjusted Incidence Rates* by Jurisdiction and Race, Maryland, 2015-2019

Jurisdiction	Total	Race		
		White	Black	Other
Maryland	133.0	112.6	193.9	65.0
Allegany	120.0	113.5	316.6	**
Anne Arundel	112.6	101.8	182.8	82.7
Baltimore City	141.0	97.8	164.1	70.2
Baltimore	131.1	115.0	192.0	75.1
Calvert	122.2	108.5	218.7	**
Caroline	121.0	120.6	136.1	0.0
Carroll	125.5	121.0	229.5	**
Cecil	114.6	108.9	213.8	**
Charles	154.6	124.4	201.1	**
Dorchester	132.0	106.1	221.4	**
Frederick	109.1	100.3	249.8	**
Garrett	95.4	93.0	**	0.0
Harford	121.9	110.3	218.8	83.0
Howard	126.9	119.4	219.5	63.2
Kent	127.4	107.2	251.0	0.0
Montgomery	115.7	107.4	190.4	58.4
Prince George's	152.1	89.0	178.9	53.6
Queen Anne's	130.4	118.6	294.7	**
St. Mary's	100.5	88.0	174.1	**
Somerset	118.1	90.0	191.9	**
Talbot	143.4	142.8	166.3	0.0
Washington	104.4	98.9	185.0	**
Wicomico	136.3	111.5	228.1	**
Worcester	122.9	113.3	218.0	**

* 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 March 4, 2022

Table 45
Number of Deaths for Prostate Cancer by Jurisdiction and Race,
Maryland, 2015-2019

Jurisdiction	Total	Race		
		White	Black	Other
Maryland	2,851	1,664	1,123	64
Allegany	39	35	<10	<10
Anne Arundel	255	202	s	<10
Baltimore City	370	s	304	<10
Baltimore	444	311	s	<10
Calvert	48	35	s	<10
Caroline	14	s	<10	<10
Carroll	71	64	<10	<10
Cecil	46	40	<10	<10
Charles	69	38	s	<10
Dorchester	27	20	<10	<10
Frederick	99	81	s	<10
Garrett	19	s	<10	<10
Harford	110	87	s	<10
Howard	108	73	s	<10
Kent	17	13	<10	<10
Montgomery	381	252	96	33
Prince George's	439	s	346	<10
Queen Anne's	24	23	<10	<10
St. Mary's	48	38	<10	<10
Somerset	12	<10	<10	<10
Talbot	35	26	<10	<10
Washington	64	57	<10	<10
Wicomico	68	47	s	<10
Worcester	44	34	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, 2015-2019, as of February 1, 2022

Table 46
Prostate Cancer Age-Adjusted Mortality Rates* by Jurisdiction and Race, Maryland, 2015-2019

Jurisdiction	Total	Race		
		White	Black	Other
Maryland	20.2	16.4	36.2	7.3
Allegany	17.2	15.6	**	**
Anne Arundel	20.4	18.9	35.4	**
Baltimore City	29.9	13.8	40.3	**
Baltimore	19.6	17.0	36.9	**
Calvert	22.3	18.6	**	**
Caroline	**	**	**	**
Carroll	16.6	15.8	**	**
Cecil	18.0	17.1	**	**
Charles	24.5	21.0	35.6	**
Dorchester	24.8	23.0	**	**
Frederick	18.1	16.5	**	**
Garrett	**	**	**	**
Harford	18.0	15.7	52.7	**
Howard	16.4	15.9	36.4	**
Kent	**	**	**	**
Montgomery	14.7	13.3	31.2	8.1
Prince George's	26.5	16.7	33.4	**
Queen Anne's	16.8	17.3	**	**
St. Mary's	19.6	18.4	**	**
Somerset	**	**	**	**
Talbot	19.0	15.5	**	**
Washington	15.0	14.1	**	**
Wicomico	27.9	24.5	44.5	**
Worcester	19.5	16.2	**	**

* 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, 2015-2019, as of February 1, 2022

Maryland Prostate Cancer Incidence Rates by Geographical Area: Comparison to U.S. Rate, 2015-2019

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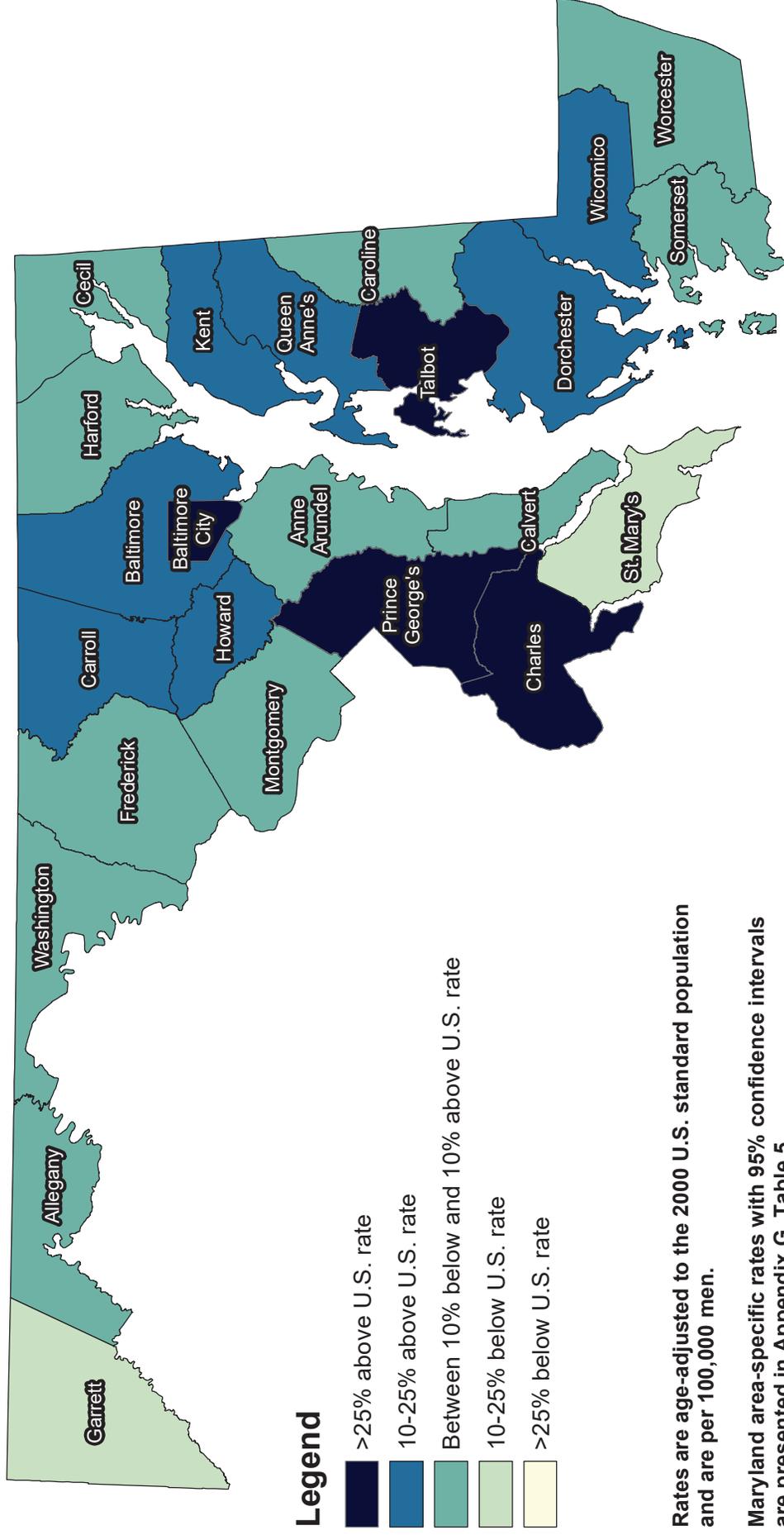
Rates are age-adjusted to the 2000 U.S. standard population and are per 100,000 men.

Maryland area-specific rates with 95% confidence intervals are presented in Appendix G, Table 5.

U.S. prostate cancer incidence rate, 2015-2019: 112.7 / 100,000

Maryland prostate cancer incidence rate, 2015-2019: 133.0 / 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, 2015-2019

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, 2015-2019: 18.9 / 100,000

Maryland prostate cancer mortality rate, 2015-2019: 20.2 / 100,000

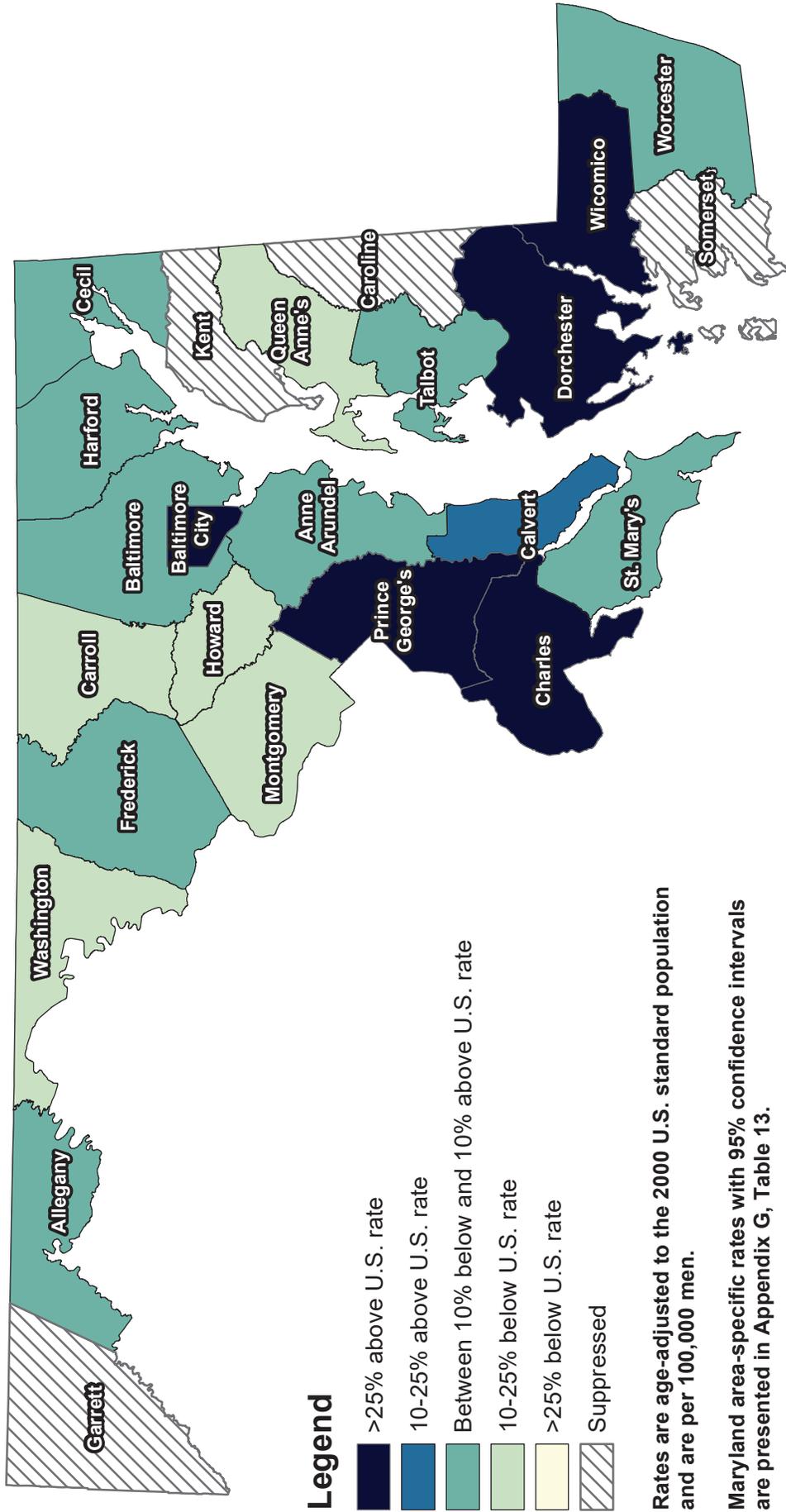Sources: CDC WONDER
          U.S. SEER, Cancer Statistics Review

Note: Rates based on case counts of 0-19 are suppressed per MDH/CCPC Data Use Policy and Procedures.

E. Oral Cancer

Incidence (New Cases)

In 2019, a total of 832 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 2019 was 11.0 per 100,000 population (10.2-11.7, 95% CI), which is statistically similar to the 2019 U.S. SEER age-adjusted oral cancer incidence rate of 11.4 per 100,000 population (11.2-11.5, 95% CI).

Mortality (Deaths)

In 2019, 182 persons in Maryland died of oral cancer. The 2019 age-adjusted mortality rate for oral cancer in Maryland was 2.4 per 100,000 population (2.1-2.8, 95% CI), accounting for 1.7% of Maryland cancer deaths in 2019. This rate is statistically similar to the 2019 U.S. oral cancer mortality rate of 2.5 per 100,000 population (2.5-2.6, 95% CI). Maryland had the 28th highest oral cancer mortality rate among the states and the District of Columbia for the period from 2015 to 2019.

Table 47

Oral Cancer Incidence and Mortality Rates

by Gender and Race, Maryland (MD) and the United States, 2019

Incidence 2019	Total*	Male	Female	White	Black	Other
MD New Cases (count)	832	597	234	621	154	44
MD Incidence Rate	11.0	16.9	5.9	12.4	7.4	8.8
U.S. SEER Rate	11.4	17.2	6.3	12.0	8.1	7.7
Mortality 2019	Total	Male	Female	White	Black	Other
MD Deaths (count)	182	124	58	119	51	12
MD Mortality Rate	2.4	3.7	1.4	2.4	2.5	**
U.S. Mortality Rate	2.5	3.9	1.4	2.6	2.4	1.9

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 jurisdiction

** 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 Underlying Cause of Death in CDC WONDER, 2019

U.S. SEER, Cancer Statistics Review

Oral Cancer Incidence and Mortality Rates by Year of Diagnosis or Death, Maryland, 2015-2019

Age-Adjusted Rate Per 100,000 Population

Incidence: 11.1 (2015), 10.8 (2016), 11.6 (2017), 11.3 (2018), 11.0 (2019)

Mortality: 2.2 (2015), 3.0 (2016), 2.4 (2017), 2.4 (2018), 2.4 (2019)

Year of Diagnosis or Death

- -□- - Incidence   -◇- Mortality

Source: Maryland Cancer Registry
NCHS Underlying Cause of Death in CDC WONDER, 2017-2019
NCHS Compressed Mortality File in CDC WONDER, 2015-2016
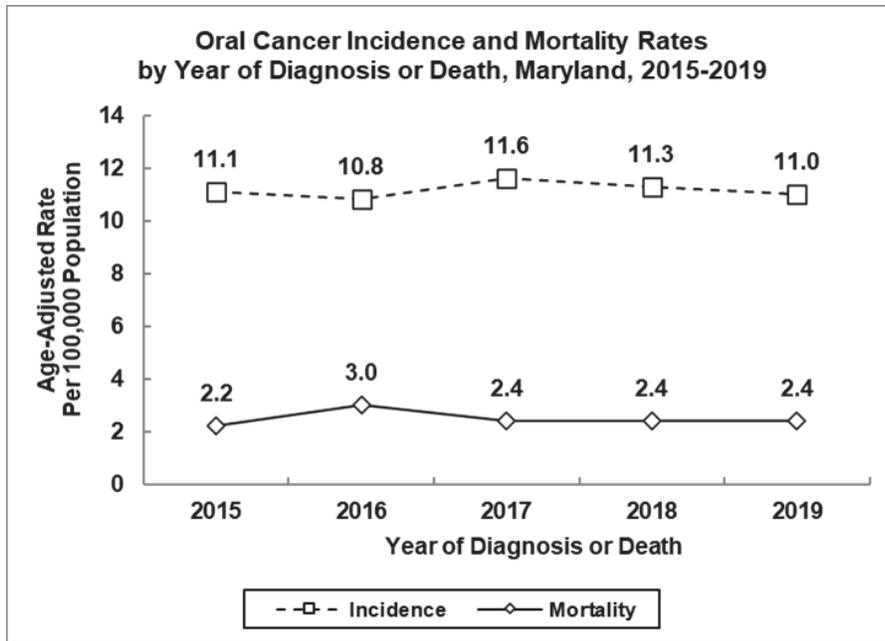
Incidence and Mortality Trends

The incidence of oral cancer in Maryland increased at a rate of 0.3% per year from 2015 to 2019.

Oral cancer mortality rates decreased from 2015 to 2019 at a rate of 0.5% annually.

See Appendix H, Tables 1 and 2.

Oral Cancer Incidence Rates by Race Maryland, 2015-2019

Age-Adjusted Rate Per 100,000 Population

White: 12.1 (2015), 12.5 (2016), 13.8 (2017), 13.0 (2018), 12.4 (2019)

Black: 9.2 (2015), 7.8 (2016), 7.6 (2017), 7.8 (2018), 7.4 (2019)

Year of Diagnosis

-□- White   -■- Black

Source: Maryland Cancer Registry
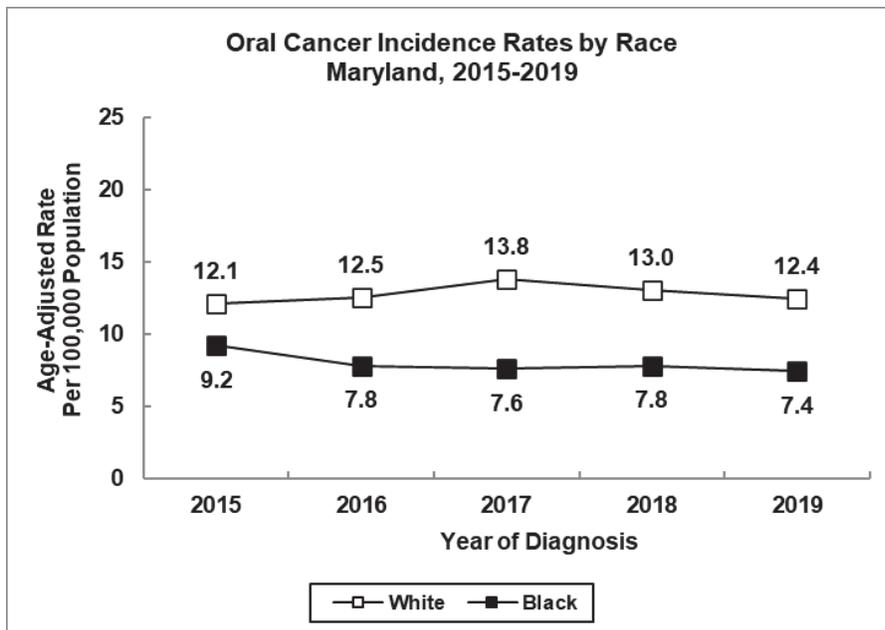
Incidence Trends by Race

Over the 5-year period from 2015 to 2019, oral cancer incidence rates in Maryland decreased at a rate of 4.3% per year for blacks and increased at a rate of 0.9% per year for whites.

See Appendix H, Table 3.
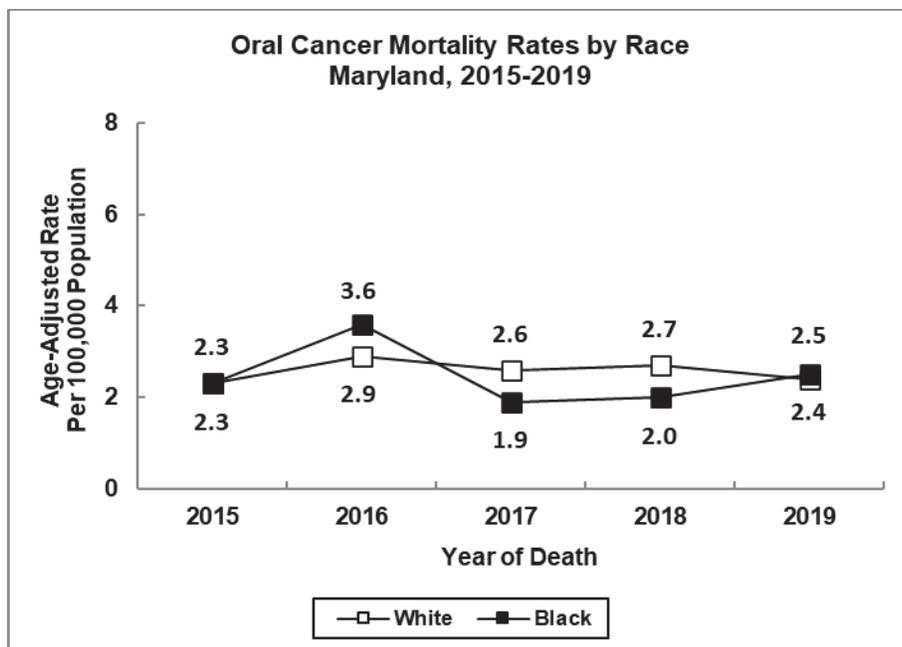
Oral Cancer Mortality Rates by Race
Maryland, 2015-2019

Age-Adjusted Rate Per 100,000 Population

Year	White	Black
2015	2.3	2.3
2016	2.9	3.6
2017	2.6	1.9
2018	2.7	2.0
2019	2.5	2.4

Year of Death

—□— White   —■— Black

Source: NCHS Underlying Cause of Death in CDC WONDER, 2017-2019
NCHS Compressed Mortality File in CDC WONDER, 2015-2016

Mortality Trends by Race

Over the 5-year period from 2015 to 2019, oral cancer mortality rates increased at a rate of 0.1% per year for whites and decreased at a rate of 4.1% per year for blacks.
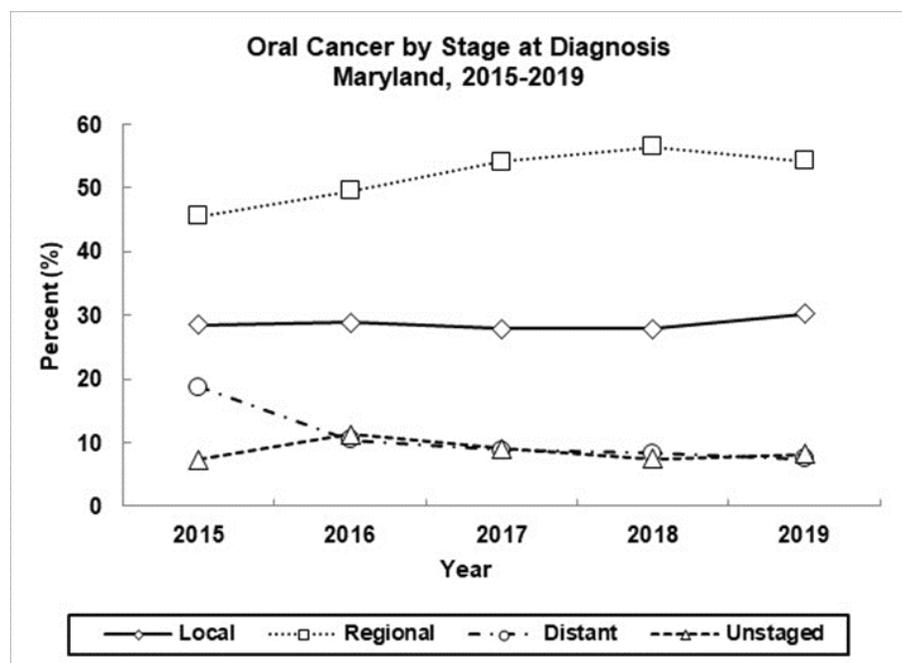
See Appendix H, Table 5.

Oral Cancer by Stage at Diagnosis
Maryland, 2015-2019

Percent (%)

—◇— Local   ····□···· Regional   – ·○· – Distant   – –△– – Unstaged

Source: Maryland Cancer Registry
Note: Due to a methodology change, SEER summary stage 2000 was used in 2016 to 2017, while the derived SEER summary stage 2000 was used in 2015, and SS2018 was used in 2018 and 2019

Stage at Diagnosis

In 2019, 30.2% of oral cancers in Maryland were diagnosed at the local stage, 54.2% were diagnosed at the regional stage, and 7.5% were di-agnosed at the distant stage. From 2015 to 2019, the proportion of oral cancers reported as unstaged decreased at a rate of 1.8% 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, 2012-2018, Compared to Maryland 2020 Objective

Percent (%)

2012	24.3%
2016	21.6%
2018	24.1%
MD 2020	26.7%

Year

□ MD   ■ MD 2020
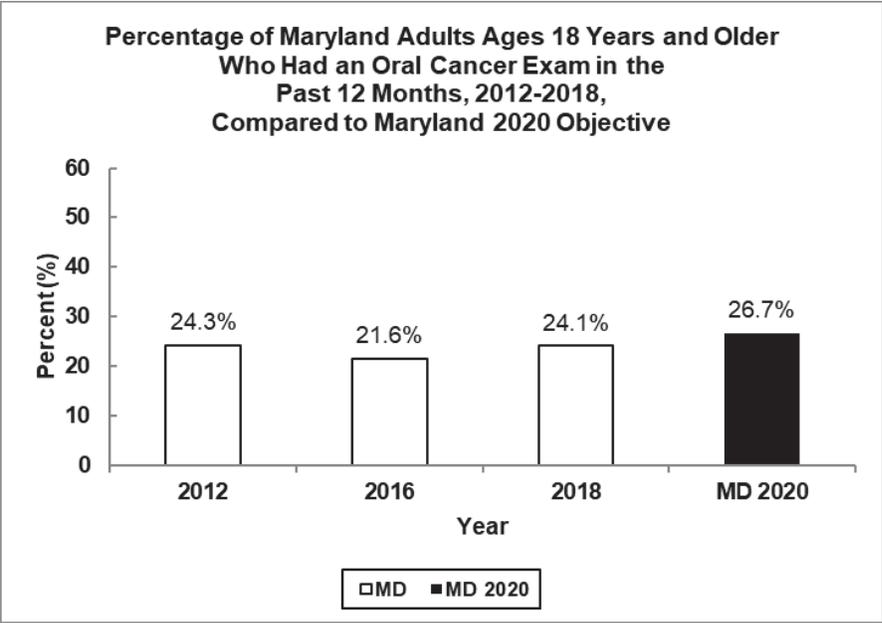
Source: Maryland BRFSS, 2012, 2016, 2018
          Maryland Comprehensive Cancer Control Plan, 2016-2020

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 was 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, 2016, and 2018, Maryland fell short of this target. In 2018, 24.1% of Maryland adults reported that they had an oral cancer exam in the past year.

Public Health Evidence (adapted from the National Cancer Institute Physician Data Query [PDQ] and the United States Preventive Services Task Force [USPSTF])

Prevention

Avoiding risk factors may help prevent cancer. The following are risk factors for oral cancer (cancer of the oral cavity [the mouth] and oropharynx [the part of the throat at the back of the mouth]):
- 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 use only tobacco or only alcohol).
- Betel quid chewing.
- Personal history of head and neck cancer.
- Being infected with certain types of human papillomavirus (HPV), especially HPV-16.

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:
- Some studies show that when people stop drinking alcohol, their risk of oral cavity cancer decreases within about 20 years.
- Getting an HPV vaccination greatly lessens the risk of oral HPV infection, but 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 oral cancer would lower 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 by primary care providers; however, dental care providers and otolaryngologists may conduct a comprehensive examination of the oral cavity and pharynx during the clinical encounter.

Maryland Department of Health Office of Oral Health Public Health Interventions for Oral Cancer
- Avoid tobacco products.   - Limit alcohol consumption.   - Use lip balm that has an SPF of at least 15.   - Eat a variety of fruits and vegetables.   - Be aware of sexual behaviors leading to HPV exposure, and talk to a medical or dental provider about how the HPV vaccine might prevent oropharyngeal cancer.   - Have an oral exam once a year, and ask the dental provider for an oral cancer exam during the visit.

Individuals should discuss the 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 Cases for Oral Cancer by Jurisdiction, Gender, and Race, Maryland, 2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	832	597	234	621	154	44
Allegany	23	16	7	22	0	0
Anne Arundel	95	75	20	81	10	<6
Baltimore City	72	51	21	31	39	<6
Baltimore	125	82	43	104	13	8
Calvert	17	12	<6	13	<6	<6
Caroline	<6	<6	<6	<6	0	0
Carroll	33	27	6	31	0	<6
Cecil	9	7	<6	9	0	0
Charles	25	18	7	16	8	0
Dorchester	7	<6	<6	s	<6	0
Frederick	40	30	10	35	<6	<6
Garrett	<6	<6	<6	<6	0	0
Harford	35	28	7	s	<6	<6
Howard	33	22	11	25	<6	<6
Kent	7	<6	<6	7	0	0
Montgomery	111	71	39	80	12	14
Prince George's	95	67	28	31	56	7
Queen Anne's	15	13	<6	15	0	0
St. Mary's	12	8	<6	11	0	0
Somerset	<6	<6	<6	<6	0	0
Talbot	7	s	<6	7	0	0
Washington	28	23	<6	24	<6	<6
Wicomico	13	10	<6	13	0	0
Worcester	15	11	<6	s	<6	<6

Total includes cases reported as transexual, hermaphrodite, unknown gender, unknown race, and unknown jurisdiction

<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 March 4, 2022

Table 49
Oral Cancer Age-Adjusted Incidence Rates* by Jurisdiction, Gender, and Race, Maryland, 2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	11.0	16.9	5.9	12.4	7.4	8.8
Allegany	24.3	34.9	**	23.9	0.0	0.0
Anne Arundel	13.5	22.4	5.8	14.4	**	**
Baltimore City	10.4	16.2	6.0	14.4	8.6	**
Baltimore	11.0	15.9	7.1	12.7	**	**
Calvert	12.9	**	**	**	**	**
Caroline	**	**	**	**	0.0	0.0
Carroll	14.1	24.0	**	13.9	0.0	**
Cecil	**	**	**	**	0.0	0.0
Charles	13.4	20.5	**	14.9	**	0.0
Dorchester	**	**	**	**	**	0.0
Frederick	12.8	20.2	**	12.4	**	**
Garrett	**	**	**	**	0.0	0.0
Harford	10.5	18.2	**	11.6	**	**
Howard	8.4	12.6	**	9.3	**	**
Kent	**	**	**	**	0.0	0.0
Montgomery	8.6	11.9	5.6	9.1	**	**
Prince George's	9.5	15.1	5.1	11.8	8.3	**
Queen Anne's	**	**	**	**	0.0	0.0
St. Mary's	**	**	**	**	0.0	0.0
Somerset	**	**	**	**	0.0	0.0
Talbot	**	**	**	**	0.0	0.0
Washington	13.7	23.1	**	12.8	**	**
Wicomico	**	**	**	**	0.0	0.0
Worcester	**	**	**	**	**	**

* 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 March 4, 2022

Table 50
Number of Deaths for Oral Cancer by Jurisdiction, Gender, and Race, Maryland, 2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	182	124	58	119	51	12
Allegany	<10	<10	<10	<10	<10	<10
Anne Arundel	17	s	<10	10	<10	<10
Baltimore City	24	s	<10	<10	16	<10
Baltimore	28	s	<10	19	<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	21	s	<10	15	<10	<10
Prince George's	25	s	<10	s	15	<10
Queen Anne's	<10	<10	<10	<10	<10	<10
St. 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, 2019, as of February 1, 2022

Table 51
Oral Cancer Age-Adjusted Mortality Rates* by Jurisdiction, Gender, and Race, Maryland, 2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	2.4	3.7	1.4	2.4	2.5	**
Allegany	**	**	**	**	**	**
Anne Arundel	**	**	**	**	**	**
Baltimore City	3.5	**	**	**	**	**
Baltimore	2.5	4.1	**	**	**	**
Calvert	**	**	**	**	**	**
Caroline	**	**	**	**	**	**
Carroll	**	**	**	**	**	**
Cecil	**	**	**	**	**	**
Charles	**	**	**	**	**	**
Dorchester	**	**	**	**	**	**
Frederick	**	**	**	**	**	**
Garrett	**	**	**	**	**	**
Harford	**	**	**	**	**	**
Howard	**	**	**	**	**	**
Kent	**	**	**	**	**	**
Montgomery	1.7	**	**	**	**	**
Prince George's	2.6	**	**	**	**	**
Queen Anne's	**	**	**	**	**	**
St. 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, 2019, as of February 1, 2022

Table 52
Number of Cases for Oral Cancer by Jurisdiction, Gender, and Race, Maryland, 2015-2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	4,124	2,926	1,197	3,107	807	170
Allegany	82	56	26	80	<6	0
Anne Arundel	460	345	115	408	36	12
Baltimore City	390	270	120	159	225	<6
Baltimore	620	419	201	497	100	20
Calvert	71	49	22	62	s	<6
Caroline	27	23	<6	22	<6	<6
Carroll	146	107	39	140	<6	<6
Cecil	92	68	24	87	<6	<6
Charles	123	98	25	87	31	<6
Dorchester	32	25	7	27	<6	0
Frederick	192	141	51	172	12	<6
Garrett	21	13	8	21	0	0
Harford	191	139	52	175	11	<6
Howard	161	112	49	115	20	24
Kent	31	20	11	29	<6	0
Montgomery	551	359	191	408	63	69
Prince George's	415	280	135	154	240	15
Queen Anne's	43	39	<6	43	0	0
St. Mary's	103	76	27	87	14	<6
Somerset	20	14	6	16	<6	0
Talbot	52	42	10	49	<6	0
Washington	138	107	31	130	s	<6
Wicomico	89	68	21	76	s	<6
Worcester	63	47	16	56	<6	<6

Total includes cases reported as transexual, hermaphrodite, unknown gender, unknown race, and unknown jurisdiction

<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 March 4, 2022

Table 53
Oral Cancer Age-Adjusted Incidence Rates* by Jurisdiction, Gender, and Race, Maryland, 2015-2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	11.2	17.1	6.1	12.7	7.9	6.9
Allegany	17.2	24.3	9.8	17.5	**	0.0
Anne Arundel	13.1	20.9	6.3	14.2	7.5	**
Baltimore City	11.5	17.7	6.6	14.6	10.1	**
Baltimore	11.6	17.3	6.9	13.1	8.5	6.7
Calvert	11.5	15.4	7.5	11.6	**	**
Caroline	11.9	21.5	**	11.5	**	**
Carroll	12.7	19.0	6.7	12.8	**	**
Cecil	14.2	21.5	7.3	14.2	**	**
Charles	14.0	24.4	5.6	17.4	8.8	**
Dorchester	11.4	18.9	**	12.9	**	0.0
Frederick	12.5	19.3	6.4	12.6	**	**
Garrett	10.2	**	8.7	10.3	0.0	0.0
Harford	11.7	18.1	6.1	12.4	6.6	**
Howard	8.5	12.7	5.0	8.9	6.6	7.7
Kent	18.1	23.7	13.9	20.1	**	0.0
Montgomery	8.8	12.7	5.6	9.7	6.1	6.6
Prince George's	8.3	12.6	4.9	12.0	7.0	**
Queen Anne's	11.9	21.2	**	13.1	0.0	0.0
St. Mary's	15.7	23.0	8.5	16.2	**	**
Somerset	12.5	**	**	14.1	**	0.0
Talbot	14.7	25.5	**	15.5	**	0.0
Washington	14.0	22.4	6.6	14.5	**	**
Wicomico	14.6	23.6	7.2	17.5	**	**
Worcester	13.7	21.6	6.8	13.8	**	**

* 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 March 4, 2022

Table 54
Number of Deaths for Oral Cancer by Jurisdiction, Gender, and Race, Maryland, 2015-2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	915	645	270	631	241	43
Allegany	20	s	<10	s	<10	<10
Anne Arundel	83	58	25	67	s	<10
Baltimore City	131	90	41	s	87	<10
Baltimore	131	84	47	106	s	<10
Calvert	17	s	<10	14	<10	<10
Caroline	<10	<10	<10	<10	<10	<10
Carroll	22	s	<10	21	<10	<10
Cecil	12	<10	<10	s	<10	<10
Charles	29	s	<10	16	s	<10
Dorchester	10	<10	<10	s	<10	<10
Frederick	30	s	<10	27	<10	<10
Garrett	<10	<10	<10	<10	<10	<10
Harford	39	27	12	34	<10	<10
Howard	35	23	12	20	<10	s
Kent	<10	<10	<10	<10	<10	<10
Montgomery	110	73	37	86	<10	s
Prince George's	113	84	29	s	68	<10
Queen Anne's	<10	<10	<10	<10	<10	<10
St. Mary's	21	s	<10	18	<10	<10
Somerset	<10	<10	<10	<10	<10	<10
Talbot	<10	<10	<10	<10	<10	<10
Washington	29	s	<10	27	<10	<10
Wicomico	22	s	<10	16	<10	<10
Worcester	22	s	<10	18	<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, 2015-2019, as of February 1, 2022

Table 55
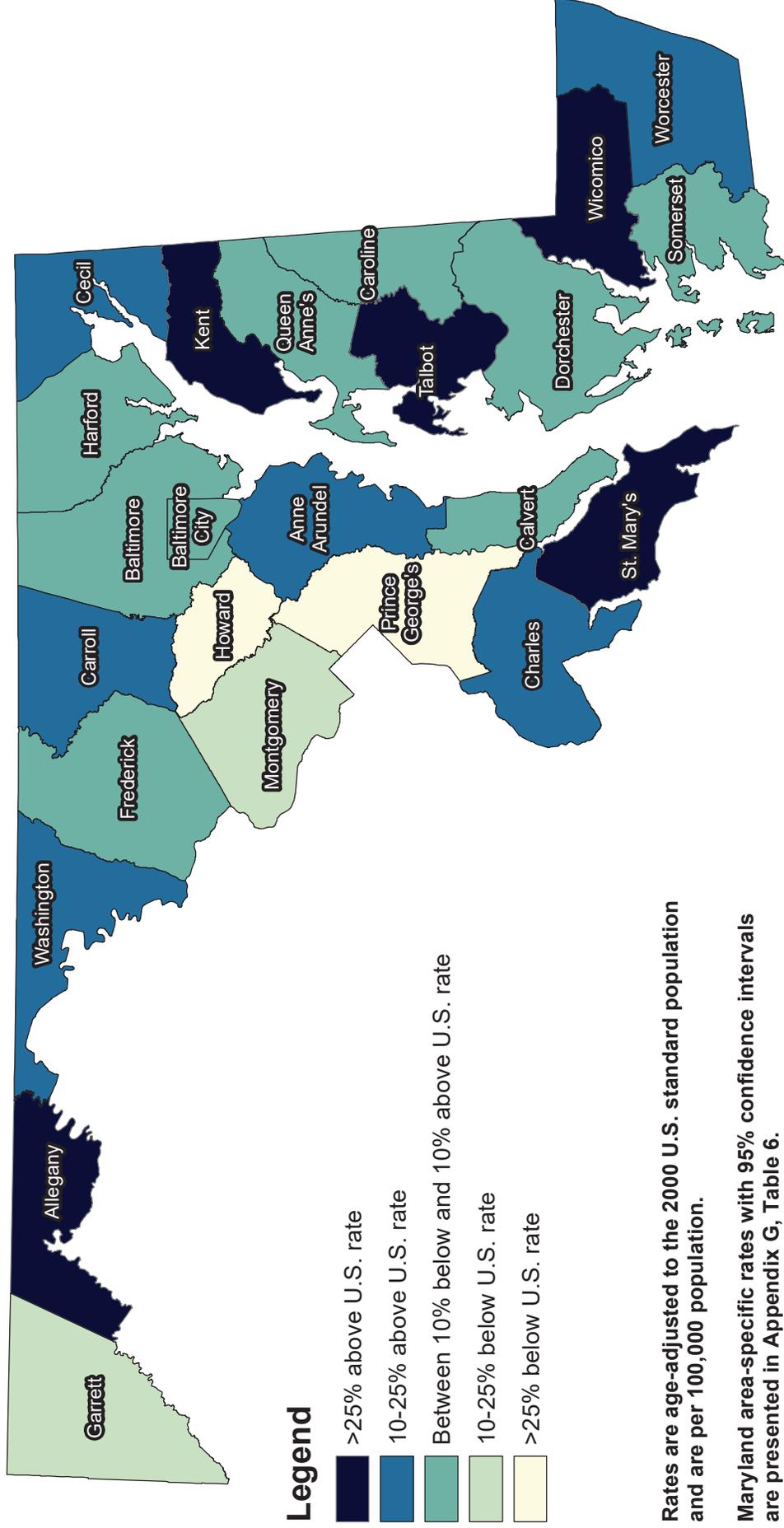**Oral Cancer Age-Adjusted Mortality Rates* by Jurisdiction, Gender, and Race, Maryland, 2015-2019**

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	2.5	4.0	1.3	2.6	2.5	1.9
Allegany	3.8	**	**	4.0	**	**
Anne Arundel	2.5	3.7	1.4	2.4	**	**
Baltimore City	3.9	6.2	2.1	3.9	4.0	**
Baltimore	2.4	3.7	1.4	2.6	2.0	**
Calvert	**	**	**	**	**	**
Caroline	**	**	**	**	**	**
Carroll	1.9		**	1.8	**	**
Cecil	**	**	**	**	**	**
Charles	3.5	5.9	**	**	**	**
Dorchester	**	**	**	**	**	**
Frederick	1.9	3.3	**	1.9	**	**
Garrett	**	**	**	**	**	**
Harford	2.5	4.0	**	2.5	**	**
Howard	2.0	2.9	**	1.7	**	**
Kent	**	**	**	**	**	**
Montgomery	1.8	2.7	1.1	2.1	**	**
Prince George's	2.3	4.0	1.1	3.1	2.0	**
Queen Anne's	**	**	**	**	**	**
St. Mary's	3.3	**	**	**	**	**
Somerset	**	**	**	**	**	**
Talbot	**	**	**	**	**	**
Washington	2.9	5.3	**	2.8	**	**
Wicomico	3.4	6.5	**	**	**	**
Worcester	4.9	**	**	**	**	**

* 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, 2015-2019, as of February 1, 2022

Maryland Oral Cancer Incidence Rates by Geographical Area: Comparison to U.S. Rate, 2015-2019

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

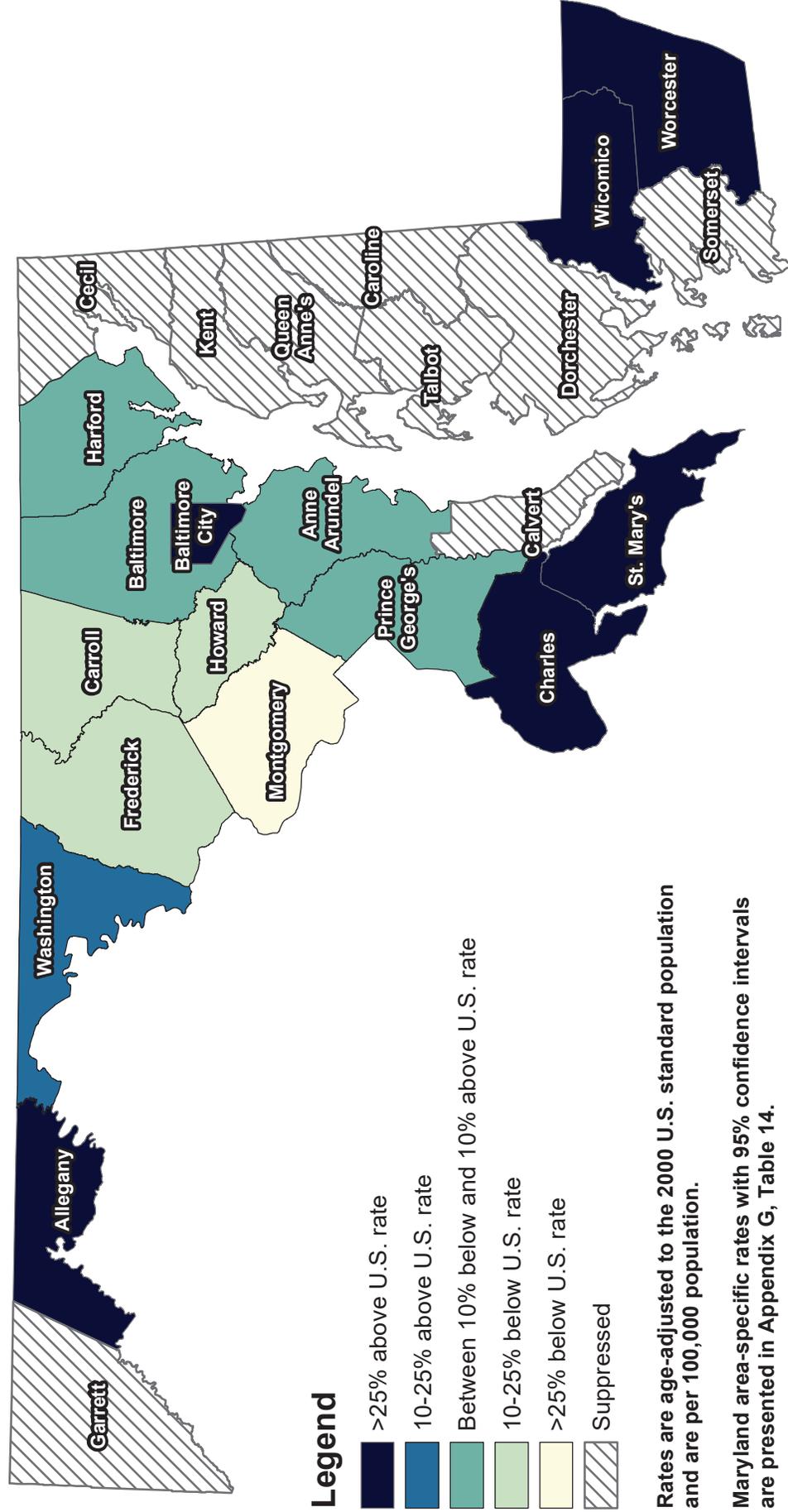Rates are age-adjusted to the 2000 U.S. standard population and are per 100,000 population.

Maryland area-specific rates with 95% confidence intervals are presented in Appendix G, Table 6.

U.S. oral cancer incidence rate, 2015-2019: 11.5 / 100,000

Maryland oral cancer incidence rate, 2015-2019: 11.2 / 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, 2015-2019

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, 2015-2019: 2.5 / 100,000

Maryland oral cancer mortality rate, 2015-2019: 2.5 / 100,000

Sources: CDC WONDER
　　　　　U.S. SEER, Cancer Statistics Review

Note: Rates based on case counts of 0-19 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 2019, a total of 1,954 cases of melanoma of the skin were reported in Maryland. The age-adjusted incidence rate for melanoma in 2019 was 27.0 per 100,000 population (25.8-28.2, 95% CI), which is statistically significantly higher than the 2018 U.S. SEER age-adjusted melanoma incidence rate of 21.7 per 100,000 population (21.5-22.0, 95% CI).

Mortality (Deaths)

In 2019, a total of 143 persons died of melanoma in Maryland. The 2019 age-adjusted mortality rate for melanoma in Maryland was 1.9 per 100,000 population (1.6-2.2, 95% CI). This rate is statistically similar to the 2019 U.S. melanoma of the skin mortality rate of 2.0 per 100,000 population (2.0-2.1, 95% CI). Maryland had the 45th highest melanoma cancer mortality rate among the states and the District of Columbia for the period from 2015 to 2019.

Table 56
Melanoma Incidence and Mortality Rates
by Gender and Race, Maryland (MD) and the United States, 2019

Incidence 2019	*Total**	*Male*	*Female*	*White*	*Black*	*Other*
MD New Cases (count)	1,954	1,172	782	1,902	17	<6
MD Incidence Rate	27.0	35.9	20.7	40.7	0.9	**
U.S. SEER Rate	21.7	27.7	17.4	25.5	0.9	1.4
Mortality 2019	*Total*	*Male*	*Female*	*White*	*Black*	*Other*
MD Deaths (count)	143	99	44	140	<10	<10
MD Mortality Rate	1.9	3.2	1.0	2.8	**	**
U.S. Mortality Rate	2.0	3.0	1.3	2.4	0.3	0.3

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 jurisdiction

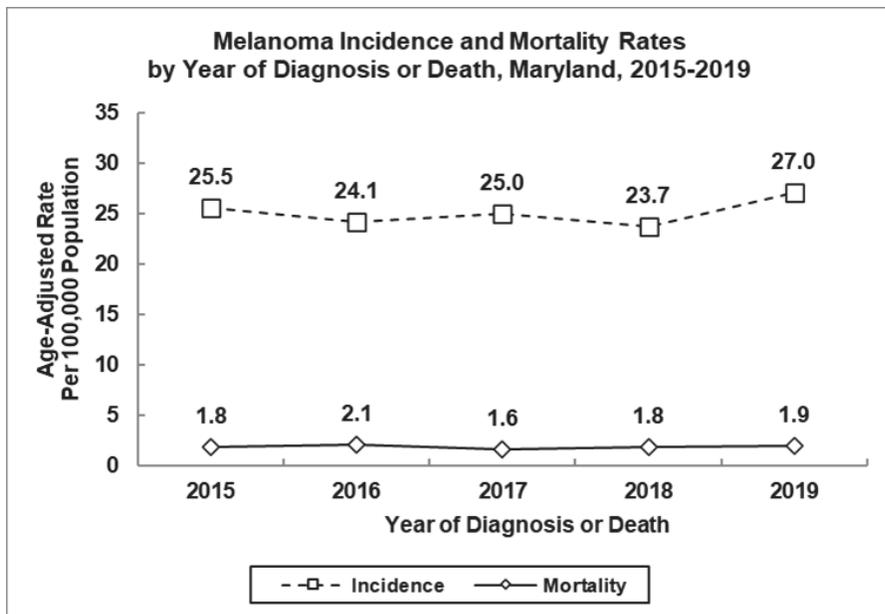<10 = Death counts of 0-9 are suppressed per MDH/CCPC Mortality Data Suppression Policy

** 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 Underlying Cause of Death in CDC WONDER, 2019
U.S. SEER, Cancer Statistics Review

**Melanoma Incidence and Mortality Rates
by Year of Diagnosis or Death, Maryland, 2015-2019**

Age-Adjusted Rate Per 100,000 Population

Incidence: 25.5 (2015), 24.1 (2016), 25.0 (2017), 23.7 (2018), 27.0 (2019)

Mortality: 1.8 (2015), 2.1 (2016), 1.6 (2017), 1.8 (2018), 1.9 (2019)

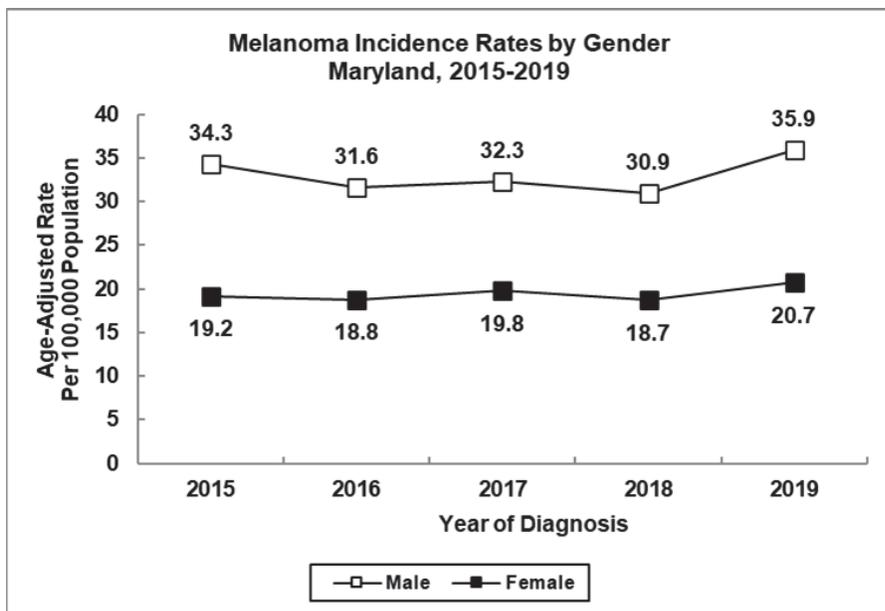Year of Diagnosis or Death

- -□- - Incidence   —◇— Mortality

Source: Maryland Cancer Registry
NCHS Underlying Cause of Death in CDC WONDER, 2017-2019
NCHS Compressed Mortality File in CDC WONDER, 2015-2016

Incidence and Mortality Trends

Melanoma incidence rates in Maryland increased at a rate of 1.0% per year from 2015 to 2019.

Melanoma mortality rates decreased at a rate of 0.5% per year from 2015 to 2019.
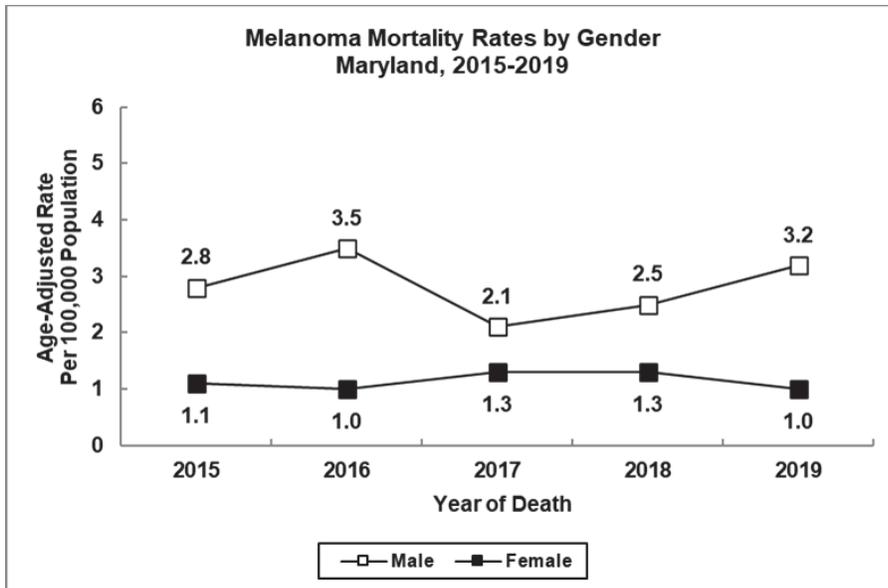
See Appendix H, Tables 1 and 2.

**Melanoma Incidence Rates by Gender
Maryland, 2015-2019**

Age-Adjusted Rate Per 100,000 Population

Male: 34.3 (2015), 31.6 (2016), 32.3 (2017), 30.9 (2018), 35.9 (2019)

Female: 19.2 (2015), 18.8 (2016), 19.8 (2017), 18.7 (2018), 20.7 (2019)

Year of Diagnosis

—□— Male   —■— Female

Incidence Trends by Gender

Over the 5-year period from 2015 to 2019, incidence rates increased at a rate of 0.7% per year among males and increased at a rate of 1.5% per year among females. In 2019, melanoma incidence rates were 73.4% higher among males than females in Maryland.
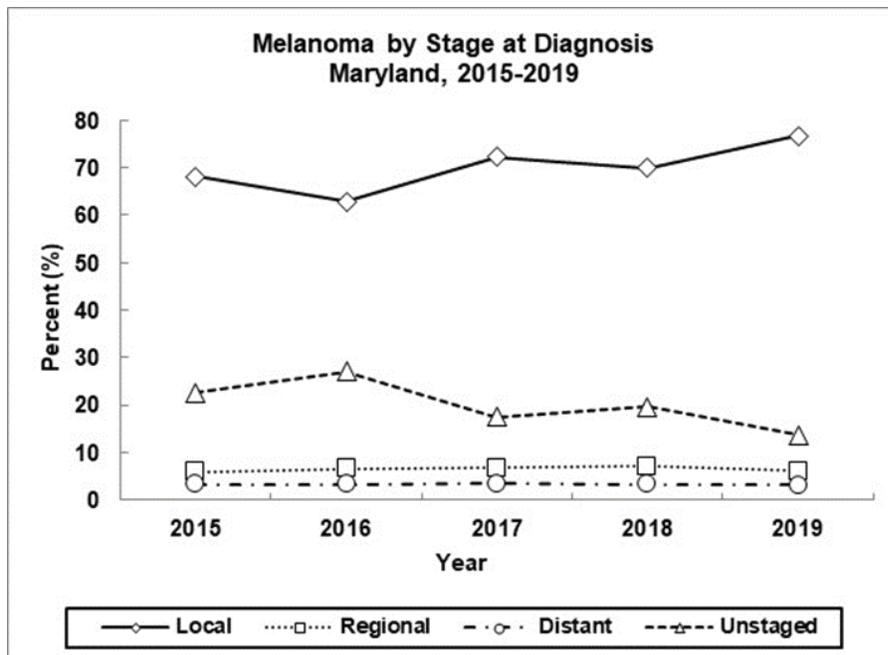
See Appendix H, Table 4.

Source: Maryland Cancer Registry

Melanoma Mortality Rates by Gender
Maryland, 2015-2019

Y-axis: Age-Adjusted Rate Per 100,000 Population

Male: 2015: 2.8, 2016: 3.5, 2017: 2.1, 2018: 2.5, 2019: 3.2
Female: 2015: 1.1, 2016: 1.0, 2017: 1.3, 2018: 1.3, 2019: 1.0

X-axis: Year of Death

Legend: —□— Male   —■— Female

Source: NCHS Underlying Cause of Death in CDC WONDER, 2017-2019
          NCHS Compressed Mortality File in CDC WONDER, 2015-2016

Mortality Trends by Gender

Melanoma mortality rates in males decreased at a rate of 0.7% per year from 2015 to 2019 in Maryland. Female melanoma mortality rates increased at a rate of 0.7% per year in the same time period.

See Appendix H, Table 6.

Melanoma by Stage at Diagnosis
Maryland, 2015-2019

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

Legend: —◇— Local   ····□···· Regional   – ·○· – Distant   – –△– – Unstaged

Source: Maryland Cancer Registry
Note: Due to a methodology change, SEER summary stage 2000 was used in 2016 to 2017, while the derived SEER summary stage 2000 was used in 2015, and SS2018 was used in 2018 and 2019
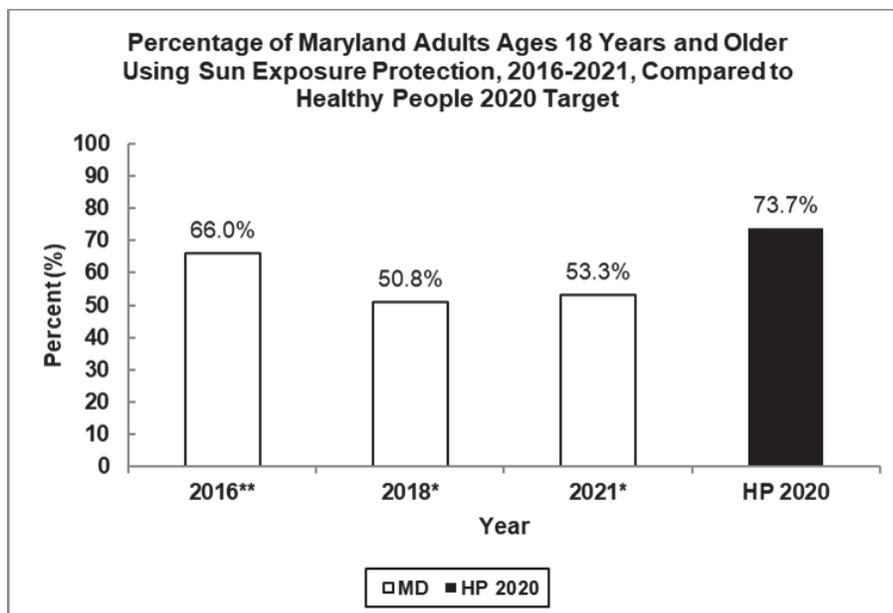
Stage at Diagnosis

During the 5-year period from 2015 to 2019, the percent of new melanoma cases diagnosed at the local stage increased 3.5% per year.

In 2019, 76.8% of all melanoma was diagnosed at the local stage, 6.2% was found at the regional stage, and 3.2% was found at the distant stage. The proportion of melanoma reported as unstaged was 13.8%.

See Appendix I, Table 7.

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Percentage of Maryland Adults Ages 18 Years and Older Using Sun Exposure Protection, 2016-2021, Compared to Healthy People 2020 Target

Year	Percent (%)
2016**	66.0%
2018*	50.8%
2021*	53.3%
HP 2020	73.7%

Legend: □ MD ■ HP 2020

Sun Exposure Protection

The Healthy People 2020 target aimed 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 2018, 50.8% of Maryland adults used at least one method of protection against sun exposure, and in 2021 this percentage increased to 53.3%.

Source: Maryland BRFSS 2016, 2018, 2021
         Healthy People 2020, U.S. Department of Health and Human Services

* The Maryland BRFSS question has been phrased differently than past years since the 2018 survey. The estimate indicated is based on adults who reported "always" or "almost always" using one or more of the following measures: limiting exposure to the sun when outside for more than an hour on a warm, sunny day; 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.

** The Maryland BRFSS 2016 estimate is 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.

*** 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.

Public Health Evidence (adapted from the National Cancer Institute Physician Data Query [PDQ] and the United States Preventive Services Task Force [USPSTF])

Prevention

The most common types of skin cancer are squamous cell carcinoma and basal cell carcinoma. Squamous cell carcinoma and basal cell carcinoma are also called nonmelanoma skin cancers. Melanoma is a less common type of skin cancer that grows and spreads quickly.

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.
- 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.
- 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:
- Sunscreen use and avoiding sun exposure. It is not known if sunscreen use, avoiding sun exposure, or wearing protective clothing when outdoors decreases the risk of nonmelanoma skin cancer. This is because not enough studies have been done to prove this.
  However, skin experts suggest the following:
  - Using sunscreen that protects against UV radiation.

- o Not staying out in the sun for long periods of time, especially when the sun is at its strongest.
- 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. It has not been proven that using sunscreen to prevent sunburn can protect against melanoma caused by UV radiation.
- Receiving counseling or information about protecting the skin from the sun.

Screening

Screening for skin cancer may include examination by both the patient and the health care provider. 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. An update by the USPSTF is currently in progress at the time of writing this report.

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 during times of peak sunlight, which are during the midday hours of 10 a.m. to 4 p.m (daylight savings) or 9 a.m. to 3 p.m. (standard time).   - Use sunscreen with an SPF of 15 or higher.   - Avoid indoor tanning and sunbathing.

Individuals should discuss the 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 Cases for Melanoma by Jurisdiction, Gender, and Race, Maryland, 2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	1,954	1,172	782	1,902	17	<6
Allegany	36	21	15	36	0	0
Anne Arundel	286	173	113	279	<6	0
Baltimore City	66	42	24	61	<6	<6
Baltimore	324	200	124	321	0	0
Calvert	47	32	15	45	0	0
Caroline	<6	<6	<6	<6	0	0
Carroll	97	59	38	97	0	0
Cecil	53	27	26	53	0	0
Charles	26	10	16	19	<6	<6
Dorchester	11	<6	7	11	0	0
Frederick	104	57	47	103	0	0
Garrett	17	14	<6	17	0	0
Harford	126	77	49	126	0	0
Howard	129	82	47	124	<6	<6
Kent	7	<6	<6	7	0	0
Montgomery	304	177	127	294	<6	<6
Prince George's	58	38	20	55	<6	0
Queen Anne's	35	24	11	35	0	0
St. Mary's	23	17	6	21	<6	0
Somerset	6	<6	<6	6	0	0
Talbot	25	14	11	25	0	0
Washington	53	30	23	53	0	0
Wicomico	31	17	14	31	0	0
Worcester	55	33	22	54	0	0

Total includes cases reported as transexual, hermaphrodite, unknown gender, unknown race, and unknown jurisdiction

<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 March 4, 2022

Table 58
Melanoma Age-Adjusted Incidence Rates* by Jurisdiction, Gender, and Race, Maryland, 2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	27.0	35.9	20.7	40.7	0.9	**
Allegany	41.0	46.2	40.4	44.8	0.0	0.0
Anne Arundel	42.7	55.2	33.8	52.1	**	0.0
Baltimore City	10.0	14.4	6.6	27.8	**	**
Baltimore	30.4	43.2	21.9	43.5	0.0	0.0
Calvert	41.6	60.4	**	47.1	0.0	0.0
Caroline	**	**	**	**	0.0	0.0
Carroll	45.5	58.3	35.6	48.4	0.0	0.0
Cecil	41.2	42.4	40.1	44.7	0.0	0.0
Charles	13.6	**	14.6	19.1	**	**
Dorchester	**	**	**	**	0.0	0.0
Frederick	32.7	39.0	28.0	37.2	0.0	0.0
Garrett	43.6	**	**	44.1	0.0	0.0
Harford	39.5	54.4	29.2	46.5	0.0	0.0
Howard	34.2	47.7	23.3	49.9	**	**
Kent	**	**	**	**	0.0	0.0
Montgomery	24.2	30.7	19.7	35.9	**	**
Prince George's	5.8	9.0	3.6	22.2	**	0.0
Queen Anne's	52.3	71.1	**	57.3	0.0	0.0
St. Mary's	19.6	30.2	**	21.8	**	0.0
Somerset	**	**	**	**	0.0	0.0
Talbot	33.0	**	**	37.4	0.0	0.0
Washington	27.6	34.1	24.0	30.3	0.0	0.0
Wicomico	27.3	29.5	**	37.6	0.0	0.0
Worcester	60.4	72.7	51.7	68.4	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 March 4, 2022

Table 59
Number of Deaths for Melanoma by Jurisdiction, Gender, and Race, Maryland, 2019

Jurisdiction	Total	Gender		Race		
		Male	**Female**	**White**	**Black**	**Other**
Maryland	143	99	44	140	<10	<10
Allegany	<10	<10	<10	<10	<10	<10
Anne Arundel	11	s	<10	s	<10	<10
Baltimore City	<10	<10	<10	<10	<10	<10
Baltimore	35	s	<10	s	<10	<10
Calvert	<10	<10	<10	<10	<10	<10
Caroline	<10	<10	<10	<10	<10	<10
Carroll	12	<10	<10	s	<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	16	s	<10	14	<10	<10
Prince George's	<10	<10	<10	<10	<10	<10
Queen Anne's	<10	<10	<10	<10	<10	<10
St. 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, 2019, as of February 1, 2022

Table 60
Melanoma Age-Adjusted Mortality Rates* by Jurisdiction, Gender, and Race, Maryland, 2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	1.9	3.2	1.0	2.8	**	**
Allegany	**	**	**	**	**	**
Anne Arundel	**	**	**	**	**	**
Baltimore City	**	**	**	**	**	**
Baltimore	2.9	5.4	**	3.9	**	**
Calvert	**	**	**	**	**	**
Caroline	**	**	**	**	**	**
Carroll	**	**	**	**	**	**
Cecil	**	**	**	**	**	**
Charles	**	**	**	**	**	**
Dorchester	**	**	**	**	**	**
Frederick	**	**	**	**	**	**
Garrett	**	**	**	**	**	**
Harford	**	**	**	**	**	**
Howard	**	**	**	**	**	**
Kent	**	**	**	**	**	**
Montgomery	**	**	**	**	**	**
Prince George's	**	**	**	**	**	**
Queen Anne's	**	**	**	**	**	**
St. 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, 2019, as of February 1, 2022

Table 61
Number of Cases for Melanoma by Jurisdiction, Gender, and Race, Maryland, 2015-2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	8,767	5,187	3,579	8,524	86	36
Allegany	110	67	43	110	0	0
Anne Arundel	1,182	686	496	1,157	<6	<6
Baltimore City	373	220	153	359	9	<6
Baltimore	1,561	930	631	1,531	10	<6
Calvert	182	114	68	178	0	0
Caroline	49	28	21	48	0	0
Carroll	432	257	175	427	<6	<6
Cecil	204	105	99	202	<6	0
Charles	130	76	54	114	7	<6
Dorchester	54	28	26	54	0	0
Frederick	430	236	194	426	0	<6
Garrett	65	44	21	65	0	0
Harford	620	365	255	604	<6	<6
Howard	528	332	196	516	6	<6
Kent	62	38	24	62	0	0
Montgomery	1,221	748	473	1,169	17	13
Prince George's	271	158	113	245	12	<6
Queen Anne's	161	101	60	159	<6	0
St. Mary's	151	94	56	143	6	0
Somerset	53	23	30	53	0	0
Talbot	143	83	60	138	<6	0
Washington	258	152	106	253	0	0
Wicomico	181	100	81	178	<6	0
Worcester	227	141	86	225	<6	0

Total includes cases reported as transexual, hermaphrodite, unknown gender, unknown race, and unknown jurisdiction

<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 March 4, 2022

Table 62
Melanoma Age-Adjusted Incidence Rates* by Jurisdiction, Gender, and Race, Maryland, 2015-2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	25.1	33.0	19.5	37.4	0.9	1.6
Allegany	23.8	29.0	21.5	25.7	0.0	0.0
Anne Arundel	36.3	45.3	29.5	44.0	**	**
Baltimore City	11.4	16.2	8.3	33.4	**	**
Baltimore	30.2	40.8	23.0	42.1	**	**
Calvert	34.4	46.0	25.0	39.7	0.0	0.0
Caroline	24.8	28.7	20.8	28.5	0.0	0.0
Carroll	42.9	53.9	35.2	45.0	**	**
Cecil	34.7	37.0	33.9	37.2	**	0.0
Charles	15.2	20.2	11.6	24.9	**	**
Dorchester	23.9	25.2	23.5	32.3	0.0	0.0
Frederick	29.6	35.1	25.5	33.6	0.0	**
Garrett	31.6	46.9	19.0	32.0	0.0	0.0
Harford	40.5	52.5	31.9	46.1	**	**
Howard	29.4	41.0	20.2	43.4	**	**
Kent	39.1	46.3	34.3	45.9	0.0	0.0
Montgomery	19.8	26.7	14.8	28.4	1.6	**
Prince George's	5.9	8.3	4.4	19.8	**	**
Queen Anne's	50.9	63.7	40.4	55.1	**	0.0
St. Mary's	26.4	33.6	20.0	30.1	**	0.0
Somerset	33.5	30.0	41.3	50.4	0.0	0.0
Talbot	43.5	53.2	36.0	48.1	**	0.0
Washington	26.8	34.0	21.5	28.9	0.0	0.0
Wicomico	31.9	36.9	29.4	43.4	**	0.0
Worcester	52.6	67.1	41.1	60.1	**	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 March 4, 2022

Table 63
Number of Deaths for Melanoma by Jurisdiction, Gender, and Race, Maryland, 2015-2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	641	417	224	614	s	<10
Allegany	10	<10	<10	s	<10	<10
Anne Arundel	74	53	21	73	<10	<10
Baltimore City	22	s	<10	20	<10	<10
Baltimore	125	87	38	120	<10	<10
Calvert	11	<10	<10	s	<10	<10
Caroline	<10	<10	<10	<10	<10	<10
Carroll	36	25	11	36	<10	<10
Cecil	18	s	<10	s	<10	<10
Charles	15	<10	<10	s	<10	<10
Dorchester	<10	<10	<10	<10	<10	<10
Frederick	36	20	16	s	<10	<10
Garrett	<10	<10	<10	<10	<10	<10
Harford	39	26	13	39	<10	<10
Howard	21	s	<10	s	<10	<10
Kent	<10	<10	<10	<10	<10	<10
Montgomery	90	53	37	80	<10	<10
Prince George's	35	22	13	26	<10	<10
Queen Anne's	<10	<10	<10	<10	<10	<10
St. Mary's	15	s	<10	s	<10	<10
Somerset	<10	<10	<10	<10	<10	<10
Talbot	<10	<10	<10	<10	<10	<10
Washington	34	18	16	s	<10	<10
Wicomico	11	<10	<10	s	<10	<10
Worcester	12	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, 2015-2019, as of February 1, 2022

Table 64
## Melanoma Age-Adjusted Mortality Rates* by Jurisdiction, Gender, and Race, Maryland, 2015-2019

Jurisdiction	Total	Gender		Race		
		Male	Female	White	Black	Other
Maryland	1.9	2.8	1.1	2.6	0.3	**
Allegany	**	**	**	**	**	**
Anne Arundel	2.2	3.6	1.2	2.7	**	**
Baltimore City	0.7	**	**	1.9	**	**
Baltimore	2.3	3.9	1.2	2.9	**	**
Calvert	**	**	**	**	**	**
Caroline	**	**	**	**	**	**
Carroll	3.7	5.9	**	3.9	**	**
Cecil	**	**	**	**	**	**
Charles	**	**	**	**	**	**
Dorchester	**	**	**	**	**	**
Frederick	2.7	3.5	**	3.1	**	**
Garrett	**	**	**	**	**	**
Harford	2.5	4.0	**	2.9	**	**
Howard	1.1	**	**	1.7	**	**
Kent	**	**	**	**	**	**
Montgomery	1.4	1.9	1.1	1.8	**	**
Prince George's	0.8	1.3	**	2.2	**	**
Queen Anne's	**	**	**	**	**	**
St. Mary's	**	**	**	**	**	**
Somerset	**	**	**	**	**	**
Talbot	**	**	**	**	**	**
Washington	3.5	**	**	3.7	**	**
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, 2015-2019, as of February 1, 2022

Maryland Melanoma Cancer Incidence Rates by Geographical Area: Comparison to U.S. Rate, 2015-2019
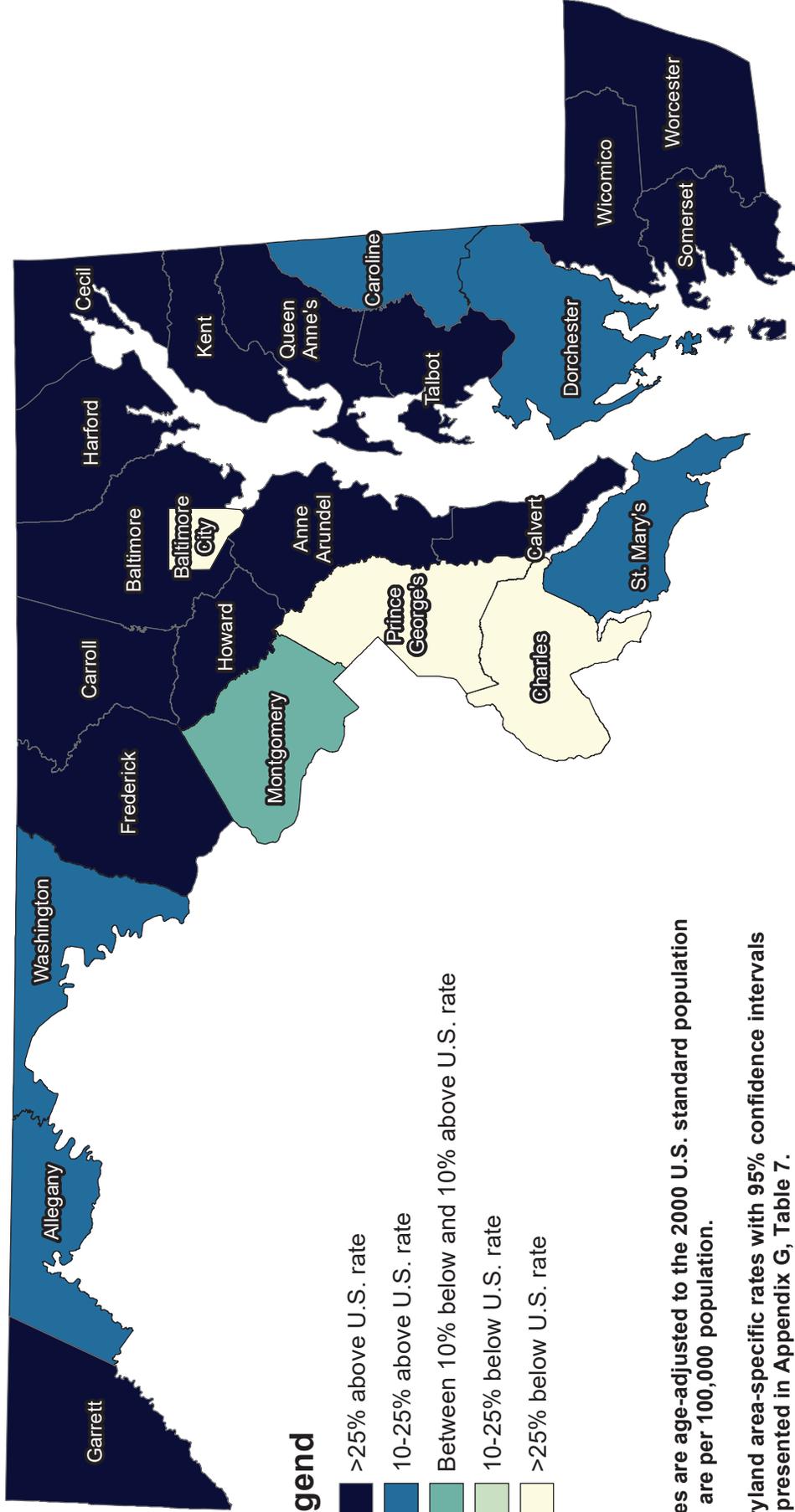
Legend

- >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

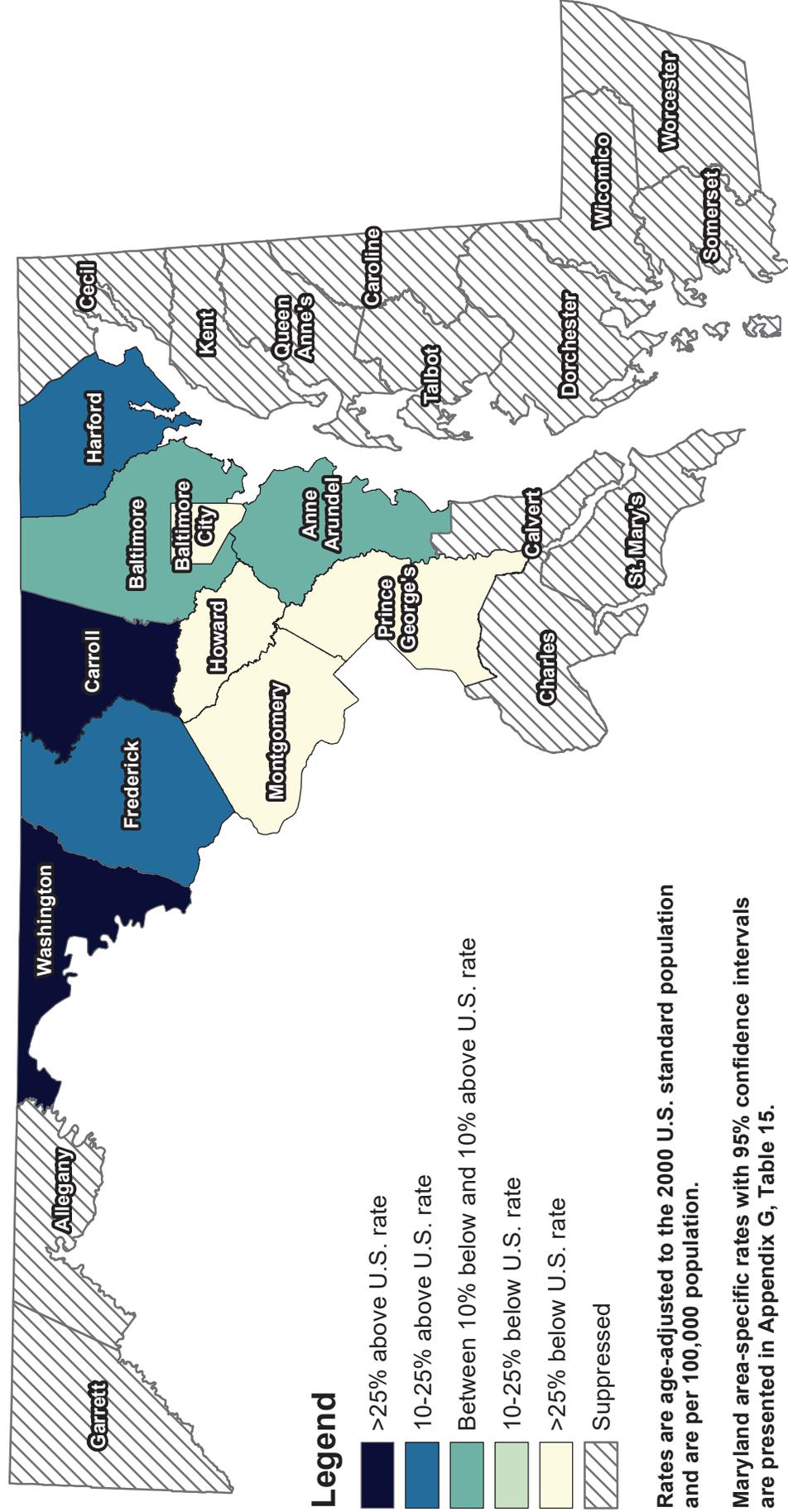Rates are age-adjusted to the 2000 U.S. standard population and are per 100,000 population.

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

U.S. melanoma cancer incidence rate, 2015-2019: 21.5 / 100,000

Maryland melanoma cancer incidence rate, 2015-2019: 25.1 / 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, 2015-2019

Garrett

Allegany

Washington

Frederick

Carroll

Harford

Cecil

Baltimore

Baltimore City

Kent

Queen Anne's

Caroline

Talbot

Howard

Anne Arundel

Montgomery

Prince George's

Dorchester

Wicomico

Worcester

Somerset

Calvert

St. Mary's

Charles

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, 2015-2019: 2.2 / 100,000

Maryland melanoma cancer mortality rate, 2015-2019: 1.9 / 100,000

Sources: CDC WONDER
U.S. SEER, Cancer Statistics Review

Note: Rates based on case counts of 0-19 are suppressed per MDH/CCPC Data Use Policy and Procedures.

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G. Cervical Cancer

Incidence (New Cases)

A total of 225 cases of cervical cancer among women in Maryland were reported in 2019. The age-adjusted incidence rate for cervical cancer in Maryland in 2019 was 6.6 per 100,000 women (5.8-7.6, 95% CI), which is statistically similar to the 2019 U.S. SEER age-adjusted cervical cancer incidence rate of 7.6 per 100,000 women (7.4-7.8, 95% CI).

Mortality (Deaths)

In 2019, a total of 82 women died of cervical cancer in Maryland. The age-adjusted cervical cancer mortality rate in Maryland in 2019 was 2.2 per 100,000 women (1.8-2.8, 95% CI). This rate is statistically similar to the 2019 U.S. cervical cancer mortality rate of 2.2 per 100,000 women (2.1-2.2, 95% CI). Maryland had the 26th highest cervical cancer mortality rate among the states and the District of Columbia for the period from 2015 to 2019.

Table 65

Cervical Cancer Incidence and Mortality Rates

by Race, Maryland (MD) and the United States, 2019

Incidence 2019	*Total**	*White*	*Black*	*Other*
MD New Cases (count)	225	126	86	<6
MD Incidence Rate	6.6	6.5	7.6	**
U.S. SEER Rate	7.6	7.6	8.2	5.8
Mortality 2019	*Total*	*White*	*Black*	*Other*
MD Deaths (count)	82	45	s	<10
MD Mortality Rate	2.2	2.0	2.9	**
U.S. Mortality Rate	2.2	2.1	3.3	1.5

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

* Total includes unknown race and unknown jurisdiction

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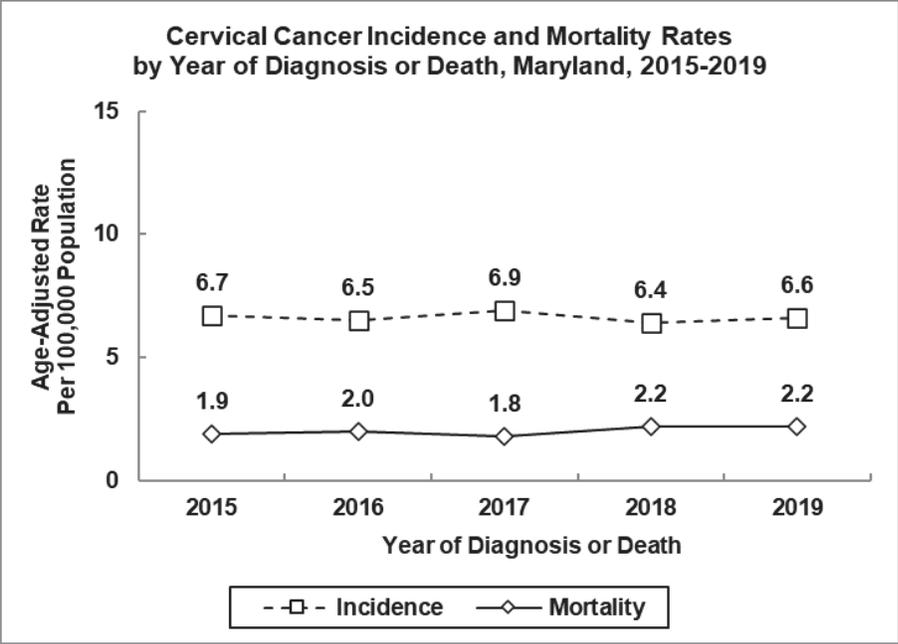
** MD incidence rates based on case counts of 1-15 are suppressed per MDH/MCR Data Use Policy and Procedures; MD mortality rates based on death counts of 0-19 are suppressed per MDH/CCPC Mortality Data Suppression Policy

Source: Maryland Cancer Registry
U.S. SEER, SEER*Stat
NCHS Underlying Cause of Death in CDC WONDER, 2019
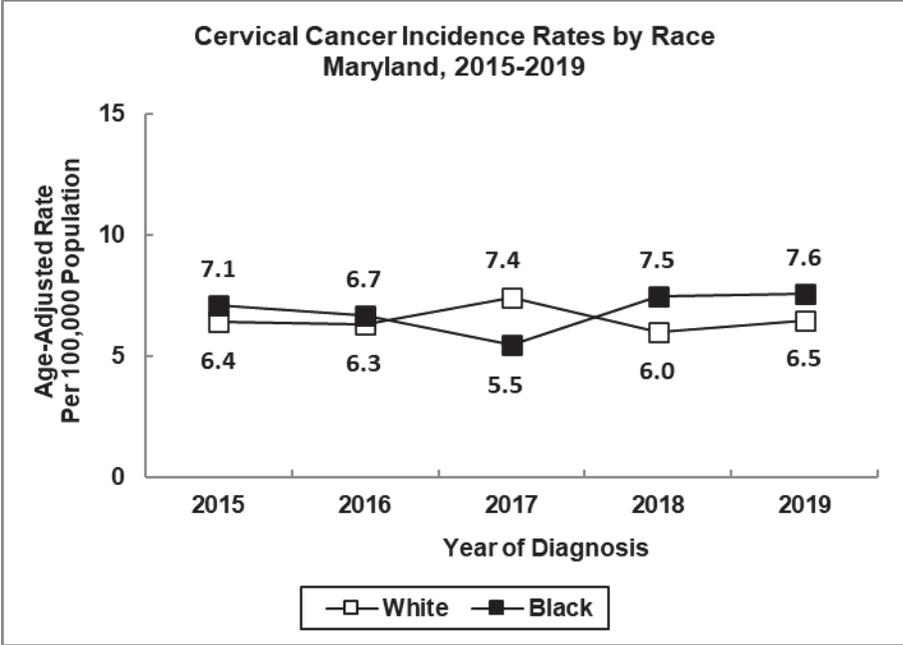U.S. SEER, Cancer Statistics Review

Cervical Cancer Incidence and Mortality Rates by Year of Diagnosis or Death, Maryland, 2015-2019

Age-Adjusted Rate Per 100,000 Population

Year	Incidence	Mortality
2015	6.7	1.9
2016	6.5	2.0
2017	6.9	1.8
2018	6.4	2.2
2019	6.6	2.2

- ☐ - Incidence   ◇ Mortality

Year of Diagnosis or Death

Source: Maryland Cancer Registry
NCHS Underlying Cause of Death in CDC WONDER, 2017-2019
NCHS Compressed Mortality File in CDC WONDER, 2015-2016

Incidence and Mortality Trends

Cervical cancer incidence rates among Maryland women decreased at a rate of 0.5% per year from 2015 to 2019.

Cervical cancer mortality rates increased at a rate of 4.0% per year from 2015 to 2019.

See Appendix H, Tables 1 and 2.

Cervical Cancer Incidence Rates by Race Maryland, 2015-2019

Age-Adjusted Rate Per 100,000 Population

Year	White	Black
2015	6.4	7.1
2016	6.3	6.7
2017	7.4	5.5
2018	6.0	7.5
2019	6.5	7.6

☐ White   ■ Black

Year of Diagnosis

Source: Maryland Cancer Registry

Incidence Trends by Race

From 2015 to 2019, cervical cancer incidence rates among black females increased at a rate of 2.5% per year and decreased at a rate of 0.2% per year among white females.

See Appendix H, Table 3.

## Cervical Cancer Mortality Rates by Race
Maryland, 2015-2019
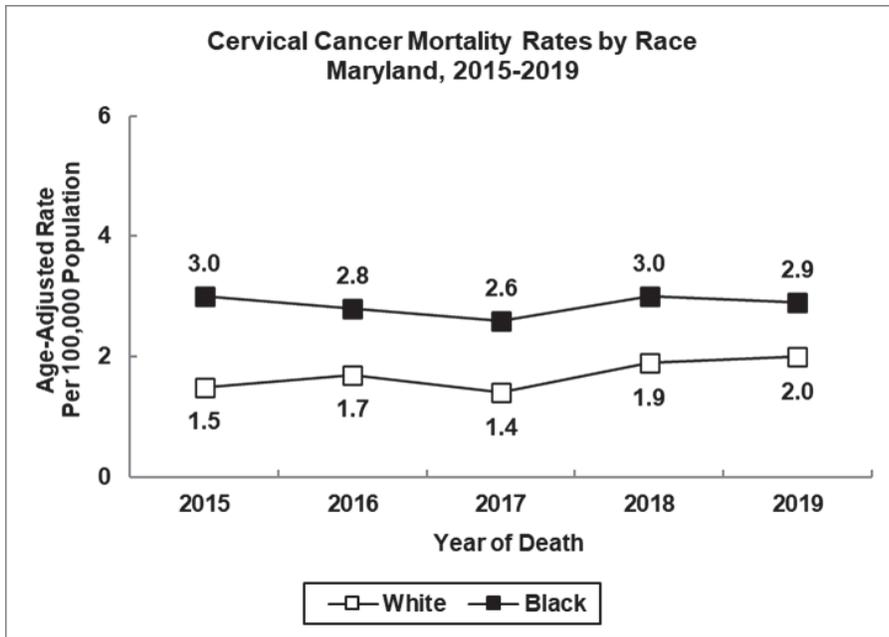
Mortality Trends by Race

From 2015 to 2019, mortality rates increased at a rate of 7.1% per year for white females while rates for black females remained stagnant.

See Appendix H, Table 5.

Source: NCHS Underlying Cause of Death in CDC WONDER, 2017-2019
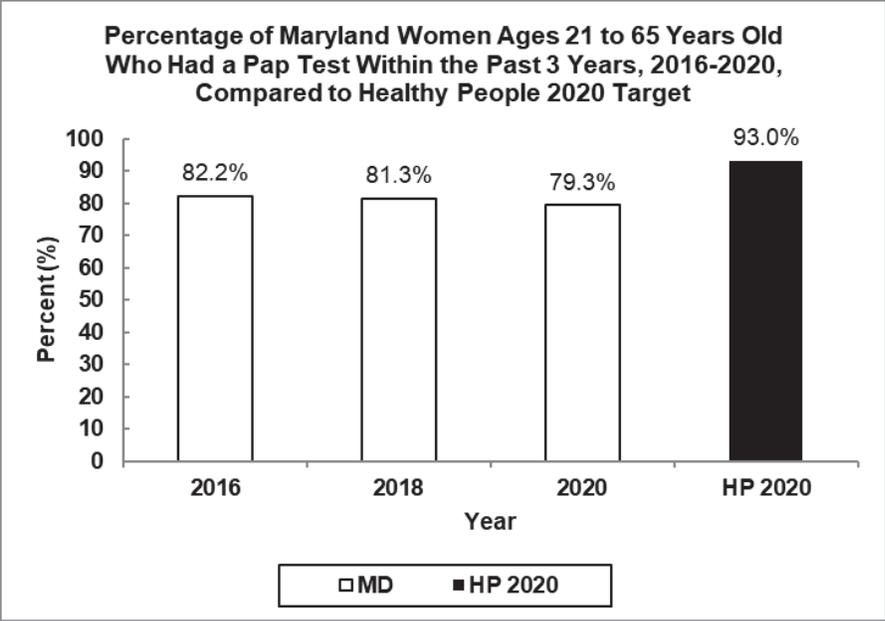NCHS Compressed Mortality File in CDC WONDER, 2015-2016

Cervical Cancer by Stage at Diagnosis
Maryland, 2015-2019
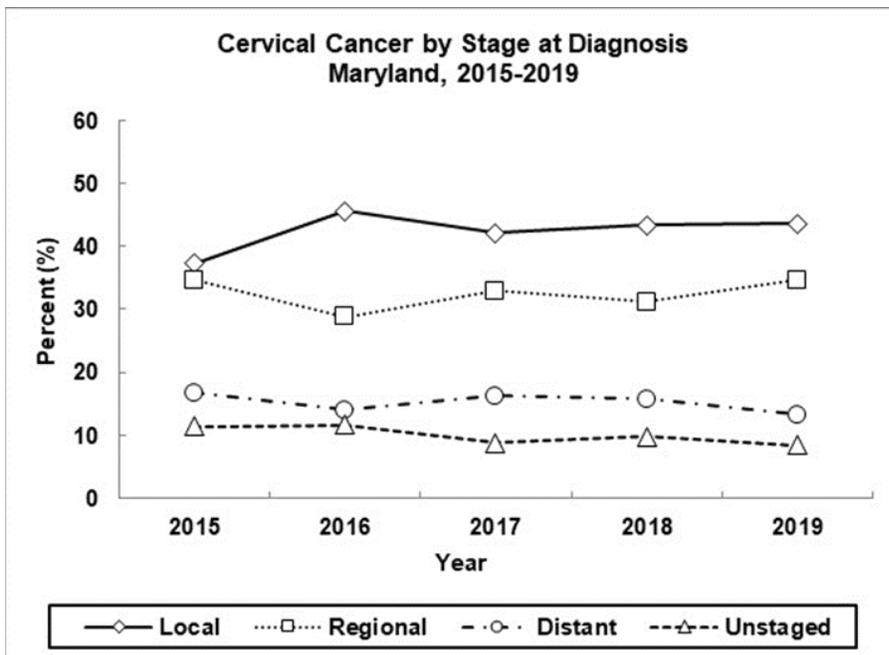
Stage at Diagnosis

In 2019, 43.6% of all cervical cancer cases in Maryland were diagnosed at the local stage, 34.7% were diagnosed at the regional stage, and 13.3% were found at the distant stage. The proportion of cervical cancer cases reported as unstaged decreased in 2019 to 8.4%.

See Appendix I, Table 8.

Source: Maryland Cancer Registry
Note: Due to a methodology change, SEER summary stage 2000 was used in 2016 to 2017, while the derived SEER summary stage 2000 was used in 2015, and SS2018 was used in 2018 and 2019

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

Year	Percent (%)
2016	82.2%
2018	81.3%
2020	79.3%
HP 2020	93.0%

Legend: □ MD ■ HP 2020

Source: Maryland BRFSS 2016, 2018, 2020
Healthy People 2020, U.S. Department of Health and Human Services

Cervical Cancer Screening

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

In 2020, 79.3% of Maryland women ages 21 to 65 years old reported they had a Pap test within the past three years.

Public Health Evidence (adapted from the National Cancer Institute Physician Data Query [PDQ]; the Advisory Committee on Immunization Practices [ACIP]; and the United States Preventive Services Task Force [USPSTF])

Prevention

Avoiding risk factors may help prevent cancer. The following are risk factors for cervical cancer:
- Human Papillomavirus (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 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) 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. HPV vaccines approved by the U.S. Food and Drug Administration have been shown to prevent infection with the types of HPV that cause most cervical cancers.

The ACIP recommends routine HPV vaccination at ages 11 or 12 years old. Vaccination can be given starting at age 9 years. ACIP also recommends catch-up HPV vaccination for all persons through age 26 years who are not adequately vaccinated. ACIP does not recommend catch up vaccination for all adults older than 26 years. Instead, ACIP recommends shared clinical decision-making regarding HPV vaccination for some adults aged 27 through 45 years who are not adequately vaccinated. HPV vaccines are not licensed for use in adults older than 45 years.

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.

Screening women aged 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. An update by the USPSTF is currently in progress at the time of writing this report.

The risks of cervical cancer screening include the following:
- Unnecessary follow-up 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.

Maryland Department of Health Medical Advisory Committee Public Health Intervention for Cervical Cancer

- For average risk individuals, ages 21 to 29 years old, screen for cervical cancer every three years with cervical cytology alone.
- For average risk individuals, ages 30 to 65 years old, screen 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).

Individuals should discuss the 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 Cases for Cervical Cancer by Jurisdiction and Race, Maryland, 2019

Jurisdiction	Total	Race		
		White	Black	Other
Maryland	225	126	86	<6
Allegany	<6	<6	0	0
Anne Arundel	21	18	<6	0
Baltimore City	33	8	23	0
Baltimore	28	16	10	<6
Calvert	0	0	0	0
Caroline	<6	<6	0	0
Carroll	<6	<6	0	0
Cecil	7	7	0	0
Charles	8	<6	<6	0
Dorchester	<6	<6	<6	0
Frederick	6	6	0	0
Garrett	<6	<6	0	0
Harford	<6	<6	<6	0
Howard	14	s	<6	<6
Kent	0	0	0	0
Montgomery	26	13	11	<6
Prince George's	39	9	28	0
Queen Anne's	<6	<6	0	0
St. Mary's	<6	<6	<6	0
Somerset	<6	<6	<6	0
Talbot	<6	<6	0	0
Washington	6	6	0	0
Wicomico	<6	0	<6	0
Worcester	<6	<6	0	<6

Total includes cases reported as unknown race and unknown jurisdiction

<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)

Table 67
Cervical Cancer Age-Adjusted Incidence Rates* by Jurisdiction and Race, Maryland, 2019

Jurisdiction	Total	Race		
		White	**Black**	**Other**
Maryland	6.6	6.5	7.6	**
Allegany	**	**	0.0	0.0
Anne Arundel	6.8	8.1	**	0.0
Baltimore City	9.3	**	9.3	0.0
Baltimore	5.5	5.0	**	**
Calvert	0.0	0.0	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
Frederick	**	**	0.0	0.0
Garrett	**	**	0.0	0.0
Harford	**	**	**	0.0
Howard	**	**	**	**
Kent	0.0	0.0	0.0	0.0
Montgomery	4.0	**	**	**
Prince George's	7.8	**	7.7	0.0
Queen Anne's	**	**	0.0	0.0
St. Mary's	**	**	**	0.0
Somerset	**	**	**	0.0
Talbot	**	**	0.0	0.0
Washington	**	**	0.0	0.0
Wicomico	**	0.0	**	0.0
Worcester	**	**	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 March 4, 2022

Table 68
Number of Deaths for Cervical Cancer by Jurisdiction and Race, Maryland, 2019

Jurisdiction	Total	Race		
		White	Black	Other
Maryland	82	45	s	<10
Allegany	<10	<10	<10	<10
Anne Arundel	<10	<10	<10	<10
Baltimore City	17	<10	12	<10
Baltimore	<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	<10	<10
Queen Anne's	<10	<10	<10	<10
St. 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, 2019, as of February 1, 2022

Table 69
Cervical Cancer Age-Adjusted Mortality Rates* by Jurisdiction and Race, Maryland, 2019

Jurisdiction	Total	Race		
		White	Black	Other
Maryland	2.2	2.0	2.9	**
Allegany	**	**	**	**
Anne Arundel	**	**	**	**
Baltimore City	**	**	**	**
Baltimore	**	**	**	**
Calvert	**	**	**	**
Caroline	**	**	**	**
Carroll	**	**	**	**
Cecil	**	**	**	**
Charles	**	**	**	**
Dorchester	**	**	**	**
Frederick	**	**	**	**
Garrett	**	**	**	**
Harford	**	**	**	**
Howard	**	**	**	**
Kent	**	**	**	**
Montgomery	**	**	**	**
Prince George's	**	**	**	**
Queen Anne's	**	**	**	**
St. 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, 2019, as of February 1, 2022

Table 70
Number of Cases for Cervical Cancer by Jurisdiction and Race, Maryland, 2015-2019

Jurisdiction	Total	Race		
		White	Black	Other
Maryland	1,111	640	379	53
Allegany	13	13	0	0
Anne Arundel	112	85	22	<6
Baltimore City	174	52	113	<6
Baltimore	148	99	40	<6
Calvert	<6	<6	0	0
Caroline	6	<6	<6	0
Carroll	23	21	<6	0
Cecil	28	s	<6	<6
Charles	32	12	17	<6
Dorchester	8	<6	<6	0
Frederick	35	32	<6	<6
Garrett	<6	<6	0	0
Harford	45	40	<6	<6
Howard	43	27	7	8
Kent	<6	<6	0	0
Montgomery	154	82	36	25
Prince George's	170	45	112	<6
Queen Anne's	9	s	<6	0
St. Mary's	15	11	<6	0
Somerset	<6	<6	<6	0
Talbot	9	8	0	0
Washington	29	24	<6	0
Wicomico	22	18	<6	0
Worcester	16	s	<6	<6

Total includes cases reported as unknown race and unknown jurisdiction

<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 March 4, 2022

Table 71
Cervical Cancer Age-Adjusted Incidence Rates* by Jurisdiction and Race, Maryland, 2015-2019

Jurisdiction	Total	Race		
		White	Black	Other
Maryland	6.6	6.5	6.9	3.9
Allegany	**	**	0.0	0.0
Anne Arundel	7.3	7.4	8.2	**
Baltimore City	10.3	10.4	9.8	**
Baltimore	6.3	6.9	5.4	**
Calvert	**	**	0.0	0.0
Caroline	**	**	**	0.0
Carroll	5.0	5.1	**	0.0
Cecil	10.4	10.4	**	**
Charles	7.4	**	8.6	**
Dorchester	**	**	**	0.0
Frederick	5.3	5.8	**	**
Garrett	**	**	0.0	0.0
Harford	6.4	7.0	**	**
Howard	4.9	5.3	**	**
Kent	**	**	0.0	0.0
Montgomery	5.0	4.3	6.2	4.4
Prince George's	6.8	7.9	6.1	**
Queen Anne's	**	**	**	0.0
St. Mary's	**	**	**	0.0
Somerset	**	**	**	0.0
Talbot	**	**	0.0	0.0
Washington	7.6	6.9	**	0.0
Wicomico	8.3	10.8	**	0.0
Worcester	12.9	**	**	**

* 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 March 4, 2022

Table 72
Number of Deaths for Cervical Cancer by Jurisdiction and Race,
Maryland, 2015-2019

Jurisdiction	Total	Race		
		White	Black	Other
Maryland	375	189	163	23
Allegany	<10	<10	<10	<10
Anne Arundel	26	20	<10	<10
Baltimore City	82	s	58	<10
Baltimore	51	32	s	<10
Calvert	<10	<10	<10	<10
Caroline	<10	<10	<10	<10
Carroll	<10	<10	<10	<10
Cecil	<10	<10	<10	<10
Charles	14	<10	<10	<10
Dorchester	<10	<10	<10	<10
Frederick	10	s	<10	<10
Garrett	<10	<10	<10	<10
Harford	<10	<10	<10	<10
Howard	<10	<10	<10	<10
Kent	<10	<10	<10	<10
Montgomery	42	24	<10	s
Prince George's	70	s	50	<10
Queen Anne's	<10	<10	<10	<10
St. Mary's	<10	<10	<10	<10
Somerset	<10	<10	<10	<10
Talbot	<10	<10	<10	<10
Washington	11	<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, 2015-2019, as of February 1, 2022

Table 73
Cervical Cancer Age-Adjusted Mortality Rates* by Jurisdiction and Race, Maryland, 2015-2019

Jurisdiction	Total	Race		
		White	Black	Other
Maryland	2.0	1.7	2.8	1.6
Allegany	**	**	**	**
Anne Arundel	1.5	1.5	**	**
Baltimore City	4.6	4.1	4.7	**
Baltimore	1.9	1.9	**	**
Calvert	**	**	**	**
Caroline	**	**	**	**
Carroll	**	**	**	**
Cecil	**	**	**	**
Charles	**	**	**	**
Dorchester	**	**	**	**
Frederick	**	**	**	**
Garrett	**	**	**	**
Harford	**	**	**	**
Howard	**	**	**	**
Kent	**	**	**	**
Montgomery	1.3	1.2	**	**
Prince George's	2.6	**	2.6	**
Queen Anne's	**	**	**	**
St. 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, 2015-2019, as of February 1, 2022

Maryland Cervical Cancer Incidence Rates by Geographical Area: Comparison to U.S. Rate, 2015-2019
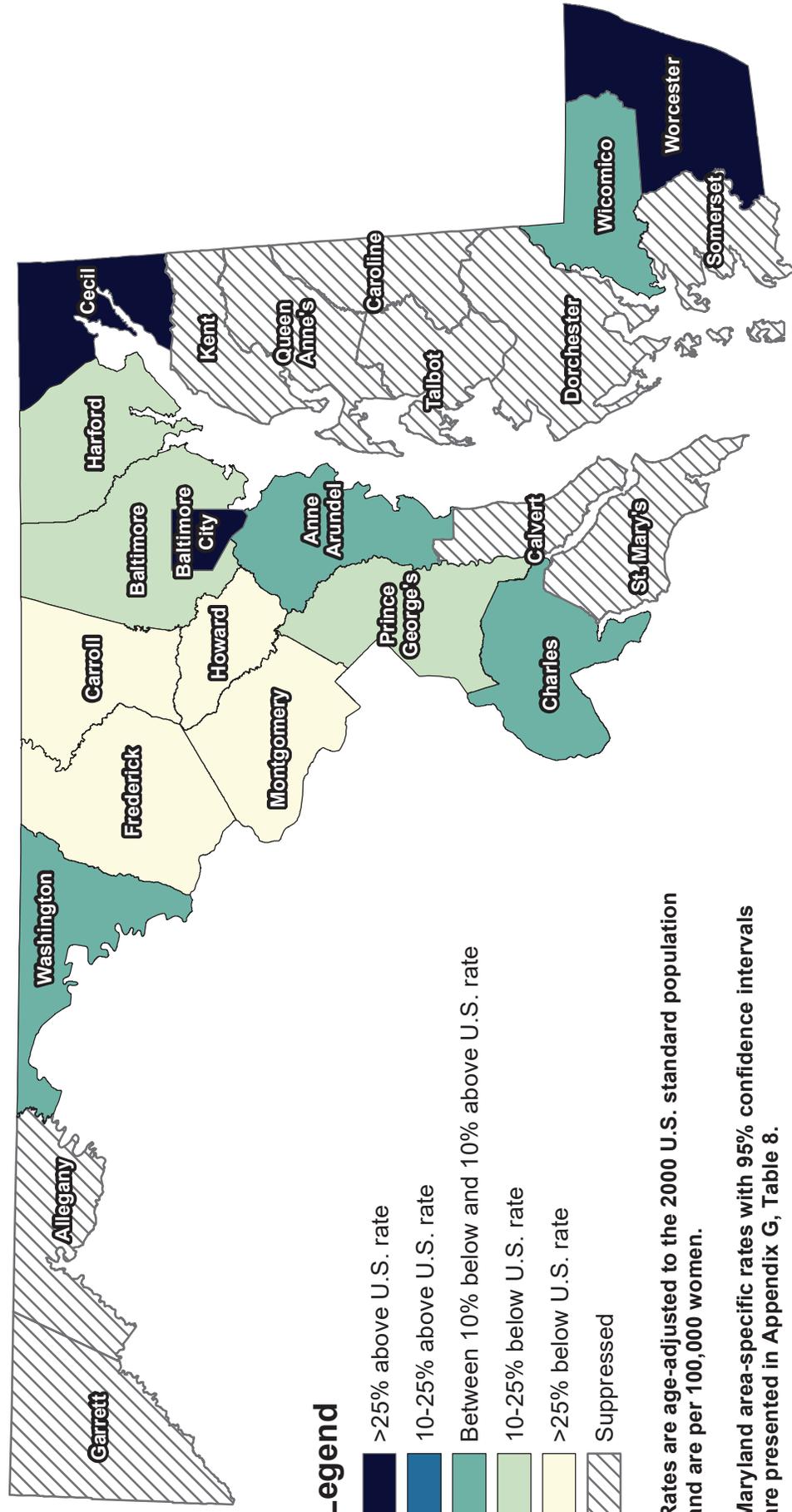
Legend

- >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, 2015-2019: 7.8 / 100,000

Maryland cervical cancer incidence rate, 2015-2019: 6.6 / 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.

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Maryland Cervical Cancer Mortality Rates by Geographical Area: Comparison to U.S. Rate, 2015-2019

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, 2015-2019: 2.2 / 100,000

Maryland cervical cancer mortality rate, 2015-2019: 2.0 / 100,000

Sources: CDC WONDER
U.S. SEER, Cancer Statistics Review

Note: Rates based on case counts of 0-19 are suppressed per MDH/CCPC Data Use Policy and Procedures.

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

Appendix A

Cigarette Restitution Fund
Cancer Report Requirements

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Cigarette Restitution Fund Cancer Report Requirements

The Maryland General Assembly established the 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 Health General Article § 13-1104 requires the MDH to conduct a baseline cancer study (2000) as well as cancer studies at least every other year thereafter.

§13-1103 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 all cancers and 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 CRF Program, CPEST Program, the 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 2022 CRF Cancer Report focuses on the most recent data (2019 and 5-year combined data for the period 2015 to 2019).

Section I of the 2022 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 (2020) 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 (2010 to 2019) in overall cancer incidence and mortality rates for Maryland and the U.S.; 5-year incidence and mortality trends (2015 to 2019) for all cancer sites (overall and by race); and trends in stage for all cancers diagnosed in Maryland (2015 to 2019).

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 2019 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 mortality rates for the 5-year period 2015-2019; 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 2019 and for the 5-year period from 2015 to 2019. 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 2015 to 2019 by geographical area (see Appendix G for map data).

Appendix A describes the statutory 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 2022 Cancer Report and specific data considerations (e.g., data confidentiality and statistical methods). Maryland population estimates for 2019 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 jurisdiction). 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 (2015 to 2019). Appendix I tables show the distribution of cancer stage at diagnosis for all cancer sites and the targeted cancers, by year, from 2015 to 2019. Appendix J tables depict trends in incidence and mortality rates for all cancer sites from 2010 to 2019 in Maryland and the U.S.

Appendix C

Cancer Data Sources, References, and Data Considerations

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2022 Cigarette Restitution Fund (CRF) Cancer Report
Sources, References, and Data Considerations

I. DATA SOURCES

Data and information presented in the 2022 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 2022 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 March 4, 2022, for the diagnosis year 2019.

Maryland cancer reporting law (Health-General Article §18-203 and 18-204) and regulations (Code of Maryland Regulations 10.14.01) 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 NAACCR National Interstate Data Exchange Agreement and at the point of reporting receives abstracts from 27 other states/ jurisdictions, including Alabama, Arkansas, California, Colorado, Delaware, Florida, Georgia, Idaho, Kentucky, Louisiana, Maine, Massachusetts, Mississippi, Montana, Nebraska, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, Tennessee, Utah, Virginia, West Virginia, and the District of Columbia. Information on Maryland residents diagnosed and/or treated for cancer in these jurisdictions is included in this report.

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 (2015-2019), 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 2019 presented in Appendix D were also obtained from SEER*Stat.

B. Cancer Mortality Data

Maryland mortality data for 2019 and the 5-year aggregate data (2015 to 2019) were acquired from 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 intuitive, 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 2017 to 2019, and the 5-year aggregate data (2015 to 2019), presented in this report were obtained from the National Center for Health Statistics (NCHS) Underlying Causes of Death accessed using CDC WONDER. The Underlying Cause of Death data available on WONDER are county-level national mortality and population data spanning the years 1999-2020. Data are based on death certificates for U.S. residents. Each death certificate identifies a single underlying cause of death and demographic data. Single year data from 2015 to 2016 were obtained from

the NCHS CMF. 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 2012 to 2016 for Maryland were obtained from the 1999-2016 CMF using ICD Tenth Revision (ICD-10) codes. The U.S. mortality rates for single year 2010 to 2019 and 5-year aggregate data (2015 to 2019) 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 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 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 can be accessed at https://ibis.health.maryland.gov 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 Risk Behavior Survey

The Maryland Youth Risk Behavior Survey (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 CDC's Youth Tobacco Survey (YTS) measures youth tobacco use behaviors, secondhand smoke exposure, and tobacco-related attitudes and beliefs for youth in middle and high school. Biennial surveillance of youth tobacco use behaviors is mandated by State statute (Maryland Health-General Code Ann. §13–1003 and §13–1004). To comply with these statutes, the Department implemented the YTS as the baseline survey in 2000 for surveillance of tobacco use behaviors for youth in middle and high school. The YTS was then conducted biennially in the fall of even years at a jurisdiction-level. In 2013, Maryland combined the YRBS and YTS (YRBS/YTS), utilizing the YRBS survey methodology, to create one survey tool to reduce the survey burden on schools and students. This survey tool is disseminated to selected schools by the Department with assistance from Maryland State Department of Education (MSDE). All public middle schools and high schools in Maryland selected to participate in the biennial Maryland YRBS/YTS are mandated by statute to do so; however, parents may opt their child out of the survey by signing and returning the parental opt out form. Maryland data results for 2014-2015, 2016-2017, and 2018-2019 can be accessed at https://phpa.health.maryland.gov/ccdpc/Reports/Pages/YRBS-Main.aspx.

3. Maryland Youth Pandemic Behavior Survey

The 2021 Maryland Youth Pandemic Behavior Survey (YPBS-21) was administered in place of the YRBS due to safety concerns and remote learning during the 2020-2021 school year. The Maryland Department of Health recognized the pandemic would have an impact on students and their families, making it as important to collect data on youth risk behaviors. The YPBS-21 was created to close the gap in youth risk behavior surveillance in Maryland. A total of 608 validated and completed surveys from high school students recruited through social media ads were submitted between May and June of 2021. The YPBS-21 Detailed Report contains the results of the responses to the survey questions that were analyzed and weighted to match the profile of high school students in Maryland based on their age, gender, grade level and race/ethnicity. This report can be accessed at https://health.maryland.gov/phpa/ohpetup/Pages/tob_reports.aspx.

4. Healthy People 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 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 2016-2020 MCCCP was the coordinated effort of 83 stakeholders and several MDH offices and centers, with the aim of developing 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 NCI PDQ cancer information summaries are comprehensive, evidence-based summaries on topics that cover adult and pediatric cancer treatment, supportive and palliative care, screening, prevention, genetics, and integrative, alternative, and complementary therapies. Information provided in the individual cancer chapters under the section "Public Health Evidence" was taken primarily from the NCI PDQ Patient Version websites. Links to the Health Professional version of the NCI PDQ are available below. Contents of the NCI PDQ are often quoted verbatim and sometimes paraphrased, and NCI PDQ definitions are included in the Glossary. 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.

The NCI PDQ Editorial Boards are responsible for producing and maintaining comprehensive, evidence-based cancer information summaries. There are six NCI PDQ Editorial Boards, and each board is comprised of experts in cancer-related specialties. Each Editorial Board meets regularly to review and update the cancer information summaries on the basis of newly published research results. 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:
PDQ
    http://www.cancer.gov/cancertopics/pdq

Levels of Evidence
    http://www.cancer.gov/publications/pdq/levels-evidence/screening-prevention

Prevention and Screening
    http://www.cancer.gov/cancertopics/pdq/prevention
    http://www.cancer.gov/cancertopics/pdq/screening

Lung Cancer
Patient Version
PDQ® Screening and Prevention Editorial Board. PDQ Lung Cancer Prevention. Bethesda, MD: National Cancer Institute. Updated 8/4/2021. Available at https://www.cancer.gov/types/lung/patient/lung-prevention-pdq. Accessed 9/1/2022. [PMID: 26389497]

PDQ® Screening and Prevention Editorial Board. PDQ Lung Cancer Screening. Bethesda, MD: National Cancer Institute. Updated 7/30/2021. Available at

https://www.cancer.gov/types/lung/patient/lung-screening-pdq. Accessed 9/1/2022.
[PMID: 26389428]

Health Professional Version
PDQ Lung Cancer Prevention – available at https://www.cancer.gov/types/lung/hp/lung-prevention-pdq

PDQ Lung Cancer Screening – available at https://www.cancer.gov/types/lung/hp/lung-screening-pdq

Colorectal Cancer
Patient Version
PDQ® Screening and Prevention Editorial Board. PDQ Colorectal Cancer Prevention. Bethesda, MD: National Cancer Institute. Updated 6/10/2022. Available at https://www.cancer.gov/types/colorectal/patient/colorectal-prevention-pdq. Accessed 9/1/2022. [PMID: 26389376]

PDQ® Screening and Prevention Editorial Board. PDQ Colorectal Cancer Screening. Bethesda, MD: National Cancer Institute. Updated 6/10/2022. Available at https://www.cancer.gov/types/colorectal/patient/colorectal-screening-pdq. Accessed 9/1/2022. [PMID: 26389230]

Health Professional Version
PDQ Colorectal Cancer Prevention – available at https://www.cancer.gov/types/colorectal/hp/colorectal-prevention-pdq

PDQ Colorectal Cancer Screening – available at https://www.cancer.gov/types/colorectal/hp/colorectal-screening-pdq

Female Breast Cancer
Patient Version
PDQ® Screening and Prevention Editorial Board. PDQ Breast Cancer Prevention. Bethesda, MD: National Cancer Institute. Updated 12/10/2021. Available at https://www.cancer.gov/types/breast/patient/breast-prevention-pdq. Accessed 9/6/2022. [PMID: 26389410]

PDQ® Screening and Prevention Editorial Board. PDQ Breast Cancer Screening. Bethesda, MD: National Cancer Institute. Updated 8/4/2021. Available at https://www.cancer.gov/types/breast/patient/breast-screening-pdq. Accessed 9/6/2022. [PMID: 26389160]

Health Professional Version
PDQ Breast Cancer Prevention – available at https://www.cancer.gov/types/breast/hp/breast-prevention-pdq

PDQ Breast Cancer 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 5/6/2022. Available at
https://www.cancer.gov/types/prostate/patient/prostate-prevention-pdq. Accessed
9/6/2022. [PMID: 26389260]

PDQ® Screening and Prevention Editorial Board. PDQ Prostate Cancer Screening.
Bethesda, MD: National Cancer Institute. Updated 5/6/2022. Available at
https://www.cancer.gov/types/prostate/patient/prostate-screening-pdq. Accessed
9/8/2022. [PMID: 26389306]

Health Professional Version
PDQ Prostate Cancer Prevention – available at
https://www.cancer.gov/types/prostate/hp/prostate-prevention-pdq

PDQ Prostate Cancer 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, Oropharyngeal,
Hypopharyngeal, and Laryngeal Cancers Prevention. Bethesda, MD: National Cancer
Institute. Updated 10/8/2021. Available at https://www.cancer.gov/types/head-and-
neck/patient/oral-prevention-pdq. Accessed 8/1/2022. [PMID: 26389257]

PDQ® Screening and Prevention Editorial Board. PDQ Oral Cavity and Nasopharyngeal
Cancers Screening. Bethesda, MD: National Cancer Institute. Updated 6/10/2022.
Available at https://www.cancer.gov/types/head-and-neck/patient/oral-screening-pdq.
Accessed 8/1/2022. [PMID: 26389441]

Health Professional Version
PDQ Oral Cavity, Oropharyngeal, Hypopharyngeal, and Laryngeal Cancers Prevention –
available at https://www.cancer.gov/types/head-and-neck/hp/oral-prevention-pdq

PDQ Oral Cavity and Nasopharyngeal Cancers Screening – available at
https://www.cancer.gov/types/head-and-neck/hp/oral-screening-pdq

<u>Skin Cancer</u>
Patient Version
PDQ® Screening and Prevention Editorial Board. PDQ Skin Cancer Prevention.
Bethesda, MD: National Cancer Institute. Updated 10/18/2021. Available at

https://www.cancer.gov/types/skin/patient/skin-prevention-pdq. Accessed 8/3/2022. [PMID: 26389434]

PDQ® Screening and Prevention Editorial Board. PDQ Skin Cancer Screening. Bethesda, MD: National Cancer Institute. Updated 6/10/2022. Available at https://www.cancer.gov/types/skin/patient/skin-screening-pdq. Accessed 8/3/2022. [PMID: 26389182]

Health Professional Version
PDQ Skin Cancer Prevention – available at https://www.cancer.gov/types/skin/hp/skin-prevention-pdq

PDQ Skin Cancer 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 9/28/2021. Available at https://www.cancer.gov/types/cervical/patient/cervical-prevention-pdq. Accessed 8/3/2022. [PMID: 26389339]

PDQ® Screening and Prevention Editorial Board. PDQ Cervical Cancer Screening. Bethesda, MD: National Cancer Institute. Updated 6/10/2022. Available at https://www.cancer.gov/types/cervical/patient/cervical-screening-pdq. Accessed 8/3/2022. [PMID: 26389215]

Health Professional Version
PDQ Cervical Cancer Prevention – available at https://www.cancer.gov/types/cervical/hp/cervical-prevention-pdq

PDQ Cervical Cancer 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 Medical Advisory Committees to formulate guidelines for cancer screening, diagnosis, and/or treatment for use by programs funded by the Maryland Department of Health.

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
https://www.uspreventiveservicestaskforce.org/uspstf/

Lung Cancer
Final Recommendation Statement: Lung Cancer: Screening. U.S. Preventive Services
Task Force. March 9, 2021.
https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/lung-cancer-screening. Accessed 9/2/2022.

Colorectal Cancer
Final Recommendation Statement: Colorectal Cancer: Screening. U.S. Preventive
Services Task Force. May 18, 2021.
https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/colorectal-cancer-screening. Accessed 9/2/2022.

Female Breast Cancer
Final Recommendation Summary: Breast Cancer: Screening. U.S. Preventive Services
Task Force. January 11, 2016.
https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/breast-cancer-screening. Accessed 9/6/2022.

Prostate Cancer
Final Recommendation Statement: Prostate Cancer: Screening. U.S. Preventive Services
Task Force. May 8, 2018.
https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/prostate-cancer-screening. Accessed 9/8/2022.

Oral Cancer
Final Recommendation Statement: Oral Cancer: Screening. U.S. Preventive Services
Task Force. November 15, 2013.
https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/oral-cancer-screening. Accessed 8/1/2022.

Oral Cancer Screening. Maryland Department of Health. August 2018.
https://health.maryland.gov/phpa/oralhealth/Documents/OralCancerEnglish.pdf.
Accessed 8/1/2022.

Skin Cancer
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Task Force. July 26, 2016.
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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 and ensures they are secured from unauthorized access and disclosure. The MCR manages and releases cancer information in accordance with Health-General Article, §§18-203 – 204 and §4-101 et seq., Annotate Code of Maryland, and Code of Maryland Regulations 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 2019 were calculated using Maryland resident cancer cases diagnosed from January 1 through December 31 of that year, and reported to the MCR as of March 4, 2022. The individual year mortality data for 2019 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 2015-2019 data. Corresponding mortality rates were extracted from CDC WONDER, as 5-year combined data from 2015 to 2019.

Age-adjustment, also called age-standardization, is a tool used to control for different and changing age distributions of populations in the U.S. (by 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., national, 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% CI 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 2019 lung cancer incidence rate was 51.2 per 100,000, with a 95% confidence interval of 49.6-52.9. The 2019 U.S. SEER age-adjusted lung cancer incidence rate was 49.0 per 100,000 population, with a 95% confidence interval of 48.7-49.3. 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 the National Institutes of Health (NIH) National Cancer Institute (NCI) State Cancer Profiles death rates tables. 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 (2015-2019) 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 (2015-2019) U.S. rate was used as a basis for comparison with rates for Maryland jurisdictions. 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 U.S. 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 2019 and 5-year aggregate data (2015 to 2019) obtained from SEER CSR only report U.S. mortality for whites and blacks.

H. Healthy People 2020 Targets

In the 2020 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 is 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, 2019 (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, 2015-2019 (Appendix G)
- Trends in Cancer Incidence and Mortality Rates in Maryland by Cancer Site, Race or Gender, and Year, 2015-2019 (Appendix H)
- Trends in Cancer Stage of Disease at Diagnosis in Maryland by Cancer Site and Year, 2015-2019 (Appendix I)
- Trends in All Cancer Sites Incidence and Mortality Rates in Maryland and U.S. by Year, 2010-2019 (Appendix J)

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Appendix D

Maryland Population Estimates, 2019

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Maryland Population Estimates by Jurisdiction, 2019

Jurisdiction	Total All Genders	Total Males	Total Females	Total Whites	White Males	White Females	Total Blacks	Black Males	Black Females
Maryland	6,054,954	2,932,474	3,122,480	3,611,109	1,783,501	1,827,608	1,952,942	913,398	1,039,544
Baltimore Metropolitan Area	2,753,318	1,325,381	1,427,937	1,684,910	828,527	856,383	869,821	400,740	469,081
Anne Arundel County	579,895	286,840	293,055	436,304	217,442	218,862	111,704	54,328	57,376
Baltimore City	594,601	278,520	316,081	191,567	94,773	96,794	381,159	173,229	207,930
Baltimore County	828,503	392,009	436,494	507,490	244,700	262,790	259,609	117,322	142,287
Carroll County	168,774	83,534	85,240	156,645	77,279	79,366	7,323	4,036	3,287
Harford County	255,594	125,067	130,527	205,104	100,794	104,310	40,225	19,420	20,805
Howard County	325,951	159,411	166,540	187,800	93,539	94,261	69,801	32,405	37,396
Eastern Shore Region	457,537	223,024	234,513	362,891	176,665	186,226	82,896	40,600	42,296
Caroline County	33,509	16,385	17,124	27,575	13,502	14,073	5,086	2,403	2,683
Cecil County	103,092	51,137	51,955	92,380	45,743	46,637	8,427	4,296	4,131
Dorchester County	31,864	15,100	16,764	21,575	10,346	11,229	9,652	4,460	5,192
Kent County	19,426	9,338	10,088	16,008	7,718	8,290	3,046	1,432	1,614
Queen Anne's County	50,585	25,109	25,476	46,062	22,822	23,240	3,443	1,773	1,670
Somerset County	25,609	13,798	11,811	14,090	7,222	6,868	11,067	6,345	4,722
Talbot County	37,186	17,593	19,593	31,310	14,830	16,480	5,045	2,370	2,675
Wicomico County	104,005	49,242	54,763	69,970	33,135	36,835	29,944	14,144	15,800
Worcester County	52,261	25,322	26,939	43,921	21,347	22,574	7,186	3,377	3,809
National Capital Area	1,962,691	946,354	1,016,337	893,378	446,639	446,739	825,807	383,433	442,374
Montgomery County	1,051,129	508,428	542,701	644,721	317,097	327,624	221,126	103,539	117,587
Prince George's County	911,562	437,926	473,636	248,657	129,542	119,115	604,681	279,894	324,787
Northwest Region	511,251	256,134	255,117	432,154	212,974	219,180	57,637	32,845	24,792
Allegany County	70,527	36,727	33,800	63,112	31,420	31,692	6,346	4,812	1,534
Frederick County	260,609	128,259	132,350	214,226	105,277	108,949	30,140	15,176	14,964
Garrett County	29,049	14,354	14,695	28,415	14,013	14,402	426	266	160
Washington County	151,066	76,794	74,272	126,401	62,264	64,137	20,725	12,591	8,134
Southern Region	370,157	181,581	188,576	237,776	118,696	119,080	116,781	55,780	61,001
Calvert County	92,660	45,836	46,824	76,639	38,080	38,559	13,162	6,430	6,732
Charles County	163,733	78,889	84,844	70,307	34,819	35,488	85,235	40,324	44,911
St. Mary's County	113,764	56,856	56,908	90,830	45,797	45,033	18,384	9,026	9,358

Source: SEER*Stat static data as of March 4, 2022

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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, 2015-2019

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Appendix G

Table 1: All Cancer Sites Incidence
Age-Adjusted Incidence Rates
by Geographical Area, Maryland, 2015-2019

Geographical Area	Incidence Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	450.4	448.1	452.6
Baltimore Metropolitan Area ^	468.0	464.2	471.8
Anne Arundel	457.1	449.7	464.6
Baltimore City	483.8	476.1	491.5
Baltimore	482.2	476.1	488.4
Carroll	487.7	474.1	501.5
Harford	506.7	495.3	518.3
Howard	404.0	394.5	413.6
Eastern Shore Region	498.3	490.1	506.5
Caroline	468.0	438.3	499.3
Cecil	520.4	501.9	539.4
Dorchester	494.2	464.6	525.3
Kent	470.6	434.6	509.3
Queen Anne's	490.3	465.8	515.9
Somerset	510.5	474.7	548.3
Talbot	467.7	442.0	494.6
Wicomico	513.3	494.8	532.4
Worcester	511.7	488.6	535.8
National Capital Area	391.1	387.4	394.9
Montgomery	379.7	374.7	384.7
Prince George's	405.7	399.9	411.6
Northwest Region	465.3	457.6	473.1
Allegany	521.0	500.4	542.4
Frederick	449.0	437.9	460.3
Garrett	422.4	394.2	452.3
Washington	471.9	458.0	486.2
Southern Region	441.3	432.0	450.9
Calvert	441.9	424.0	460.5
Charles	441.5	427.1	456.3
St. Mary's	440.8	424.0	458.1

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

^ Area rate does not include Baltimore City

Source: Maryland Cancer Registry

Table 2: Lung and Bronchus Cancer Incidence
Age-Adjusted Incidence Rates
by Geographical Area, Maryland, 2015-2019

Geographical Area	Incidence Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	53.2	52.4	54.0
Baltimore Metropolitan Area ^	57.4	56.1	58.7
Anne Arundel	57.4	54.8	60.1
Baltimore City	78.0	75.0	81.1
Baltimore	63.7	61.6	65.9
Carroll	53.8	49.6	58.4
Harford	64.6	60.7	68.8
Howard	34.9	32.1	37.9
Eastern Shore Region	66.8	64.0	69.8
Caroline	58.1	48.3	69.5
Cecil	86.2	79.0	94.0
Dorchester	57.6	48.4	68.2
Kent	58.6	47.3	72.4
Queen Anne's	55.8	48.0	64.5
Somerset	77.7	64.7	92.9
Talbot	45.9	38.9	54.1
Wicomico	79.6	72.5	87.1
Worcester	60.8	53.8	68.7
National Capital Area	34.7	33.6	35.8
Montgomery	29.7	28.3	31.1
Prince George's	41.2	39.3	43.1
Northwest Region	57.9	55.2	60.6
Allegany	78.9	71.5	87.0
Frederick	47.3	43.8	51.0
Garrett	41.8	34.0	51.3
Washington	66.3	61.2	71.6
Southern Region	56.6	53.2	60.1
Calvert	53.5	47.4	60.3
Charles	52.3	47.3	57.6
St. Mary's	65.5	59.0	72.5

* 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, 2015-2019

Geographical Area	Incidence Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	35.8	35.2	36.5
Baltimore Metropolitan Area ^	36.6	35.5	37.7
Anne Arundel	35.0	32.9	37.1
Baltimore City	39.4	37.2	41.7
Baltimore	37.2	35.5	39.0
Carroll	39.6	35.8	43.7
Harford	42.4	39.1	45.9
Howard	30.7	28.1	33.5
Eastern Shore Region	38.9	36.6	41.3
Caroline	48.0	38.5	59.3
Cecil	40.4	35.3	46.0
Dorchester	52.1	42.5	63.3
Kent	32.4	24.1	43.4
Queen Anne's	37.8	31.0	45.7
Somerset	40.6	30.9	52.7
Talbot	32.5	25.5	41.0
Wicomico	39.2	34.1	44.9
Worcester	35.6	29.7	42.6
National Capital Area	32.2	31.1	33.3
Montgomery	30.1	28.7	31.6
Prince George's	35.0	33.3	36.8
Northwest Region	37.3	35.1	39.6
Allegany	45.4	39.4	52.1
Frederick	33.3	30.3	36.5
Garrett	42.6	34.0	53.0
Washington	37.7	33.8	41.8
Southern Region	36.6	34.0	39.5
Calvert	38.1	32.9	43.9
Charles	36.8	32.7	41.3
St. Mary's	35.5	30.9	40.7

* 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 4: Female Breast Cancer Incidence
Age-Adjusted Incidence Rates
by Geographical Area, Maryland, 2015-2019

Geographical Area	Incidence Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	132.7	131.0	134.4
Baltimore Metropolitan Area ^	140.4	137.5	143.3
Anne Arundel	133.6	128.1	139.3
Baltimore City	125.9	120.6	131.3
Baltimore	144.3	139.7	149.1
Carroll	136.5	126.6	147.2
Harford	145.6	137.2	154.4
Howard	138.1	130.5	145.9
Eastern Shore Region	128.9	122.9	135.0
Caroline	113.7	94.1	136.5
Cecil	121.8	109.5	135.2
Dorchester	124.6	104.0	148.3
Kent	128.5	100.4	162.6
Queen Anne's	133.6	115.5	153.9
Somerset	149.6	121.0	183.3
Talbot	138.3	117.9	161.5
Wicomico	125.9	113.3	139.5
Worcester	140.5	122.7	160.3
National Capital Area	127.0	124.1	129.9
Montgomery	125.5	121.6	129.5
Prince George's	129.0	124.7	133.5
Northwest Region	135.7	129.8	141.8
Allegany	137.2	121.6	154.4
Frederick	134.7	126.3	143.5
Garrett	124.5	103.8	148.6
Washington	137.5	126.8	148.9
Southern Region	123.3	116.6	130.3
Calvert	127.5	114.2	142.0
Charles	123.1	113.0	133.8
St. Mary's	120.1	108.1	133.1

* 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, 2015-2019

Geographical Area	Incidence Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	133.0	131.3	134.8
Baltimore Metropolitan Area ^	124.1	121.3	126.9
Anne Arundel	112.6	107.4	118.0
Baltimore City	141.0	134.9	147.3
Baltimore	131.1	126.6	135.8
Carroll	125.5	116.2	135.5
Harford	121.9	114.1	130.1
Howard	126.9	119.5	134.7
Eastern Shore Region	126.9	121.3	132.6
Caroline	121.0	100.7	144.5
Cecil	114.6	103.0	127.2
Dorchester	132.0	111.8	155.3
Kent	127.4	103.7	156.3
Queen Anne's	130.4	114.0	148.9
Somerset	118.1	95.5	144.9
Talbot	143.4	124.5	165.0
Wicomico	136.3	122.8	150.8
Worcester	122.9	108.9	138.7
National Capital Area	131.7	128.5	134.9
Montgomery	115.7	111.8	119.7
Prince George's	152.1	146.9	157.4
Northwest Region	108.1	103.0	113.5
Allegany	120.0	106.8	134.6
Frederick	109.1	101.4	117.3
Garrett	95.4	77.8	116.4
Washington	104.4	95.4	114.0
Southern Region	128.8	121.7	136.2
Calvert	122.2	109.4	136.3
Charles	154.6	142.4	167.6
St. Mary's	100.5	89.5	112.5

* 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

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Table 6: Oral Cancer Incidence
Age-Adjusted Incidence Rates
by Geographical Area, Maryland, 2015-2019

Geographical Area	Incidence Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	11.2	10.8	11.5
Baltimore Metropolitan Area ^	11.7	11.1	12.3
Anne Arundel	13.1	11.9	14.4
Baltimore City	11.5	10.3	12.7
Baltimore	11.6	10.7	12.6
Carroll	12.7	10.7	15.0
Harford	11.7	10.1	13.5
Howard	8.5	7.2	10.0
Eastern Shore Region	13.9	12.6	15.3
Caroline	11.9	7.8	17.7
Cecil	14.2	11.3	17.6
Dorchester	11.4	7.7	16.5
Kent	18.1	11.8	27.2
Queen Anne's	11.9	8.5	16.4
Somerset	12.5	7.5	19.9
Talbot	14.7	10.7	20.1
Wicomico	14.6	11.6	18.2
Worcester	13.7	10.3	18.1
National Capital Area	8.6	8.0	9.2
Montgomery	8.8	8.1	9.6
Prince George's	8.3	7.5	9.2
Northwest Region	13.3	12.1	14.7
Allegany	17.2	13.5	21.6
Frederick	12.5	10.7	14.5
Garrett	10.2	6.0	16.4
Washington	14.0	11.8	16.7
Southern Region	13.8	12.2	15.5
Calvert	11.5	8.9	14.7
Charles	14.0	11.6	16.8
St. Mary's	15.7	12.7	19.2

* 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

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Table 7: Melanoma Incidence
Age-Adjusted Incidence Rates
by Geographical Area, Maryland, 2015-2019

Geographical Area	Incidence Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	25.1	24.6	25.6
Baltimore Metropolitan Area ^	34.0	33.0	35.1
Anne Arundel	36.3	34.2	38.5
Baltimore City	11.4	10.2	12.7
Baltimore	30.2	28.7	31.8
Carroll	42.9	38.8	47.4
Harford	40.5	37.3	44.0
Howard	29.4	26.9	32.1
Eastern Shore Region	38.2	35.9	40.6
Caroline	24.8	18.2	33.1
Cecil	34.7	29.9	40.0
Dorchester	23.9	17.5	32.0
Kent	39.1	28.7	52.4
Queen Anne's	50.9	42.9	60.0
Somerset	33.5	24.8	44.4
Talbot	43.5	35.8	52.6
Wicomico	31.9	27.2	37.2
Worcester	52.6	45.1	61.0
National Capital Area	13.7	13.0	14.4
Montgomery	19.8	18.7	21.0
Prince George's	5.9	5.2	6.7
Northwest Region	28.2	26.3	30.2
Allegany	23.8	19.3	29.0
Frederick	29.6	26.8	32.6
Garrett	31.6	24.0	41.1
Washington	26.8	23.6	30.4
Southern Region	23.9	21.7	26.2
Calvert	34.4	29.4	40.0
Charles	15.2	12.7	18.2
St. Mary's	26.4	22.3	31.1

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

^ Area rate does not include Baltimore City

Source: Maryland Cancer Registry

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Table 8: Cervical Cancer Incidence
Age-Adjusted Incidence Rates
by Geographical Area, Maryland, 2015-2019

Geographical Area	Incidence Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	6.6	6.2	7.1
Baltimore Metropolitan Area ^	6.3	5.6	7.0
Anne Arundel	7.3	6.0	8.8
Baltimore City	10.3	8.7	12.0
Baltimore	6.3	5.2	7.4
Carroll	5.0	3.1	7.7
Harford	6.4	4.6	8.6
Howard	4.9	3.6	6.7
Eastern Shore Region	8.9	7.2	10.9
Caroline	**	**	**
Cecil	10.4	6.8	15.3
Dorchester	**	**	**
Kent	**	**	**
Queen Anne's	**	**	**
Somerset	**	**	**
Talbot	**	**	**
Wicomico	8.3	5.1	12.8
Worcester	12.9	6.8	21.9
National Capital Area	5.8	5.2	6.5
Montgomery	5.0	4.2	5.9
Prince George's	6.8	5.8	8.0
Northwest Region	6.3	5.0	7.9
Allegany	**	**	**
Frederick	5.3	3.6	7.4
Garrett	**	**	**
Washington	7.6	5.0	11.0
Southern Region	5.2	3.9	6.9
Calvert	**	**	**
Charles	7.4	5.0	10.5
St. Mary's	**	**	**

* 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, 2015-2019

Geographical Area	Mortality Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	151.3	150.0	152.6
Baltimore Metropolitan Area ^	152.8	150.7	155.0
Anne Arundel	151.9	147.6	156.3
Baltimore City	196.3	191.4	201.1
Baltimore	164.0	160.5	167.5
Carroll	151.9	144.4	159.4
Harford	158.2	151.8	164.6
Howard	118.5	113.2	123.8
Eastern Shore Region	167.9	163.3	172.5
Caroline	166.2	148.4	183.9
Cecil	185.5	174.3	196.6
Dorchester	187.6	169.9	205.2
Kent	137.9	120.2	155.5
Queen Anne's	148.4	135.3	161.5
Somerset	184.3	162.9	205.7
Talbot	123.7	111.8	135.6
Wicomico	190.3	179.1	201.5
Worcester	164.0	151.9	176.2
National Capital Area	129.5	127.3	131.7
Montgomery	113.9	111.2	116.6
Prince George's	149.4	145.8	153.0
Northwest Region	150.7	146.4	155.1
Allegany	161.4	150.3	172.5
Frederick	141.9	135.6	148.2
Garrett	140.0	124.4	155.6
Washington	161.6	153.5	169.6
Southern Region	161.7	155.8	167.5
Calvert	158.1	147.2	169.1
Charles	160.8	151.8	169.8
St. Mary's	166.3	155.7	176.9

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

^ Area rate does not include Baltimore City

Source: CDC WONDER, 2015-2019

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Table 10: Lung and Bronchus Cancer Mortality
Age-Adjusted Mortality Rates
by Geographical Area, Maryland, 2015-2019

Geographical Area	Mortality Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	35.1	34.5	35.8
Baltimore Metropolitan Area ^	37.0	36.0	38.1
Anne Arundel	38.1	35.9	40.3
Baltimore City	51.5	49.0	54.0
Baltimore	40.9	39.2	42.6
Carroll	37.6	33.9	41.3
Harford	40.2	36.9	43.4
Howard	21.0	18.8	23.3
Eastern Shore Region	45.2	42.8	47.5
Caroline	40.9	32.6	50.6
Cecil	59.0	52.8	65.2
Dorchester	44.9	36.4	53.4
Kent	35.7	27.2	46.0
Queen Anne's	39.0	32.4	45.6
Somerset	62.6	50.4	74.8
Talbot	24.8	19.9	30.6
Wicomico	50.9	45.1	56.6
Worcester	41.6	35.7	47.5
National Capital Area	24.1	23.1	25.0
Montgomery	19.8	18.7	20.9
Prince George's	29.6	28.0	31.2
Northwest Region	36.2	34.1	38.3
Allegany	47.0	41.1	52.8
Frederick	30.2	27.3	33.1
Garrett	29.8	23.2	37.7
Washington	41.1	37.1	45.1
Southern Region	38.9	36.0	41.7
Calvert	37.3	32.0	42.7
Charles	35.1	30.9	39.3
St. Mary's	45.6	40.1	51.1

* 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, 2015-2019

Table 11: Colorectal Cancer Mortality
Age-Adjusted Mortality Rates
by Geographical Area, Maryland, 2015-2019

Geographical Area	Mortality Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	13.4	13.0	13.8
Baltimore Metropolitan Area ^	13.6	12.9	14.2
Anne Arundel	12.5	11.3	13.8
Baltimore City	17.7	16.2	19.2
Baltimore	14.6	13.5	15.6
Carroll	14.1	11.9	16.4
Harford	14.7	12.8	16.7
Howard	11.4	9.8	13.0
Eastern Shore Region	14.3	12.9	15.6
Caroline	14.3	9.4	20.8
Cecil	15.4	12.3	18.9
Dorchester	18.5	13.3	25.0
Kent	17.6	11.3	26.2
Queen Anne's	9.6	6.5	13.8
Somerset	**	**	**
Talbot	5.8	3.6	9.0
Wicomico	18.9	15.3	22.5
Worcester	15.3	12.0	19.3
National Capital Area	11.5	10.9	12.2
Montgomery	9.9	9.1	10.7
Prince George's	13.5	12.5	14.6
Northwest Region	14.0	12.7	15.3
Allegany	16.7	13.2	20.8
Frederick	11.7	9.9	13.5
Garrett	17.5	12.4	24.0
Washington	15.4	13.0	17.9
Southern Region	13.6	11.9	15.3
Calvert	12.6	9.7	16.1
Charles	14.3	11.6	17.0
St. Mary's	13.5	10.6	16.8

* Rates are per 100,000 population 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, 2015-2019

Table 12: Female Breast Cancer Mortality
Age-Adjusted Mortality Rates
by Geographical Area, Maryland, 2015-2019

Geographical Area	Mortality Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	21.0	20.4	21.7
Baltimore Metropolitan Area ^	20.1	19.0	21.2
Anne Arundel	19.4	17.4	21.5
Baltimore City	24.5	22.2	26.8
Baltimore	22.1	20.3	23.8
Carroll	19.3	15.5	23.0
Harford	20.9	17.8	24.0
Howard	15.9	13.3	18.5
Eastern Shore Region	18.1	16.0	20.2
Caroline	22.4	14.5	33.1
Cecil	17.5	13.1	22.7
Dorchester	22.0	13.8	33.3
Kent	**	**	**
Queen Anne's	15.1	9.9	22.1
Somerset	**	**	**
Talbot	15.0	10.1	21.4
Wicomico	21.9	16.9	27.8
Worcester	17.7	12.5	24.4
National Capital Area	21.6	20.4	22.8
Montgomery	18.8	17.3	20.3
Prince George's	25.1	23.2	27.1
Northwest Region	20.0	17.8	22.2
Allegany	15.8	11.5	21.0
Frederick	19.9	16.7	23.2
Garrett	19.5	12.4	29.3
Washington	21.8	17.5	26.0
Southern Region	24.0	21.0	27.0
Calvert	24.0	18.5	30.6
Charles	24.3	19.6	28.9
St. Mary's	23.8	18.6	30.1

* 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, 2015-2019

Table 13: Prostate Cancer Mortality
Age-Adjusted Mortality Rates
by Geographical Area, Maryland, 2015-2019

Geographical Area	Mortality Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	20.2	19.4	20.9
Baltimore Metropolitan Area ^	18.9	17.7	20.1
Anne Arundel	20.4	17.9	23.0
Baltimore City	29.9	26.7	33.0
Baltimore	19.6	17.8	21.5
Carroll	16.6	12.9	21.0
Harford	18.0	14.6	21.5
Howard	16.4	13.3	19.6
Eastern Shore Region	20.7	18.3	23.1
Caroline	**	**	**
Cecil	18.0	13.0	24.3
Dorchester	24.8	16.2	36.3
Kent	**	**	**
Queen Anne's	16.8	10.6	25.2
Somerset	**	**	**
Talbot	19.0	13.2	26.4
Wicomico	27.9	21.6	35.5
Worcester	19.5	14.1	26.4
National Capital Area	19.4	18.0	20.7
Montgomery	14.7	13.2	16.2
Prince George's	26.5	23.9	29.0
Northwest Region	17.0	14.7	19.3
Allegany	17.2	12.2	23.6
Frederick	18.1	14.6	22.1
Garrett	**	**	**
Washington	15.0	11.5	19.3
Southern Region	22.2	18.7	25.7
Calvert	22.3	16.2	30.0
Charles	24.5	18.8	31.2
St. Mary's	19.6	14.3	26.1

* Rates are per 100,000 men 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, 2015-2019

**Table 14: Oral Cancer Mortality
Age-Adjusted Mortality Rates
by Geographical Area, Maryland, 2015-2019**

Geographical Area	Mortality Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	2.5	2.3	2.7
Baltimore Metropolitan Area ^	2.4	2.1	2.6
Anne Arundel	2.5	2.0	3.1
Baltimore City	3.9	3.2	4.6
Baltimore	2.4	2.0	2.8
Carroll	1.9	1.2	2.9
Harford	2.5	1.8	3.5
Howard	2.0	1.4	2.8
Eastern Shore Region	3.0	2.4	3.6
Caroline	**	**	**
Cecil	**	**	**
Dorchester	**	**	**
Kent	**	**	**
Queen Anne's	**	**	**
Somerset	**	**	**
Talbot	**	**	**
Wicomico	3.4	2.1	5.2
Worcester	4.9	3.0	7.6
National Capital Area	2.0	1.7	2.3
Montgomery	1.8	1.5	2.1
Prince George's	2.3	1.9	2.7
Northwest Region	2.5	2.0	3.1
Allegany	3.8	2.3	5.9
Frederick	1.9	1.3	2.7
Garrett	**	**	**
Washington	2.9	1.9	4.1
Southern Region	3.2	2.5	4.1
Calvert	**	**	**
Charles	3.5	2.3	5.0
St. Mary's	3.3	2.0	5.1

* Rates are per 100,000 population 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, 2015-2019

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Table 15: Melanoma Mortality
Age-Adjusted Mortality Rates
by Geographical Area, Maryland, 2015-2019

Geographical Area	Mortality Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	1.9	1.7	2.0
Baltimore Metropolitan Area ^	2.3	2.0	2.5
Anne Arundel	2.2	1.7	2.8
Baltimore City	0.7	0.4	1.0
Baltimore	2.3	1.9	2.7
Carroll	3.7	2.5	5.2
Harford	2.5	1.8	3.5
Howard	1.1	0.7	1.8
Eastern Shore Region	2.5	2.0	3.2
Caroline	**	**	**
Cecil	**	**	**
Dorchester	**	**	**
Kent	**	**	**
Queen Anne's	**	**	**
Somerset	**	**	**
Talbot	**	**	**
Wicomico	**	**	**
Worcester	**	**	**
National Capital Area	1.2	1.0	1.4
Montgomery	1.4	1.1	1.7
Prince George's	0.8	0.6	1.2
Northwest Region	2.7	2.1	3.4
Allegany	**	**	**
Frederick	2.7	1.9	3.8
Garrett	**	**	**
Washington	3.5	2.4	4.9
Southern Region	2.2	1.6	3.0
Calvert	**	**	**
Charles	**	**	**
St. Mary's	**	**	**

* Rates are per 100,000 population 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, 2015-2019

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Table 16: Cervical Cancer Mortality
Age-Adjusted Mortality Rates
by Geographical Area, Maryland, 2015-2019

Geographical Area	Mortality Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	2.0	1.8	2.2
Baltimore Metropolitan Area ^	1.5	1.2	1.8
Anne Arundel	1.5	1.0	2.3
Baltimore City	4.6	3.6	5.7
Baltimore	1.9	1.4	2.5
Carroll	**	**	**
Harford	**	**	**
Howard	**	**	**
Eastern Shore Region	1.9	1.2	2.8
Caroline	**	**	**
Cecil	**	**	**
Dorchester	**	**	**
Kent	**	**	**
Queen Anne's	**	**	**
Somerset	**	**	**
Talbot	**	**	**
Wicomico	**	**	**
Worcester	**	**	**
National Capital Area	1.9	1.5	2.2
Montgomery	1.3	0.9	1.8
Prince George's	2.6	2.0	3.3
Northwest Region	1.9	1.3	2.8
Allegany	**	**	**
Frederick	**	**	**
Garrett	**	**	**
Washington	**	**	**
Southern Region	2.1	1.3	3.2
Calvert	**	**	**
Charles	**	**	**
St. Mary's	**	**	**

* 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, 2015-2019

Appendix H

Trends in Cancer Incidence and Mortality Rates in Maryland by Cancer Site, Race or Gender, and Year, 2015-2019

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Appendix H. Trends in Cancer Incidence and Mortality Rates in Maryland by Cancer Site, Race or Gender, and Year, 2015-2019

Table 1: Cancer Incidence Rates by Cancer Site and Year
Maryland, 2015-2019

Cancer Site	2015	2016	2017	2018	2019	APC 2015-2019	MD Trend
All Cancer Sites	449.3	443.6	449.6	445.9	462.8	0.6%	↑
Lung	55.5	54.0	55.1	50.6	51.2	-2.2%	↓
Colorectal	35.9	35.4	35.8	36.4	35.7	0.2%	↑
Female Breast	131.4	128.9	133.3	129.9	139.8	1.3%	↑
Prostate	120.6	124.6	130.6	135.3	152.2	5.6%	↑
Oral	11.1	10.8	11.6	11.3	11.0	0.3%	↑
Melanoma	25.5	24.1	25.0	23.7	27.0	1.0%	↑
Cervical	6.7	6.5	6.9	6.4	6.6	-0.5%	↓

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, 2015-2019

Cancer Site	2015	2016	2017	2018	2019	APC 2015-2019	MD Trend
All Cancer Sites	155.1	156.5	151.5	149.9	144.4	-1.8%	↓
Lung	37.6	37.5	35.9	33.4	31.7	-4.5%	↓
Colorectal	13.5	13.8	13.3	13.6	13.1	-0.7%	↓
Female Breast	21.7	21.3	21.6	21.2	19.4	-2.3%	↓
Prostate	21.0	20.6	19.5	19.1	20.7	-1.0%	↓
Oral	2.2	3.0	2.4	2.4	2.4	-0.5%	↓
Melanoma	1.8	2.1	1.6	1.8	1.9	-0.5%	↓
Cervical	1.9	2.0	1.8	2.2	2.2	4.0%	↑

Rates are age-adjusted to 2000 U.S. standard population

APC = Annual Percent Change (%)

Source: CDC WONDER, 2015-2019

Appendix H. Trends in Cancer Incidence and Mortality Rates in Maryland by Cancer Site, Race or Gender, and Year, 2015-2019

Table 3: Cancer Incidence Rates by Race and Year
Maryland, 2015-2019

Cancer Site	Race	2015	2016	2017	2018	2019	APC 2015-2019
All Cancer Sites	White	462.1	453.0	462.8	454.6	468.0	0.3%
	Black	441.8	430.4	436.6	441.9	458.3	1.0%
Lung	White	59.7	57.0	57.6	53.1	53.2	-3.0%
	Black	51.0	50.4	54.0	49.6	50.4	-0.4%
Colorectal	White	35.1	35.2	34.7	35.0	35.7	0.3%
	Black	39.1	36.3	40.0	40.8	36.0	-0.5%
Female Breast	White	133.4	127.4	135.5	132.3	140.3	1.4%
	Black	130.6	131.8	128.9	126.5	136.1	0.4%
Prostate	White	98.5	105.8	111.9	117.4	128.0	6.5%
	Black	188.4	181.8	187.6	191.0	218.1	3.5%
Oral	White	12.1	12.5	13.8	13.0	12.4	0.9%
	Black	9.2	7.8	7.6	7.8	7.4	-4.3%
Cervix	White	6.4	6.3	7.4	6.0	6.5	-0.2%
	Black	7.1	6.7	5.5	7.5	7.6	2.5%

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, 2015-2019

Cancer Site	Gender	2015	2016	2017	2018	2019	APC 2015-2019
Melanoma	Male	34.3	31.6	32.3	30.9	35.9	0.7%
	Female	19.2	18.8	19.8	18.7	20.7	1.5%

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, 2015-2019

Table 5:   Mortality Rates by Race and Year
Maryland, 2015-2019

Cancer Site	Race	2015	2016	2017	2018	2019	APC 2015-2019
All Cancer Sites	White	152.2	154.7	151.1	147.3	144.4	-1.5%
	Black	176.3	176.2	166.6	170.4	158.7	-2.4%
Lung	White	38.2	39.3	38.1	34.1	33.8	-3.8%
	Black	39.7	37.7	34.1	35.4	30.3	-5.9%
Colorectal	White	12.8	13.1	12.7	12.7	12.5	-0.8%
	Black	17.3	16.4	16.0	17.3	15.8	-1.3%
Female Breast	White	20.5	19.0	19.3	19.1	17.9	-2.6%
	Black	26.5	27.8	28.1	27.7	24.7	-1.4%
Prostate	White	16.8	16.1	16.7	16.1	16.2	-0.7%
	Black	38.3	40.6	31.2	32.3	39.0	-1.9%
Oral	White	2.3	2.9	2.6	2.7	2.4	0.1%
	Black	2.3	3.6	1.9	2.0	2.5	-4.1%
Cervix	White	1.5	1.7	1.4	1.9	2.0	7.1%
	Black	3.0	2.8	2.6	3.0	2.9	0.0%

Rates are age-adjusted to 2000 U.S. standard population

APC = Annual Percent Change (%)

Source: CDC WONDER, 2015-2019

Table 6:   Melanoma Mortality Rates by Gender and Year
Maryland, 2015-2019

Cancer Site	Gender	2015	2016	2017	2018	2019	APC 2015-2019
Melanoma	Male	2.8	3.5	2.1	2.5	3.2	-0.7%
	Female	1.1	1.0	1.3	1.3	1.0	0.7%

Rates are age-adjusted to 2000 U.S. standard population

APC = Annual Percent Change (%)

Source: CDC WONDER, 2015-2019

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Appendix I

Trends in Cancer Stage of Disease at Diagnosis in Maryland by Cancer Site and Year, 2015-2019

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Appendix I

Table 1: All Cancer Sites
Distribution of Cancer Stage at Diagnosis by Year
Maryland, 2015-2019

Stage	2015	2016	2017	2018	2019
	%	%	%	%	%
Local	44.9%	42.9%	43.9%	48.1%	48.4%
Regional	20.8%	19.3%	19.8%	19.7%	20.2%
Distant	23.0%	22.8%	22.5%	20.6%	20.6%
Unstaged	11.4%	15.0%	13.8%	11.6%	10.8%

Source: Maryland Cancer Registry

Note: Due to a methodology change, SEER summary stage 2000 was used in 2016 to 2017, while the derived SEER summary stage 2000 was used in 2015, and SS2018 was used in 2018 and 2019

Table 2: Lung Cancer
Distribution of Cancer Stage at Diagnosis by Year
Maryland, 2015-2019

Stage	2015	2016	2017	2018	2019
	%	%	%	%	%
Local	21.7%	26.1%	27.0%	27.8%	26.5%
Regional	23.2%	22.2%	23.6%	23.1%	25.0%
Distant	48.5%	42.4%	40.0%	39.2%	40.1%
Unstaged	6.7%	9.3%	9.4%	9.9%	8.4%

Source: Maryland Cancer Registry

Note: Due to a methodology change, SEER summary stage 2000 was used in 2016 to 2017, while the derived SEER summary stage 2000 was used in 2015, and SS2018 was used in 2018 and 2019

Table 3: Colorectal Cancer
Distribution of Cancer Stage at Diagnosis by Year
Maryland, 2015-2019

Stage	2015	2016	2017	2018	2019
	%	%	%	%	%
Local	34.4%	32.3%	30.8%	32.2%	28.4%
Regional	33.3%	34.4%	35.3%	37.2%	39.4%
Distant	21.4%	19.8%	21.1%	19.8%	21.0%
Unstaged	10.8%	13.5%	12.8%	10.9%	11.2%

Source: Maryland Cancer Registry

Note: Due to a methodology change, SEER summary stage 2000 was used in 2016 to 2017, while the derived SEER summary stage 2000 was used in 2015, and SS2018 was used in 2018 and 2019

Table 4: Female Breast Cancer
Distribution of Cancer Stage at Diagnosis by Year
Maryland, 2015-2019

Stage	2015	2016	2017	2018	2019
	%	%	%	%	%
Local	61.4%	62.2%	65.2%	66.0%	65.7%
Regional	29.3%	26.8%	25.4%	25.7%	25.7%
Distant	5.9%	5.3%	5.6%	5.0%	5.6%
Unstaged	3.4%	5.6%	3.9%	3.3%	3.0%

Source: Maryland Cancer Registry

Note: Due to a methodology change, SEER summary stage 2000 was used in 2016 to 2017, while the derived SEER summary stage 2000 was used in 2015, and SS2018 was used in 2018 and 2019

Appendix I

Table 5: Prostate Cancer
Distribution of Cancer Stage at Diagnosis by Year
Maryland, 2015-2019

Stage	2015	2016	2017	2018	2019
	%	%	%	%	%
Local	61.3%	55.2%	59.3%	75.7%	74.7%
Regional	11.0%	10.2%	10.7%	10.4%	10.8%
Distant	5.0%	5.6%	5.8%	6.0%	5.2%
Unstaged	22.7%	29.0%	24.3%	7.9%	9.3%

Source: Maryland Cancer Registry

Note: Due to a methodology change, SEER summary stage 2000 was used in 2016 to 2017, while the derived SEER summary stage 2000 was used in 2015, and SS2018 was used in 2018 and 2019

Table 6: Oral Cancer
Distribution of Cancer Stage at Diagnosis by Year
Maryland, 2015-2019

Stage	2015	2016	2017	2018	2019
	%	%	%	%	%
Local	28.5%	28.8%	27.9%	27.9%	30.2%
Regional	45.5%	49.5%	54.1%	56.4%	54.2%
Distant	18.7%	10.4%	8.8%	8.3%	7.5%
Unstaged	7.3%	11.3%	9.1%	7.5%	8.2%

Source: Maryland Cancer Registry

Note: Due to a methodology change, SEER summary stage 2000 was used in 2016 to 2017, while the derived SEER summary stage 2000 was used in 2015, and SS2018 was used in 2018 and 2019

Table 7: Melanoma
Distribution of Cancer Stage at Diagnosis by Year
Maryland, 2015-2019

Stage	2015	2016	2017	2018	2019
	%	%	%	%	%
Local	68.1%	62.8%	72.3%	69.9%	76.8%
Regional	6.0%	6.7%	6.8%	7.2%	6.2%
Distant	3.3%	3.3%	3.5%	3.4%	3.2%
Unstaged	22.6%	27.1%	17.5%	19.6%	13.8%

Source: Maryland Cancer Registry

Note: Due to a methodology change, SEER summary stage 2000 was used in 2016 to 2017, while the derived SEER summary stage 2000 was used in 2015, and SS2018 was used in 2018 and 2019

Table 8: Cervical Cancer
Distribution of Cancer Stage at Diagnosis by Year
Maryland, 2015-2019

Stage	2015	2016	2017	2018	2019
	%	%	%	%	%
Local	37.3%	45.6%	42.1%	43.3%	43.6%
Regional	34.6%	28.8%	32.9%	31.2%	34.7%
Distant	16.7%	14.0%	16.2%	15.8%	13.3%
Unstaged	11.4%	11.6%	8.8%	9.8%	8.4%

Source: Maryland Cancer Registry

Note: Due to a methodology change, SEER summary stage 2000 was used in 2016 to 2017, while the derived SEER summary stage 2000 was used in 2015, and SS2018 was used in 2018 and 2019

Appendix J

Trends in All Cancer Sites Incidence and Mortality Rates in Maryland and U.S. by Year, 2010-2019

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Appendix J. Trends in All Cancer Sites Incidence and Mortality Rates in Maryland and U.S. by Year, 2010-2019

Table 1: All Cancer Sites Incidence Rates by Year
Maryland and U.S., 2010-2019

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	APC 2010-2019	Trend
Maryland	449.8	440.7	432.1	452.2	442.0	449.3	443.6	449.6	445.9	462.8	0.3%	←
U.S.	451.9	443.7	436.7	431.0	428.6	429.5	424.1	427.0	431.4	440.1	-0.4%	→

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., 2010-2019

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	APC 2010-2019	Trend
Maryland	170.9	165.7	165.7	162.9	161.8	155.1	156.5	151.5	149.9	144.4	-1.7%	↘
U.S.	171.8	168.7	166.4	163.0	161.3	158.7	155.9	152.6	149.0	146.0	-1.8%	↘

Rates are age-adjusted to 2000 U.S. standard population

APC = Annual Percent Change (%)

Sources: NCHS Underlying Cause of Death in CDC WONDER, 2017-2019 (MD)

    NCHS Compressed Mortality File in CDC WONDER, 2012-2016 (MD)

    Maryland Vital Statistics Administration from MATCH, 2010 (MD)

    Maryland Vital Statistics Administration, 2011 (MD)

    U.S. SEER, Cancer Statistics Review, 2010-2019 (U.S.)

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