



STATE OF MARYLAND

# DHMH

Maryland Department of Health and Mental Hygiene

*Larry Hogan, Governor - Boyd Rutherford, Lt. Governor - Dennis R. Schrader, Secretary*

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February 6, 2017

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

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

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

Re: Health-General Article, Section 13-1104(e), 2016 Cigarette Restitution Fund Program Cancer Report

Dear Governor Hogan, President Miller, and Speaker Busch:

Pursuant to Health-General Article, Section 13-1104(e), Annotated Code of Maryland, the Department of Health and Mental Hygiene is directed to produce a biennial report on the cancers targeted under the Cigarette Restitution Fund Program's Cancer Prevention, Education, Screening and Treatment Program. Enclosed is the Cigarette Restitution Fund Program Cancer Report for 2016. This report includes the most currently available Maryland data on cancer incidence and mortality for 2013 and highlights recommended public health interventions designed to reduce the impact of this disease on Maryland citizens.

I hope you find this information useful. If you have questions about this report, please contact Webster Ye, Director of the Office of Governmental Affairs, at 410-767-6480.

Sincerely,

Dennis R. Schrader  
Secretary

Enclosure

cc: Webster Ye, Director, Office of Governmental Affairs  
Donna Gugel, Director, Cigarette Restitution Fund Program  
Ken Lin Tai, Acting Director, Center for Cancer Prevention and Control  
Sarah Albert, MSAR #10379





STATE OF MARYLAND

DHMH

Maryland Department of Health and Mental Hygiene

*Larry Hogan, Governor - Boyd Rutherford, Lt. Governor - Dennis R. Schrader, Secretary*

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Dear Governor Hogan:

Enclosed is the 2016 Cancer Report of the Cigarette Restitution Fund Program. This comprehensive report is produced biennially and guides the Department's cancer prevention and control efforts in the intervening years. Cancer prevention and control are among the Department's highest priorities, with a specific focus on reducing cancer mortality and decreasing health disparities in cancer. The Department coordinates these efforts through local health departments and other partnerships.

This report reviews total cancers and the seven specific cancer sites: lung and bronchus, colon and rectum, female breast, prostate, oral, melanoma of the skin, and cervix. These cancers were selected based on proven interventions for prevention and early detection and treatment, or the magnitude of the impact on incidence and mortality. The report uses 2013 data, which is the most recent data available.

As you know, cancer is the second leading cause of death in Maryland and in the nation. In 2013, over 29,000 Marylanders were diagnosed with cancer and more than 10,000 died from cancer. Technical advances and improved resources have led to earlier diagnosis and better treatment of many cancers. As a result, rates of new diagnoses and rates of death from all cancers combined are declining for men and women overall, and more people diagnosed with cancer are surviving each year.

Cancer prevention and control results from awareness and proactive behavior of all Marylanders. We stand ready to support your leadership in this fight.

Sincerely,

Dennis R. Schrader  
Secretary

Enclosure



Maryland Department of Health and Mental Hygiene

# 2016 Cancer Report

## *Cigarette Restitution Fund Program*

*Cancer Prevention, Education, Screening and Treatment Program*

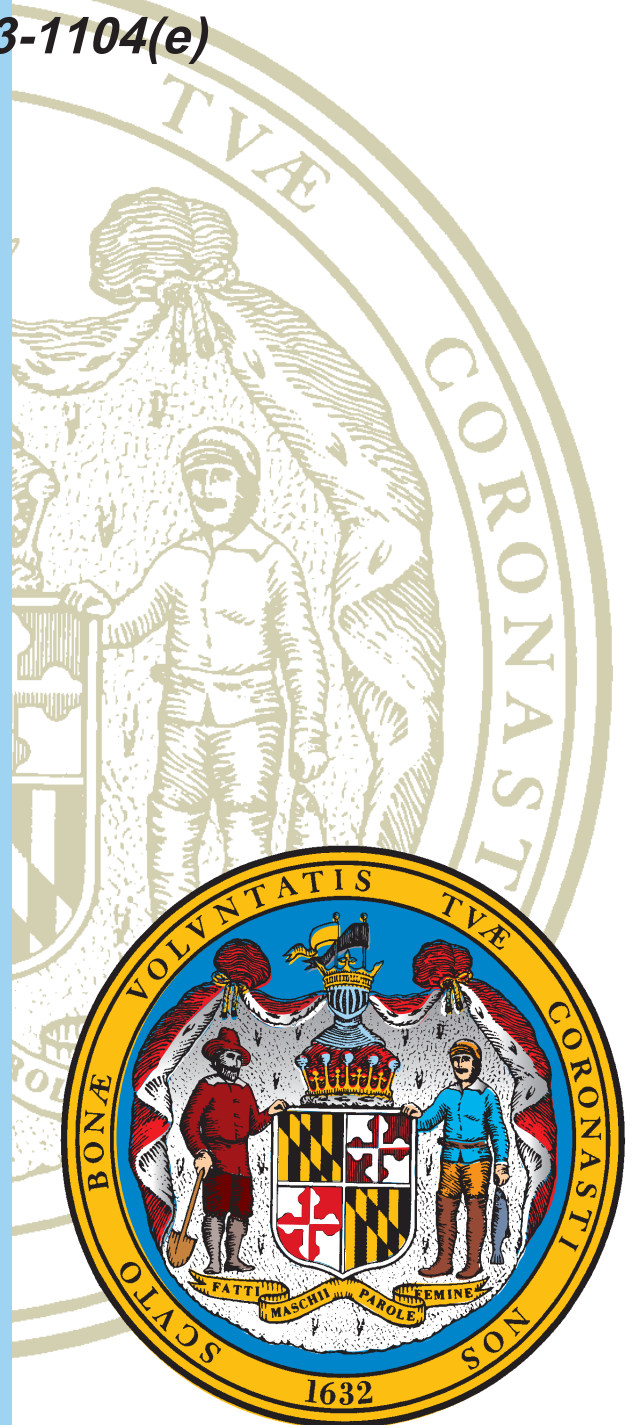
*Health-General Article, Section 13-1104(e)*

Larry Hogan  
Governor  
of Maryland

Boyd Rutherford  
Lieutenant Governor  
of Maryland

Dennis R. Schrader  
Secretary  
Maryland Department  
of Health and Mental Hygiene

December 2016



# 2016 Cancer Report

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## *Cigarette Restitution Fund Program*

### *Cancer Prevention, Education, Screening and Treatment Program*

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## Acknowledgments

The Maryland Department of Health and Mental Hygiene, Center for Cancer Prevention and Control (CCPC), is pleased to present the Cigarette Restitution Fund Program 2016 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:

- Kimberly S. Stern, M.H.A., C.T.R., Jennifer Hayes, M.Ed., M.P.H., and Afaq Ahmad, M.D., M.P.H., C.T.R., Maryland Cancer Registry, CCPC, for providing incidence data. We acknowledge the State of Maryland, the Maryland Cigarette Restitution Fund, and the National Program of Cancer Registries (NPCR) of the Centers for Disease Control and Prevention (CDC) for the funds that helped support the availability of the cancer registry data.
- Center for Chronic Disease Prevention and Control, for data from the Maryland Behavioral Risk Factor Surveillance System (BRFSS).
- Harry Goodman, D.M.D., M.P.H., formerly of the Office of Oral Health, for providing guidance on oral cancer prevention and screening.
- Robert Fiedler, J.D., Center for Tobacco Prevention and Control, for providing data from the Maryland Youth Tobacco and Risk Behavior Survey.

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

## **Dedication**

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





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## Glossary

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

<http://seer.cancer.gov/seerstat/tutorials/aarates/definition.html>

<http://www.cdc.gov/nchs/data/statnt/statnt20.pdf>

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

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

- **Ascertainment:** Refers to the quality assurance procedures that Maryland Cancer Registry staff use to ensure completeness of cancer cases in the Registry 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 2013. Cancer incidence data are also presented in aggregated form, as the average annual incidence for the 5-year period from 2009 through 2013.

- **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 2013. Cancer mortality data are also presented in an aggregated form, as the average annual mortality for the 5-year period from 2009 through 2013.
- **Primary prevention:** Measures that can be taken that aim to prevent cancer before it has developed. Examples include the avoidance of carcinogens (e.g., cigarettes, tobacco), promoting a healthy lifestyle through exercise and diet, preventing the harmful effects of carcinogens (e.g., using sunscreen), and detecting and removing precancerous lesions (e.g., removing polyps in the colon).
- **Race bridging:** Refers to the process of making data collected using one set of race categories consistent with data collected using a different set of race categories. This consistency allows estimation and comparison of race-specific statistics at a given point in time or over a period of time. More specifically, race bridging is a method used to make systems sufficiently comparable to permit estimation and analysis of race-specific statistics. Race-bridging algorithms are generally applied to population data, which are used in this report for calculating rates and for describing race categories of Maryland population estimates (see Appendix D).
- **Rate:** An estimate of the burden of a given disease on a defined population at risk over a specified period of time. A crude rate is calculated by dividing the number of cases or deaths (events) by the population at risk during a given time period. Cancer incidence and mortality rates are usually presented per 100,000 population during a given time period. An incidence rate is the number of new cases during a specific period (usually one year) divided by the population at risk per 100,000 population. A

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

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

Baltimore Metropolitan Area

Anne Arundel, Baltimore City, Baltimore County, Carroll, Harford, and Howard Counties

Note: The Baltimore Metropolitan Area does not include Baltimore City when used in Appendix G and for the incidence and mortality maps.

Eastern Shore Region

Caroline, Cecil, Dorchester, Kent, Queen Anne's, Somerset, Talbot, Wicomico, and Worcester Counties

National Capital Area

Montgomery and Prince George's Counties

Northwest Region

Allegany, Frederick, Garrett, and Washington Counties

Southern Region

Calvert, Charles, and St. Mary's Counties

- **Screening:** Checking for disease when there are no symptoms, resulting in detection of pre-cancer, cancer *in situ*, or cancer at an early stage.
- **Stage at diagnosis:** Cancer stage is the extent to which the cancer has spread from the organ of origin at the time of diagnosis. The stage information used in this report is based on the SEER Summary Stage Guidelines:
  1. ***In situ*:** The cancerous cells have not invaded the tissue basement membrane and there is no stromal invasion. *In situ* cancers are not considered malignant (with the exception of bladder cancers) and are not included in incidence rate calculations.
  2. **Local:** The tumor is confined to the organ of origin.
  3. **Regional:** The tumor has spread to adjacent organs or tissue. Regional lymph nodes may also be involved.
  4. **Distant:** The tumor has spread beyond the adjacent organs or tissues. Distant lymph nodes, organs, and/or tissues may also be involved.
  5. **Unstaged:** The stage of disease at diagnosis was unable to be classified (often due to insufficient information) or was not reported to the cancer registry.

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# **I. Executive Summary**

## **A. Introduction**

This publication is the Cigarette Restitution Fund Program (CRFP) 2016 Cancer Report which is required biennially by Maryland law. The primary purpose of the report is to assist local health departments and local community health coalitions in planning and implementing comprehensive cancer prevention, education, screening, and treatment programs. The data and the “Public Health Intervention” recommendations are intended to guide local health departments, Statewide Academic Health Centers, community health coalitions, other community organizations, and policy makers as they decide how to allocate limited resources for maximum benefit, with the goal of reducing cancer mortality and eliminating racial disparities.

The CRFP was established in 2000 to provide for the distribution of funds received as a result of multi-state litigation against the tobacco industry and provided approximately \$25 million in Fiscal Year 2016 to combat cancer. The CRFP statute established the Cancer Prevention, Education, Screening and Treatment (CPEST) Program within the Maryland Department of Health and Mental Hygiene (DHMH), whose primary goal is to reduce mortality and morbidity rates for cancer and tobacco-related diseases in the State of Maryland.

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

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

This 2016 Cancer Report includes information on cancer incidence, mortality, stage of disease at diagnosis, public health evidence for prevention and screening, recommended areas for public health intervention, and Maryland screening behaviors compared to Healthy People 2020 and the Maryland Comprehensive Cancer Control Plan targets for cancer prevention and screening. Further efforts to prevent and control cancer in Maryland can be found in the Maryland Comprehensive Cancer Control Plan (MCCCP) at <http://phpa.dhmh.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 2013, a total of 29,885 new cases of cancer were diagnosed in Maryland.
- From 2004 to 2013, the annual overall cancer incidence rates declined at a pace lower than the decline in the U.S. rates (-0.3% vs. -1.0% per year). In 2013, the Maryland all cancer incidence rate was higher than the U.S. rate (452.2 vs. 431.0 per 100,000 population).
- In 2013, the incidence rate for all cancer sites among blacks in Maryland remained below the incidence rate for whites, continuing the trend seen beginning in 2011; rates increased for both blacks and whites for the period 2009-2013.
- From 2004 to 2013, the annual overall cancer mortality rates decreased slightly more in Maryland than in the U.S (-1.9% vs. -1.4% per year). In 2013, the Maryland (all cancer sites) mortality rate was similar to the U.S. rate (162.9 vs. 163.0 per 100,000 population), which remained above the Healthy People 2020 target of 161.4 per 100,000 population.
- Blacks had higher all cancer sites mortality rates than whites from 2009 to 2013; 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 25.2% of all 10,609 cancer deaths in 2013.
- From 2009 to 2013, overall lung cancer incidence and mortality rates decreased in Maryland, and also declined for both whites and blacks, after stratification by race.
- Tobacco use is the primary cause of lung cancer; tobacco smoking causes an estimated 83.0% of lung cancer deaths in males and 76.0% of lung cancer deaths in females.<sup>1</sup>
- The public health intervention for lung cancer is the prevention and cessation of tobacco use.
- Smoking rates among Maryland youth and adults continue to decline. In 2014, 14.6% of adults age 18 years and older were current smokers. However, Maryland has not yet attained the Healthy People 2020 goal of reducing the percentage of adult smokers to 12.0%.

### **3. Major findings for colon and rectum cancer:**

- Incidence and mortality rates for colorectal cancer declined in Maryland from 2009 to 2013. Over this time period, incidence rates had a greater decrease per year among Maryland whites compared to blacks, while mortality rates had a greater decrease among Maryland blacks than whites.
- Maryland has not yet surpassed the Healthy People 2020 target for up-to-date colorectal cancer screening (70.5%); in 2014, 70.2% of Maryland adults age 50 years and older reported being up-to-date with colorectal cancer screening.

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1. American Cancer Society. Cancer Facts & Figures 2016. Atlanta: American Cancer Society; 2016.



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 2009 to 2013, with the incidence rate in black females increasing at a greater rate per year than in white females.
- From 2009 to 2013, mortality rates for female breast cancer decreased for both black and white females; mortality rates for female breast cancer had a similar annual decrease in black and white females (-1.8 vs. -1.7%).
- Maryland women continue to surpass the Healthy People 2020 target for mammography screening (81.1%); in 2014, 86.5% of Maryland women age 50 to 74 years reported having had a mammogram within the past 2 years.

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

- Prostate cancer is the second leading cause of cancer death among men in Maryland after lung cancer.
- Incidence rates for prostate cancer decreased from 2009 to 2012, but experienced a slight increase in 2013, while mortality rates decreased from 2009 to 2013.
- 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 2009 to 2013.
- From 2009 to 2013, mortality rates had a greater decrease for black men than white men (-10.0% vs. -4.7%). Decreases in incidence rates over this five year period between black and white men were similar.
- An increasing percentage of Maryland men discussed the advantages and disadvantages of prostate-specific antigen (PSA) testing from 2012 (28.9%) to 2014 (32.0%), doubling the Healthy People 2020 target of 15.9%.

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

- From 2009 to 2013, Maryland oral cancer incidence rates increased overall, with a similar rate of increase per year for both blacks and whites.
- From 2009 to 2013, oral cancer mortality rates decreased among both whites and blacks, with greater annual decreases observed among blacks than whites (-2.2% vs. -0.9%).
- Marylanders were below the Maryland Comprehensive Cancer Control Plan 2015 target of 48.0% for oral cancer screening; in 2012, 30.0% of Maryland adults age 40 years and older reported having an oral cancer exam in the past year.

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

- Melanoma incidence rates in Maryland increased slightly from 2009 to 2013. The annual incidence rate increased among males and females. In 2013, males had incidence rates of melanoma that were 68.9% higher than females.

- From 2009 to 2013, overall melanoma mortality rates decreased among both males and females.
  - In 2012, 67.7% of Marylanders aged 18 years and older 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 and mortality rates among Maryland women decreased from 2009 to 2013.
  - Cervical cancer incidence rates decreased in both black and white females.
  - Mortality rates for cervical cancer decreased from 2009 to 2013 and differed by race; mortality rates among black women remained higher than those among white women, however, rates among black women declined per year while rates among white women increased per year (-6.3% vs. 2.9%).
  - In 2014, 84.4% of Maryland women age 21 to 65 years had a Pap test within the past 3 years, below the Healthy People 2020 target of 93.0%.

### **C. Major Changes to this Report from the 2014 Cancer Report**

- This report presents Maryland and U.S. incidence and mortality data for 2013 and 5-year aggregate data for 2009-2013.
- The Maryland mortality data for 2012 and 2013 were obtained from CDC Wide-ranging Online Data for Epidemiologic Research (CDC WONDER) because data was unavailable from the Maryland Vital Statistics Administration in time for this publication. The Maryland mortality data for single years 2008, 2009, and 2010 were obtained from the Maryland Assessment Tool for Community Health (MATCH), where data are obtained from the Maryland Vital Statistics Administration, except for colorectal cancer, which was directly obtained from the Maryland Vital Statistics Administration. CDC Wonder remained the source for mortality rates for single years 2004 through 2007.
- Incidence and mortality data is shown for three race categories: whites, blacks, and “other”. For incidence data, the race category of “other” includes cases reported as American Indian or Alaskan Native, Asian Pacific Islander, and any other race category, except those cases with unknown or missing race. Please refer to Appendix C, section III for more information.

## II. All Cancer Sites

### **Incidence (New Cases)**

A total of 29,885 new cases of cancer diagnosed in 2013 in Maryland residents were reported to the Maryland Cancer Registry. The total age-adjusted cancer incidence rate for Maryland was 452.2 per 100,000 population (446.9-457.4, 95% Confidence Interval [C.I.]) in 2013. The 2013 Maryland cancer incidence rate is statistically significantly higher than the 2013 U.S. Surveillance Epidemiology and End Results (SEER) rate of 431.0 per 100,000 population (429.7-432.4, 95% C.I.).

### **Mortality (Deaths)**

Cancer is the second leading cause of death in Maryland, accounting for 23.0% of all deaths in 2013. A total of 10,609 Maryland residents died from cancer in 2013. The Maryland mortality rate for all cancer sites was 162.9 per 100,000 population (159.8-166.1, 95% C.I.) for 2013. This rate is similar to the 2013 U.S. mortality rate for all cancer sites of 163.0 per 100,000 population (162.6-163.4, 95% C.I.). Maryland ranks 31<sup>st</sup> highest among all states and the District of Columbia in total cancer mortality for the period 2009-2013.

**Table 1.**  
**All Cancer Sites Incidence and Mortality Rates**  
**by Gender and Race, Maryland and the United States, 2013**

<i>Incidence 2013</i>	<i>Total*</i>	<i>Males</i>	<i>Females</i>	<i>Whites</i>	<i>Blacks</i>	<i>Other</i>
New Cases (count)	29,885	14,669	15,209	20,710	7,802	1,006
MD Incidence Rate	452.2	493.6	425.5	461.8	446.6	259.7
U.S. SEER Rate	431.0	471.7	404.2	438.4	443.1	286.5
<i>Mortality 2013</i>	<i>Total</i>	<i>Males</i>	<i>Females</i>	<i>Whites</i>	<i>Blacks</i>	<i>Other</i>
Deaths (count)	10,609	5,401	5,208	7,391	2,925	293
MD Mortality Rate	162.9	194.9	141.6	161.6	182.0	84.3
U.S. Mortality Rate	163.0	196.2	139.1	163.4	189.5	N/A

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

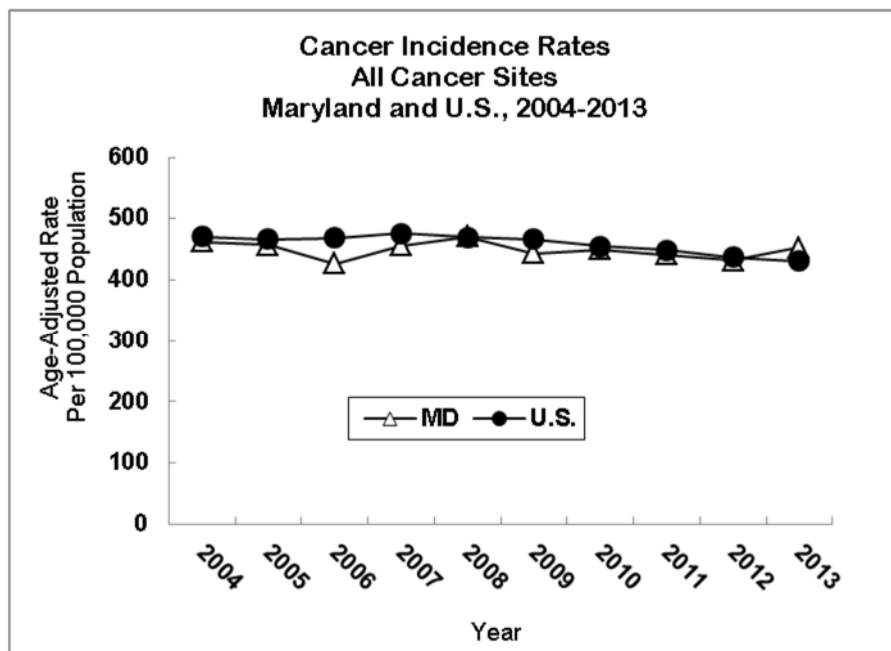
\* Total also includes cases reported as transexual, hermaphrodite, unknown gender, and unknown race

Source: Maryland Cancer Registry

U.S. SEER, SEER\*Stat

NCHS Compressed Mortality File in CDC WONDER, 2013

U.S. SEER, Cancer Statistics Review

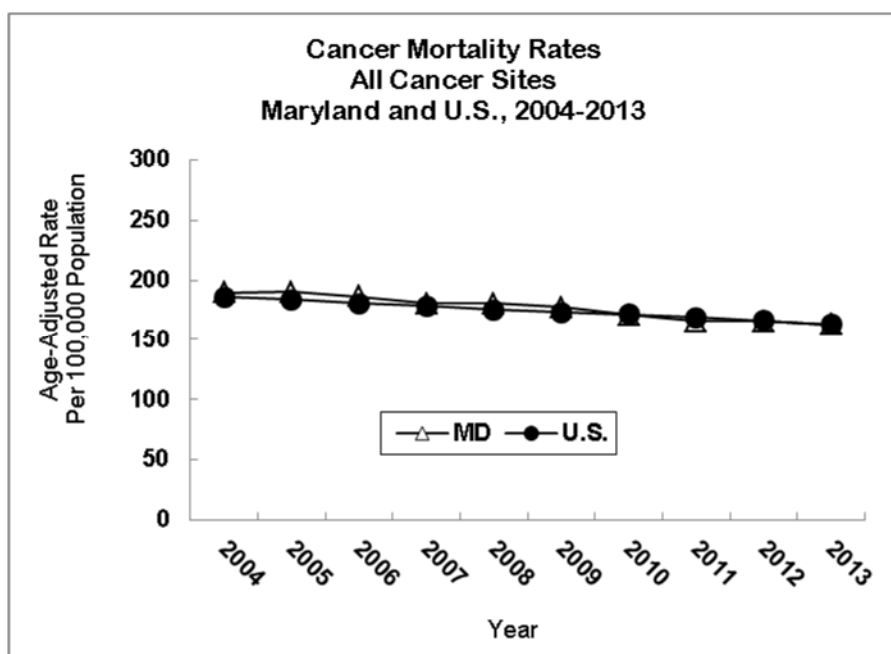


**Maryland vs. U.S., All Cancer Sites Incidence Rates, All Age Groups**

All cancer sites incidence rates in Maryland and in the U.S. declined over the 10-year period from 2004 to 2013. Maryland incidence rates decreased at a rate of 0.3% per year; U.S. incidence rates decreased at a rate of 1.0% per year.

See Appendix J, Table 1.

Source: Maryland Cancer Registry  
U.S. SEER, SEER\*Stat

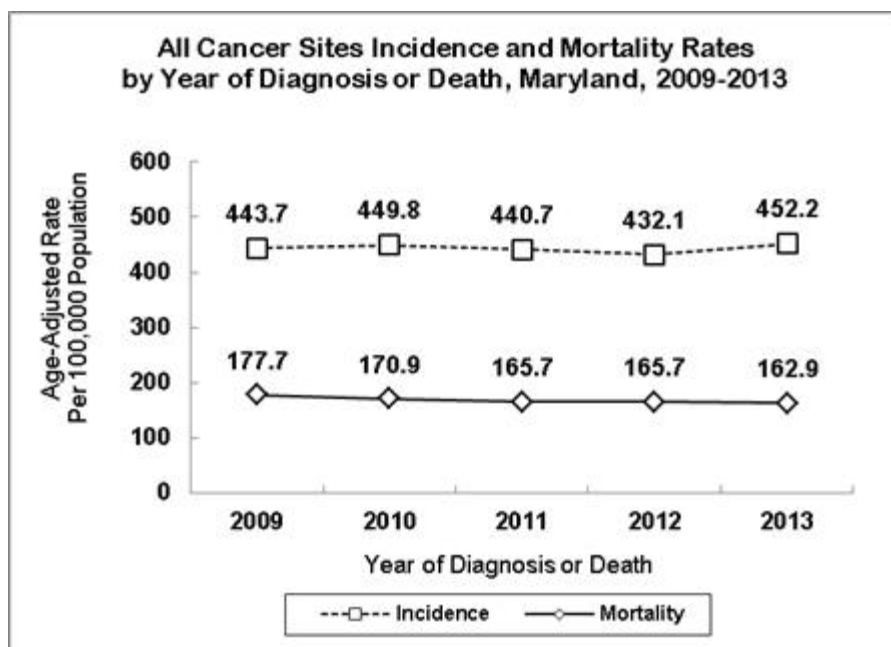


**Maryland vs. U.S., All Cancer Sites Mortality Rates, All Age Groups**

Maryland cancer mortality rates have declined since 2004. From 2004 to 2013, all cancer sites mortality rates in Maryland decreased at a rate of 1.9% per year, a greater decrease than the U.S. mortality rates which decreased at a rate of 1.4% for the same time period.

See Appendix J, Table 2.

Source: NCHS Compressed Mortality File in CDC WONDER, 2004-2007, 2012-2013 (MD)  
Maryland Vital Statistics Administration from MATCH, 2008-2010 (MD)  
Maryland Vital Statistics Administration, 2011 (MD)  
NCHS Compressed Mortality File in CDC WONDER, 2004-2008 (U.S.)  
U.S. SEER, Cancer Statistics Review, 2009-2013 (U.S.)



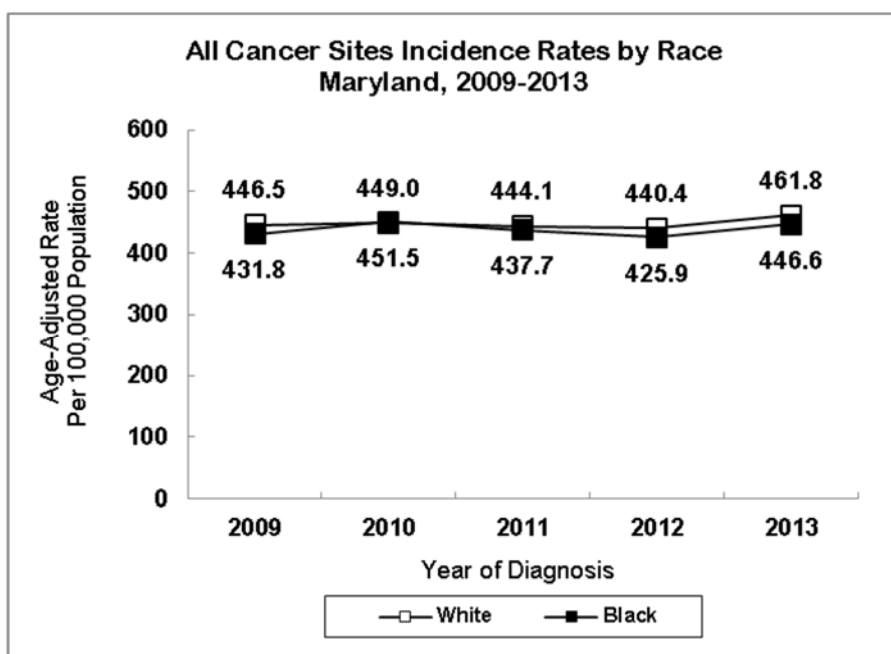
### **Incidence and Mortality Trends**

In Maryland, the incidence rate for all cancer sites was steady at a rate of 0.0% per year from 2009 to 2013.

Cancer mortality rates decreased at a rate of 2.0% per year from 2009 to 2013.

See Appendix H, Tables 1 and 2.

Source: Maryland Cancer Registry  
NCHS Compressed Mortality File in CDC WONDER, 2012-2013  
Maryland Vital Statistics Administration from MATCH, 2009-2010  
Maryland Vital Statistics Administration, 2011

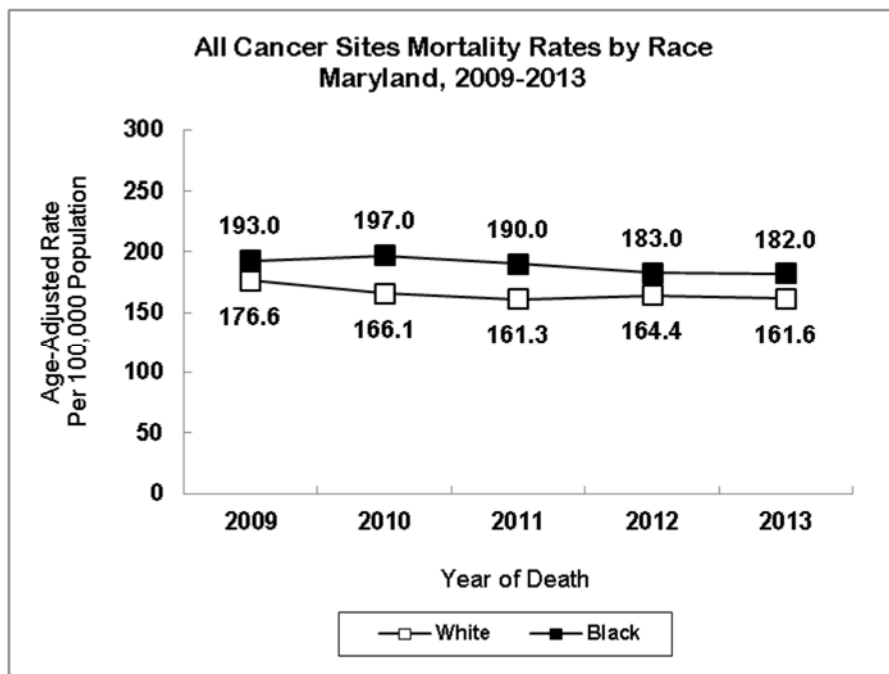


### **Incidence Trends by Race**

In 2011, the incidence rate for all cancer sites among blacks fell below the incidence rate for whites in Maryland. From 2009 to 2013, incidence rates for all cancer sites increased at a rate of 0.5% among whites and 0.1% per year among blacks.

See Appendix H, Table 3.

Source: Maryland Cancer Registry



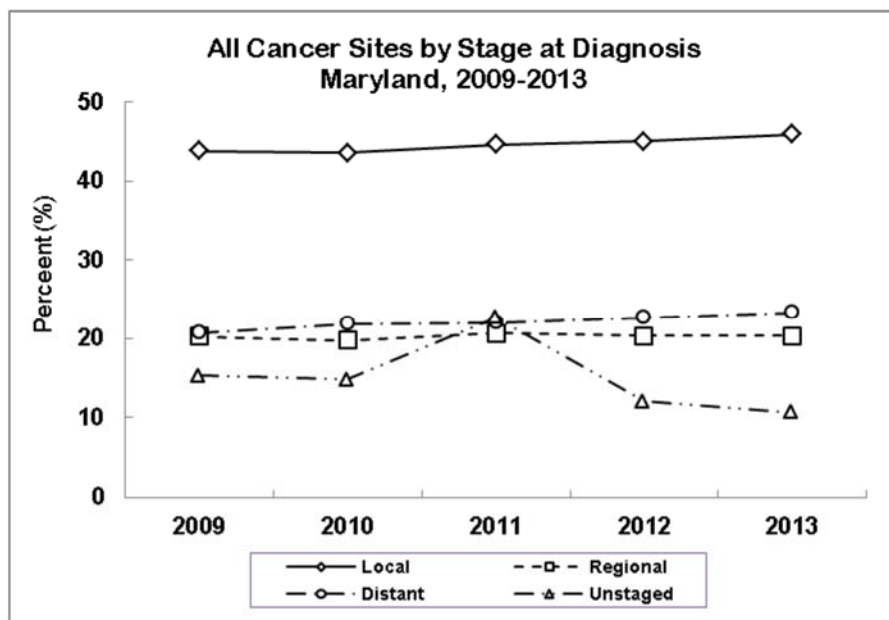
### **Mortality Trends by Race**

Both blacks and whites showed similar declines in cancer mortality from 2009 to 2013, with a decrease of 1.9% per year for both blacks and whites.

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

See Appendix H, Table 5.

Source: NCHS Compressed Mortality File in CDC WONDER, 2012-2013  
Maryland Vital Statistics Administration from MATCH, 2009-2010  
Maryland Vital Statistics Administration, 2011

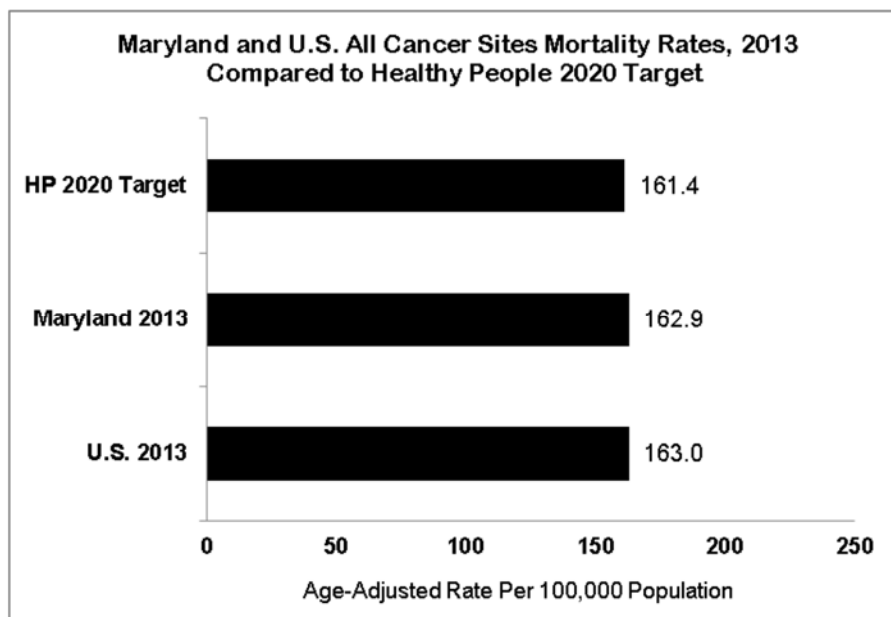


### **Stage at Diagnosis**

Of all cancers diagnosed in Maryland in 2013, 45.9% were found at the local (early) stage, 20.3% at the regional stage, and 23.3% at the distant (late) stage. The proportion of all cancers reported as unstaged began declining in 2011.

See Appendix I, Table 1.

Source: Maryland Cancer Registry



**Mortality Rates  
Compared to Healthy  
People 2020 Target**

The mortality rate for all cancer sites in Maryland for 2013 was 162.9 per 100,000 population, which was equal to the U.S. rate of 163.0 per 100,000 population. The Healthy People 2020 target is to reduce cancer mortality to 161.4 per 100,000 population.

Source: Healthy People 2020, U.S. Department of Health and Human Services  
NCHS Compressed Mortality File in CDC WONDER  
U.S. SEER, Cancer Statistics Review

**Summary – Identification of Targeted Cancers**

The cancers targeted under the Cigarette Restitution Fund in 2013 include: lung and bronchus, colon and rectum, prostate, female breast, cervical, oral, and melanoma of the skin. These cancers were chosen due to the capacity to prevent, detect early, and effectively treat these cancers, and due to the magnitude of their impact on incidence and mortality. The remaining sections of this report address these targeted cancers. The public health interventions to reduce the impact of these and other cancers among Marylanders are listed in the chart below.

**Public Health Interventions for Targeted and Other Cancers**

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

**Table 2.**  
**Number of Cancer Cases for All Cancer Sites by Jurisdiction,**  
**Gender, and Race, Maryland, 2013**

Jurisdiction	Total*	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	29,885	14,669	15,209	20,710	7,802	1,006
Allegany	523	246	277	506	15	<6
Anne Arundel	2,748	1,380	1,368	2,335	344	57
Baltimore City	3,164	1,569	1,593	1,057	2,052	40
Baltimore County	4,787	2,340	2,447	3,701	954	106
Calvert	495	242	251	427	61	<6
Caroline	199	112	87	159	36	<6
Carroll	1,010	511	498	971	31	<6
Cecil	596	312	284	556	31	s
Charles	677	344	333	398	252	15
Dorchester	236	125	111	166	s	<6
Frederick	1,135	542	593	1,023	81	20
Garrett	137	66	71	136	0	0
Harford	1,412	722	690	1,257	132	14
Howard	1,380	642	737	1,027	220	121
Kent	143	67	76	129	14	0
Montgomery	4,424	2,047	2,377	3,120	685	457
Prince George's	3,655	1,755	1,900	1,005	2,462	115
Queen Anne's	315	164	151	296	17	<6
St. Mary's	514	262	252	434	66	9
Somerset	143	80	63	104	s	<6
Talbot	297	173	124	268	24	<6
Washington	869	424	444	813	44	8
Wicomico	584	307	277	450	116	13
Worcester	391	210	181	339	46	<6

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

<6 = Case counts of 1-5 are suppressed per DHMH/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



**Table 3.**  
**All Cancer Sites Age-Adjusted Incidence Rates\* by Jurisdiction,**  
**Gender, and Race, Maryland, 2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	452.2	493.6	425.5	461.8	446.6	259.7
Allegany	521.5	517.4	555.3	532.5	**	**
Anne Arundel	449.9	497.1	419.7	459.1	429.2	238.9
Baltimore City	486.1	558.3	435.5	485.8	487.4	276.9
Baltimore County	481.3	532.8	447.8	495.0	477.7	243.6
Calvert	502.6	530.6	486.8	517.3	438.5	**
Caroline	508.6	627.8	416.2	480.5	677.2	**
Carroll	496.5	546.5	459.1	499.7	511.8	**
Cecil	520.3	576.0	475.8	517.4	556.9	**
Charles	449.7	521.1	398.1	444.5	454.3	**
Dorchester	518.0	599.8	448.0	483.6	656.1	**
Frederick	440.6	463.5	430.6	445.2	454.8	210.6
Garrett	332.2	333.4	335.7	330.1	0.0	0.0
Harford	488.4	545.3	448.8	495.7	476.0	**
Howard	433.9	442.5	434.6	458.7	452.9	275.0
Kent	439.0	442.6	452.7	463.8	**	0.0
Montgomery	390.8	403.8	386.5	393.9	398.4	269.6
Prince George's	414.5	461.5	386.7	419.5	408.6	245.4
Queen Anne's	510.4	541.7	483.4	525.5	386.3	**
St. Mary's	461.9	483.2	443.7	469.2	436.8	**
Somerset	468.2	521.3	442.1	472.4	466.5	**
Talbot	467.7	558.2	400.4	476.1	342.6	**
Washington	484.8	504.5	488.3	487.3	470.2	**
Wicomico	515.2	586.6	463.7	516.2	507.9	**
Worcester	467.7	526.8	423.1	458.2	522.8	**

\* 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 DHMH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry

**Table 4.**  
**All Cancer Sites and Age-Adjusted Incidence Rates\***  
**Among Hispanics<sup>§</sup> by Geographical Area in Maryland, 2013**

<b>Jurisdiction</b>	<b>Cases</b>	<b>Rate</b>
Maryland	825	294.4
Allegany	0	0.0
Anne Arundel	46	254.2
Baltimore City	44	317.4
Baltimore County	81	448.8
Calvert	<6	**
Caroline	<6	**
Carroll	17	723.1
Cecil	9	**
Charles	9	**
Dorchester	<6	**
Frederick	20	212.0
Garrett	<6	**
Harford	28	513.3
Howard	39	338.5
Kent	<6	**
Montgomery	319	271.4
Prince George's	154	227.7
Queen Anne's	<6	**
St. Mary's	13	**
Somerset	0	0.0
Talbot	<6	**
Washington	14	**
Wicomico	9	**
Worcester	<6	**
<b>Region</b>	<b>Cases</b>	<b>Rate</b>
Baltimore Metropolitan Area	255	381.8
Eastern Shore Region	34	385.3
National Capital Area	473	257.4
Northwest Region	35	282.9
Southern Region	27	284.9

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

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

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

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

Source: Maryland Cancer Registry

**Table 5.**  
**Number of Deaths for All Cancer Sites by Jurisdiction, Gender,**  
**and Race, Maryland, 2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	10,609	5,401	5,208	7,391	2,925	293
Allegany	190	103	87	181	<10	<10
Anne Arundel	1,060	555	505	908	126	26
Baltimore City	1,544	779	765	572	961	11
Baltimore County	1,536	774	762	1,217	291	28
Calvert	154	81	73	128	s	<10
Caroline	67	31	36	61	<10	<10
Carroll	328	168	160	319	<10	<10
Cecil	215	112	103	199	s	<10
Charles	239	117	122	158	s	<10
Dorchester	86	43	43	60	s	<10
Frederick	355	184	171	331	s	<10
Garrett	56	27	29	s	<10	<10
Harford	457	253	204	413	s	<10
Howard	384	193	191	282	72	30
Kent	50	25	25	45	<10	<10
Montgomery	1,323	623	700	993	201	129
Prince George's	1,326	653	673	401	888	37
Queen Anne's	102	58	44	93	<10	<10
St. Mary's	203	118	85	165	s	<10
Somerset	52	29	23	s	14	<10
Talbot	109	61	48	103	<10	<10
Washington	359	182	177	341	s	<10
Wicomico	250	132	118	189	56	<10
Worcester	164	100	64	138	s	<10

<10 = Death counts of 0-9 are suppressed per DHMH/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, 2013

**Table 6.**  
**All Cancer Sites Age-Adjusted Mortality Rates\* by Jurisdiction,**  
**Gender, and Race, Maryland, 2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	162.9	194.9	141.6	161.6	182.0	84.3
Allegany	179.3	220.2	146.6	177.7	**	**
Anne Arundel	180.7	219.3	154.3	182.0	177.6	134.8
Baltimore City	241.9	303.2	204.1	257.4	235.9	**
Baltimore County	149.5	179.7	129.7	150.9	158.3	66.4
Calvert	169.9	219.3	143.2	167.4	203.3	**
Caroline	164.9	172.8	159.2	176.2	**	**
Carroll	164.0	192.6	145.5	166.0	**	**
Cecil	196.0	224.6	174.8	194.2	**	**
Charles	173.0	201.1	154.4	179.5	169.3	**
Dorchester	189.5	208.4	172.3	163.8	268.2	**
Frederick	141.8	167.3	124.5	145.9	133.2	**
Garrett	126.2	128.2	121.0	127.2	**	**
Harford	163.5	211.4	131.6	166.5	165.3	**
Howard	131.3	156.9	117.3	130.6	181.3	81.8
Kent	156.2	179.6	138.2	166.0	**	**
Montgomery	116.3	130.1	108.3	119.7	129.0	83.1
Prince George's	162.0	195.4	141.2	168.3	162.1	84.7
Queen Anne's	169.5	215.7	128.8	170.1	**	**
St. Mary's	191.4	232.0	155.1	186.2	243.6	**
Somerset	171.7	198.4	155.4	168.2	**	**
Talbot	150.2	190.5	121.9	159.5	**	**
Washington	195.1	225.2	175.7	195.7	**	**
Wicomico	220.9	274.2	184.2	214.7	245.4	**
Worcester	189.8	252.9	139.0	182.8	277.0	**

\* 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 DHMH/CCPC Mortality Data Suppression Policy

Source: CDC Wonder, 2013

**Table 7.**  
**Number of Cancer Cases for All Cancer Sites by Jurisdiction,**  
**Gender, and Race, Maryland, 2009-2013**

Jurisdiction	Total*	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	140,372	69,423	70,846	97,757	35,697	4,434
Allegany	2,566	1,300	1,265	2,429	123	8
Anne Arundel	13,372	6,811	6,551	11,380	1,595	237
Baltimore City	15,465	7,519	7,934	5,287	9,887	158
Baltimore County	22,528	10,884	11,632	17,575	4,247	484
Calvert	2,101	1,021	1,068	1,795	268	11
Caroline	870	449	420	739	123	<6
Carroll	4,398	2,194	2,202	4,194	128	33
Cecil	2,659	1,369	1,288	2,499	123	20
Charles	3,003	1,553	1,445	1,866	1,008	65
Dorchester	1,081	585	495	816	256	8
Frederick	5,344	2,600	2,740	4,796	382	91
Garrett	785	370	415	778	0	<6
Harford	6,682	3,389	3,292	5,906	616	80
Howard	6,071	2,903	3,161	4,505	965	500
Kent	683	348	335	582	95	<6
Montgomery	20,897	9,918	10,973	14,902	3,118	2,017
Prince George's	16,330	8,050	8,262	4,546	10,844	520
Queen Anne's	1,314	699	615	1,206	98	<6
St. Mary's	2,195	1,122	1,071	1,855	280	30
Somerset	744	418	326	543	183	10
Talbot	1,416	768	648	1,256	143	7
Washington	4,084	2,013	2,069	3,812	211	35
Wicomico	2,816	1,496	1,318	2,173	581	40
Worcester	2,008	1,113	894	1,717	224	38

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

<6 = Case counts of 1-5 are suppressed per DHMH/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

**Table 8.**  
**All Cancer Sites Age-Adjusted Incidence Rates\* by Jurisdiction,**  
**Gender, and Race, Maryland, 2009-2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	443.6	491.7	410.9	448.3	438.5	259.0
Allegany	514.4	569.6	486.0	509.5	955.6	**
Anne Arundel	458.7	510.8	421.3	465.2	435.0	233.0
Baltimore City	482.9	552.0	437.6	485.6	480.8	244.2
Baltimore County	468.7	514.5	438.6	476.0	467.7	254.8
Calvert	446.1	474.9	426.6	454.0	402.5	**
Caroline	459.7	521.3	417.7	458.8	479.6	**
Carroll	451.3	495.9	421.1	450.1	457.3	243.8
Cecil	483.1	531.5	447.2	484.4	449.9	259.9
Charles	425.1	492.5	373.0	420.5	426.9	243.8
Dorchester	486.8	574.0	418.0	487.3	493.2	**
Frederick	438.9	474.3	417.0	439.6	458.6	223.7
Garrett	390.5	392.8	395.0	389.4	0.0	**
Harford	485.9	540.8	447.3	487.9	478.6	228.8
Howard	408.9	431.4	396.1	421.2	429.5	269.4
Kent	441.8	485.0	415.2	442.2	431.7	**
Montgomery	385.3	413.4	368.8	384.3	399.9	263.7
Prince George's	394.6	453.0	356.1	378.0	395.6	242.1
Queen Anne's	435.0	486.7	391.6	439.2	413.5	**
St. Mary's	417.0	440.9	395.7	423.6	384.5	203.7
Somerset	496.7	574.6	446.0	508.7	462.4	590.0
Talbot	458.9	530.1	402.8	463.1	393.6	**
Washington	470.5	505.3	455.8	469.5	455.5	343.0
Wicomico	520.6	618.2	450.0	522.8	520.4	302.4
Worcester	488.5	562.2	431.1	471.4	502.1	1,165.2

\* 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 DHMH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry

**Table 9.**  
**Number of Deaths for All Cancer Sites by Jurisdiction, Gender,**  
**and Race, Maryland, 2009-2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	52,064	26,455	25,609	36,638	14,105	1,321
Allegany	914	482	432	893	s	<10
Anne Arundel	4,884	2,549	2,335	4,126	634	124
Baltimore City	7,096	3,557	3,539	2,404	4,634	58
Baltimore County	8,572	4,225	4,347	6,908	1,528	136
Calvert	765	392	373	646	s	<10
Caroline	347	176	171	296	s	<10
Carroll	1,632	864	768	1,584	s	<10
Cecil	1,033	570	463	982	s	<10
Charles	1,193	605	588	776	392	25
Dorchester	422	234	188	300	s	<10
Frederick	1,833	941	892	1,677	135	21
Garrett	322	177	145	s	<10	<10
Harford	2,250	1,156	1,094	2,028	201	21
Howard	1,730	845	885	1,341	262	127
Kent	295	160	135	245	s	<10
Montgomery	6,461	3,084	3,377	4,930	942	589
Prince George's	6,509	3,249	3,260	2,124	4,229	156
Queen Anne's	499	279	220	453	s	<10
St. Mary's	900	509	391	770	116	14
Somerset	322	181	141	s	81	<10
Talbot	555	307	248	490	s	<10
Washington	1,601	840	761	1,535	54	12
Wicomico	1,106	593	513	861	235	10
Worcester	823	480	343	708	s	<10

<10 = Death counts of 0-9 are suppressed per DHMH/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, 2009-2013

**Table 10.**  
**All Cancer Sites Age-Adjusted Mortality Rates\* by Jurisdiction,**  
**Gender, and Race, Maryland, 2009-2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	168.4	202.2	145.8	166.2	188.5	87.3
Allegany	174.5	213.4	145.0	176.2	**	**
Anne Arundel	175.4	211.9	150.9	173.7	194.5	142.5
Baltimore City	226.4	278.9	193.7	217.6	233.8	92.9
Baltimore County	171.4	203.6	150.4	172.4	182.2	81.7
Calvert	174.3	213.1	151.1	174.4	184.9	**
Caroline	186.0	219.0	162.8	184.4	204.6	**
Carroll	171.0	210.4	142.8	172.4	174.1	**
Cecil	196.2	239.2	162.8	197.6	187.2	**
Charles	186.3	222.2	162.2	184.6	199.2	97.2
Dorchester	187.3	236.0	151.3	170.7	245.2	**
Frederick	155.8	187.6	133.7	156.7	182.8	63.2
Garrett	154.6	188.9	126.2	155.5	**	**
Harford	169.6	202.9	147.0	171.1	184.3	64.9
Howard	132.2	153.1	120.3	138.6	138.8	85.1
Kent	180.5	220.1	149.7	174.3	225.8	**
Montgomery	120.5	138.4	109.4	123.5	133.2	85.6
Prince George's	172.0	211.4	148.1	182.1	170.8	80.0
Queen Anne's	173.5	216.6	139.9	173.6	186.9	**
St. Mary's	181.2	217.1	149.4	185.1	172.7	**
Somerset	217.3	268.2	182.0	219.2	220.0	**
Talbot	162.8	206.9	131.3	160.2	192.8	**
Washington	181.8	219.1	157.3	183.6	150.0	**
Wicomico	203.6	257.4	165.7	202.2	219.1	**
Worcester	187.9	241.8	144.3	182.2	248.9	**

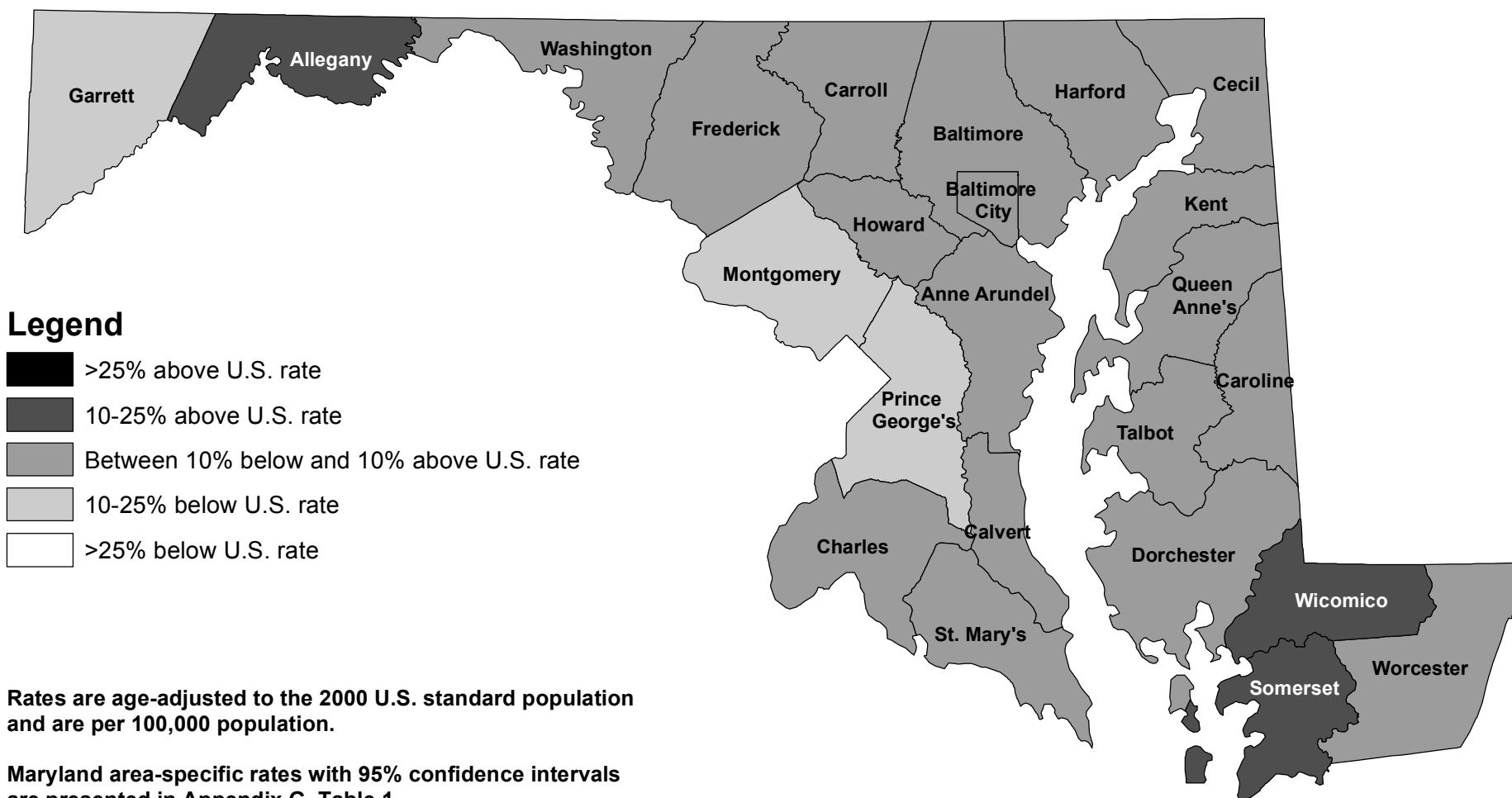
\* Rates are per 100,000 population and age-adjusted to 2000 U.S. standard population

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

Source: CDC Wonder, 2009-2013



# Maryland All Cancer Sites Incidence Rates by Geographical Area: Comparison to U.S. Rate, 2009-2013

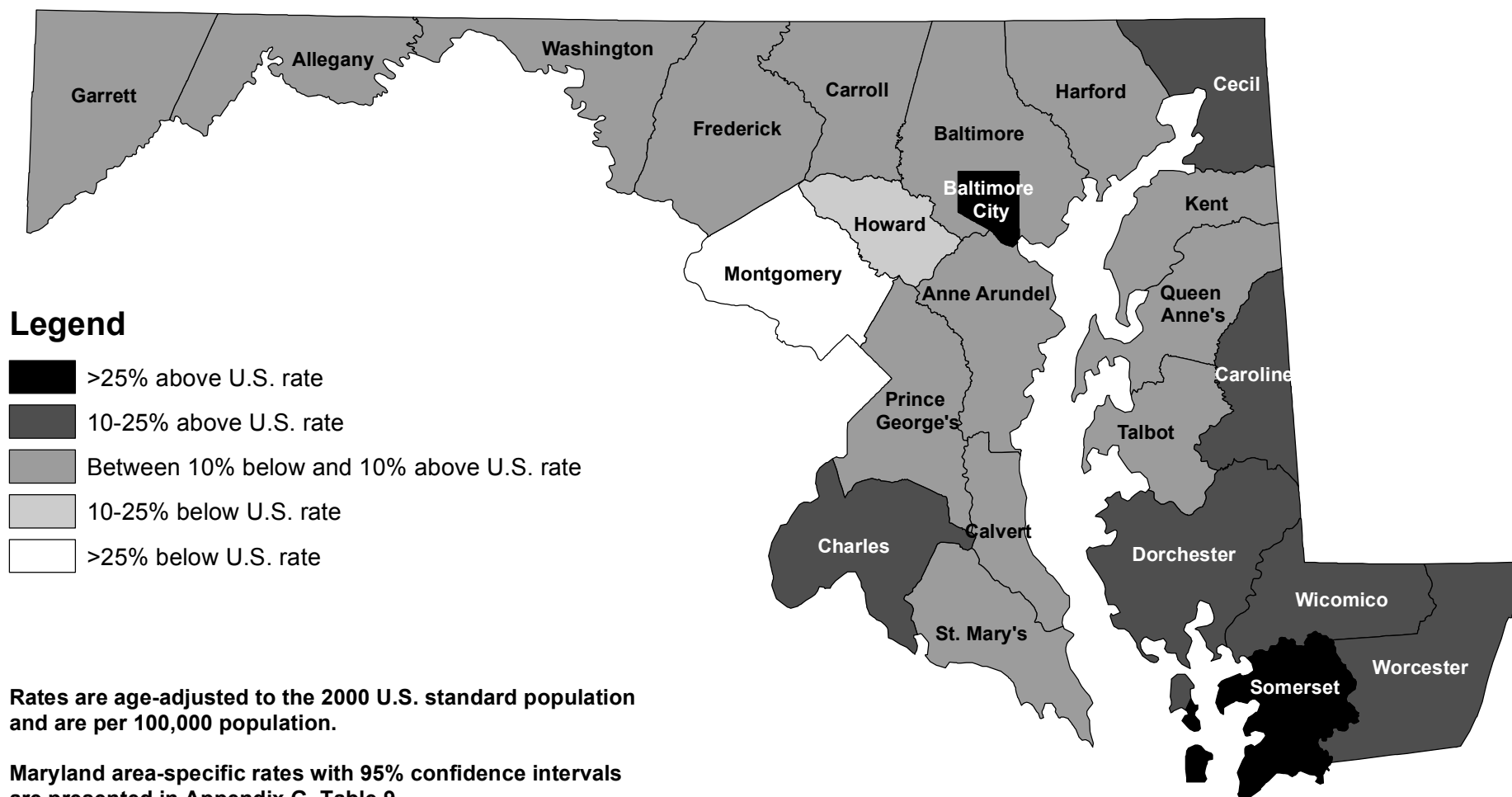


U.S. all cancer sites incidence rate, 2009-2013: 448.7 / 100,000

Maryland all cancer sites incidence rate, 2009-2013: 443.6 / 100,000

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

# Maryland All Cancer Sites Mortality Rates by Geographical Area: Comparison to U.S. Rate, 2009-2013



U.S. all cancer sites mortality rate, 2009-2013: 168.5 / 100,000

Maryland all cancer sites mortality rate, 2009-2013: 168.4 / 100,000

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

### III. Targeted Cancers

#### A. Lung and Bronchus Cancer

##### **Incidence (New Cases)**

There were 3,706 new cases of lung and bronchus cancer (called lung cancer) reported among Maryland residents in 2013. The 2013 Maryland age-adjusted lung cancer incidence rate was 56.6 per 100,000 population (54.8-58.5, 95% C.I.), which is statistically significantly higher than the 2013 U.S. SEER lung cancer incidence rate of 54.0 per 100,000 population (53.5-54.5, 95% C.I.).

##### **Mortality (Deaths)**

There were 2,673 lung cancer deaths among Maryland residents in 2013. In 2013, lung cancer accounted for 25.2% of all cancer deaths in Maryland and was the leading cause of cancer death in both men and women. The 2013 age-adjusted lung cancer mortality rate was 41.1 per 100,000 population (39.5-42.6, 95% C.I.) in Maryland. This rate is statistically significantly lower than the 2013 U.S. mortality rate for lung and bronchus cancer of 43.4 per 100,000 population (43.2-43.6, 95% C.I.). Maryland had the 32<sup>nd</sup> highest lung cancer mortality rate among the states and the District of Columbia for the period 2009-2013.

Note: In the following graphs, Maryland 2009 and 2010 lung cancer mortality data include lung, bronchus, and trachea primary sites. Incidence data only includes lung and bronchus primary sites.

**Table 11.**  
**Lung Cancer Incidence and Mortality Rates**  
**by Gender and Race, Maryland and the United States, 2013**

<i>Incidence 2013</i>	<i>Total*</i>	<i>Males</i>	<i>Females</i>	<i>Whites</i>	<i>Blacks</i>	<i>Other</i>
New Cases (count)	3,706	1,847	1,857	2,674	926	92
MD Incidence Rate	56.6	64.6	50.8	58.9	55.3	26.7
U.S. SEER Rate	54.0	62.8	47.4	55.5	59.5	35.1
<i>Mortality 2013</i>	<i>Total</i>	<i>Males</i>	<i>Females</i>	<i>Whites</i>	<i>Blacks</i>	<i>Other</i>
Deaths (count)	2,673	1,400	1,273	1,938	680	55
MD Mortality Rate	41.1	49.7	34.8	42.4	41.8	15.5
U.S. Mortality Rate	43.4	53.9	35.4	44.1	46.9	N/A

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

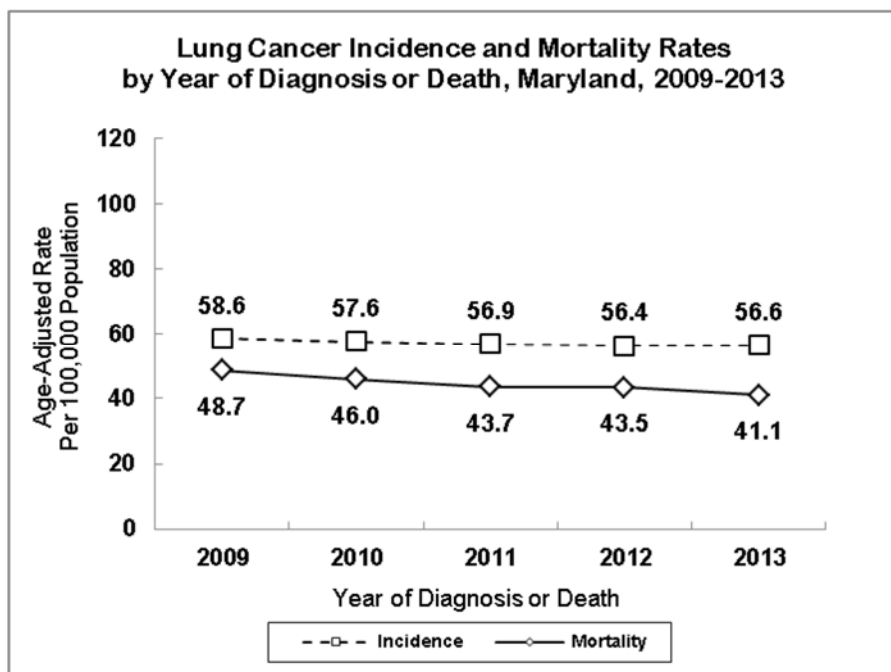
\* Total also includes cases reported as transexual, hermaphrodite, unknown gender, and unknown race

Source: Maryland Cancer Registry

U.S. SEER, SEER\*Stat

NCHS Compressed Mortality File in CDC WONDER, 2013

U.S. SEER, Cancer Statistics Review



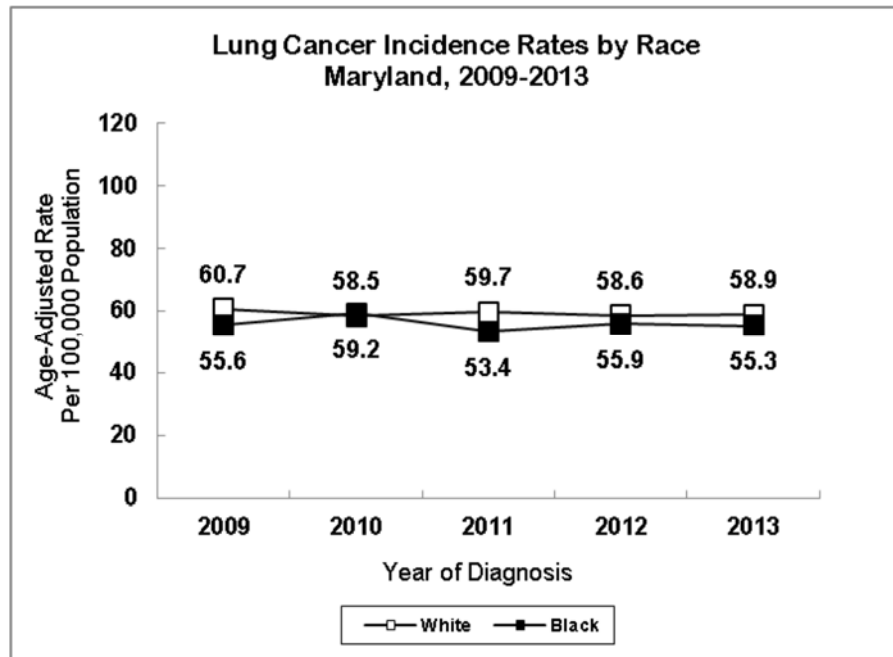
### **Incidence and Mortality Trends**

Lung cancer incidence rates in Maryland decreased at a rate of 0.9% per year from 2009 to 2013.

Lung cancer mortality rates decreased at a rate of 3.9% per year from 2009 to 2013.

See Appendix H, Tables 1 and 2.

Source: Maryland Cancer Registry  
NCHS Compressed Mortality File in CDC WONDER, 2012-2013  
Maryland Vital Statistics Administration from MATCH, 2009-2010  
Maryland Vital Statistics Administration, 2011

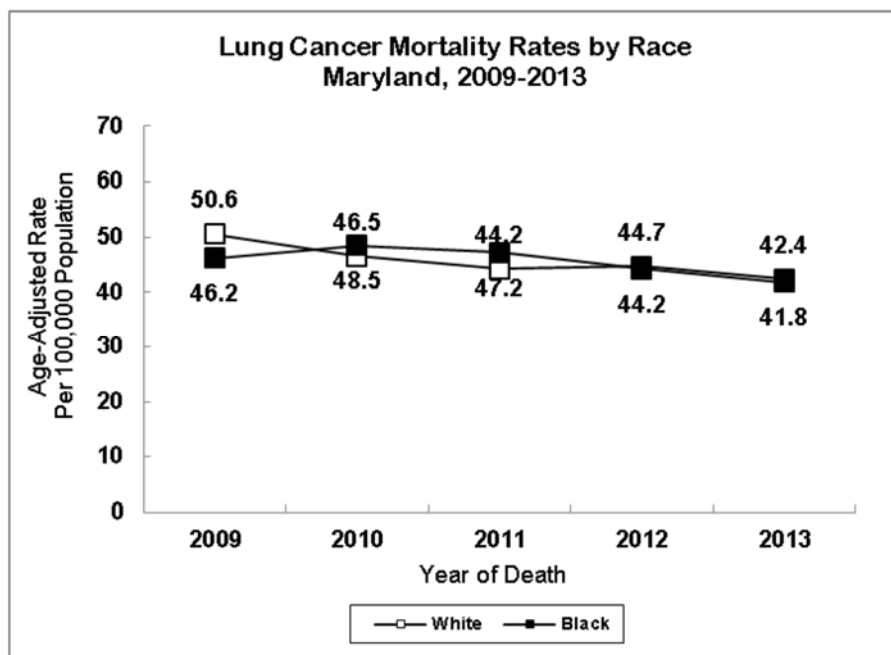


### **Incidence Trends by Race**

From 2009 to 2013, lung cancer incidence rates for blacks decreased at a rate of 0.7% per year, compared to a decline of 0.6% per year among whites.

See Appendix H, Table 3.

Source: Maryland Cancer Registry

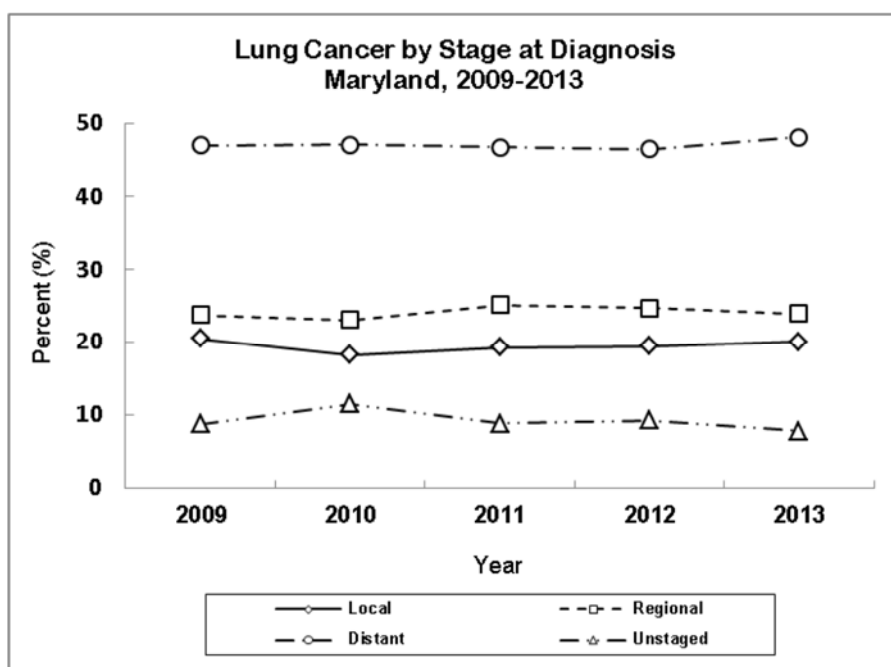


### **Mortality Trends by Race**

Lung cancer mortality rates are declining for both blacks and whites. From 2009 to 2013, rates decreased at a rate of 2.9% per year for blacks, and 3.9% per year for whites.

See Appendix H, Table 5.

Source: NCHS Compressed Mortality File in CDC WONDER, 2012-2013  
Maryland Vital Statistics Administration from MATCH, 2009-2010  
Maryland Vital Statistics Administration, 2011

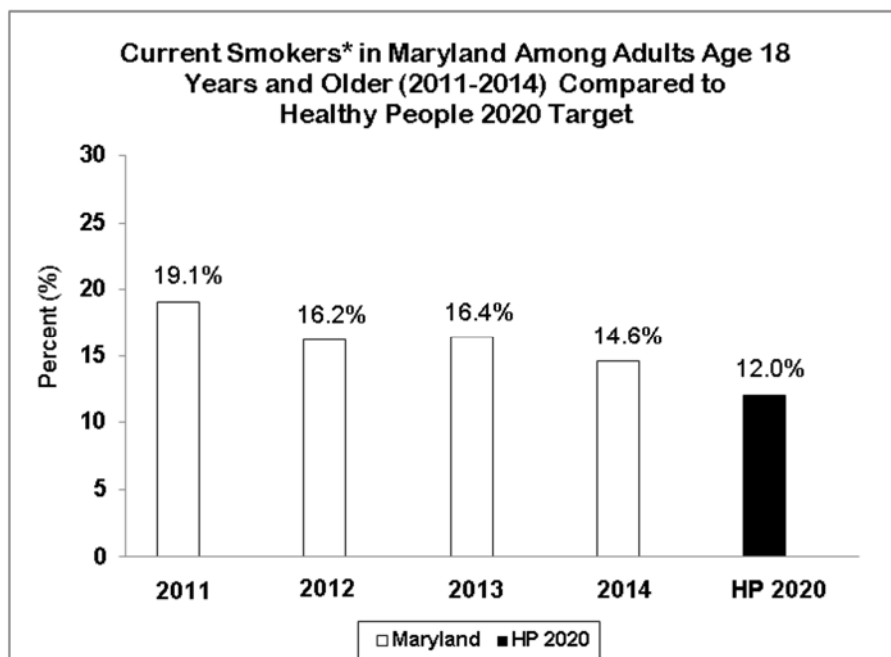


### **Stage at Diagnosis**

A higher proportion of lung cancer cases were diagnosed at the distant stage than at the local or regional stage of cancer. In 2013, 20.1% of lung cancer cases in Maryland were diagnosed at the local stage, 24.0% were detected at the regional stage, and 48.1% were found at the distant stage. The proportion of lung cancers reported as unstaged began declining in 2011.

Source: Maryland Cancer Registry

See Appendix I, Table 2.



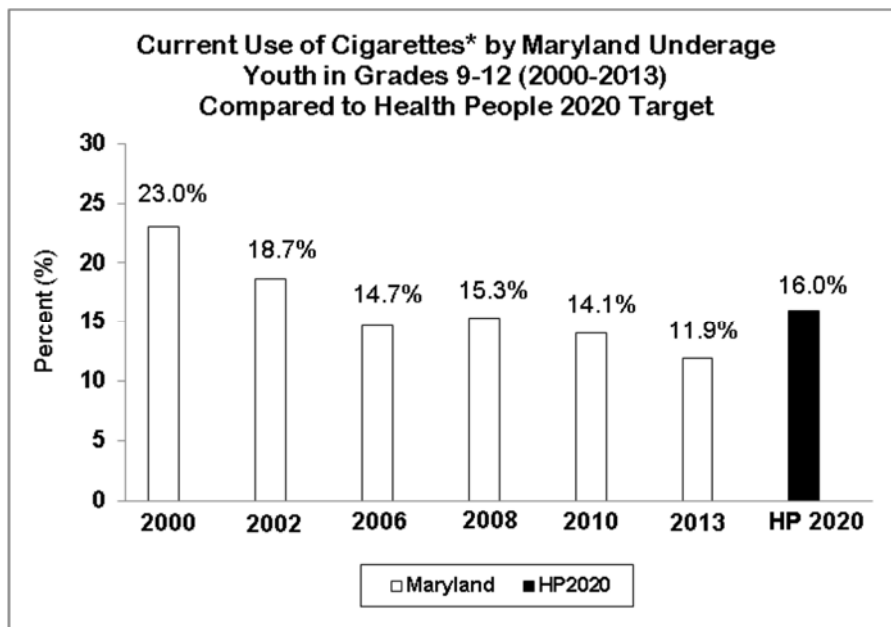
\* Current smoker is defined as a person who smokes cigarettes every day or some days.

Source: Maryland BRFSS, 2011-2014

Healthy People 2020, U.S. Department of Health and Human Services

### **Smoking Prevalence Among Maryland Adults**

One Healthy People 2020 target is to reduce the percentage of adults who are current smokers to 12.0%. Although Maryland has not yet attained this goal, the percentage of adult smokers has decreased from 19.1% in 2011 to 14.6% in 2014.



\* Current use of cigarettes is defined as smoking cigarettes on 1 or more days in the previous 30 days.

Source: Maryland Youth Tobacco Survey (2000, 2002, 2006, 2008, 2010)

Maryland Youth Tobacco and Risk Behavior Survey (2013)

Healthy People 2020, U.S. Department of Health and Human Services

### **Cigarette Use by Maryland Youth**

Healthy People 2020 has established a target of reducing the percentage of youth in grades 9-12 who have smoked cigarettes in the previous 30 days to 16.0%.

Based on results of the 2006, 2008, 2010 Maryland Youth Tobacco Surveys and the 2013 Maryland Youth Tobacco and Risk Behavior Survey, Maryland has met the Healthy People 2020 target for reducing current cigarette use among high school students.

**Public Health Evidence (quoted from National Cancer Institute [NCI], Physician Data Query [PDQ<sup>®</sup>], 2/11/2016 and 4/8/2016, and United States Preventive Services Task Force [USPSTF], 12/2013)**

**Prevention**

Based on solid evidence, cigarette smoking causes lung cancer and, therefore, smoking avoidance results in decreased mortality from primary lung cancers. The risks of lung cancer associated with cigarette smoking are dose-dependent and increase markedly according to the number of cigarettes smoked per day and the number of years smoked. On average, current smokers have approximately 20 times the risk of lung cancer compared with nonsmokers. Based on solid evidence, long-term sustained smoking cessation results in decreased incidence of lung cancer and of second primary lung tumors. Based on solid evidence, exposure to secondhand smoke causes lung cancer and, therefore, preventing exposure to secondhand smoke results in decreased incidence and mortality from primary lung cancers. Based on solid evidence, exposure to radiation increases lung cancer incidence and mortality, and cigarette smoking greatly potentiates this effect. Based on solid evidence, workplace exposure to asbestos, arsenic, beryllium, cadmium, chromium, and nickel increases lung cancer incidence and mortality. Cigarette smoking also potentiates the effect of many of these lung carcinogens so that the lung cancer risk is even greater in smokers. Reducing or eliminating workplace exposures to known lung carcinogens would be expected to result in a corresponding decrease in the risk of lung cancer. Based on solid evidence, indoor exposure to radon increases lung cancer incidence and mortality, particularly among cigarette smokers. Based on solid evidence, exposure to outdoor air pollution, specifically small particles, increases lung cancer incidence and mortality.

**Screening**

There is evidence that screening persons aged 55 to 74 years who have cigarette smoking histories of 30 or more pack-years and who, if they are former smokers, have quit within the last 15 years reduces lung cancer mortality by 20% and all-cause mortality by 6.7%. Based on solid evidence, at least 98% of all positive low-dose helical computed tomography screening exams (but not all) do not result in a lung cancer diagnosis. False-positive exams may result in unnecessary invasive diagnostic procedures. The USPSTF recommends annual screening for lung cancer with low-dose computed tomography (LDCT) in adults aged 55 to 80 years who have a 30 pack-year smoking history and currently smoke or have quit within the past 15 years. Screening should be discontinued once a person has not smoked for 15 years or develops a health problem that substantially limits life expectancy or the ability or willingness to have curative lung surgery. Based on solid evidence, screening with chest x-ray (CXR) and/or sputum cytology does not reduce mortality from lung cancer in the general population or in ever-smokers. Based on solid evidence, at least 95% of all positive CXR screening exams (but not all) do not result in a lung cancer diagnosis. False-positive exams result in unnecessary invasive diagnostic procedures. Based on solid evidence, a modest but non-negligible percentage (between 5% and 25%) of lung cancers detected by screening CXR and/or sputum cytology appear to represent overdiagnosed cancer. These cancers result in unnecessary diagnostic procedures and also lead to unnecessary treatment. Harms of diagnostic procedures and treatment occur most frequently among long-term and/or heavy smokers because of smoking-associated comorbidities that increase risk propagation.

**Chemoprevention**

Based on solid evidence, high-intensity smokers who take pharmacologic doses of beta-carotene have an increased lung cancer incidence and mortality that is associated with taking the supplement. Based on solid evidence, nonsmokers who take pharmacological doses of beta-carotene do not experience

significantly different lung cancer incidence or mortality compared with taking a placebo. Based on solid evidence, taking vitamin E supplements does not affect the risk of lung cancer.

### **Public Health Interventions for Lung Cancer (USPSTF, 2013; CDC Best Practices for Comprehensive Tobacco Control Programs, 2014)**

- Annual screening for lung cancer with low-dose computed tomography (LDCT) in adults aged 55 to 80 years who have a 30 pack-year smoking history and currently smoke or have quit within the past 15 years.
- The CDC Best Practice Guidelines for Comprehensive Tobacco Control Programs addresses the following goals and components:

#### **Goals:**

- Prevent initiation among youth and young adults.
- Promote quitting among adults and youth.
- Eliminate exposure to secondhand smoke.
- Identify and eliminate tobacco-related disparities among population groups.

#### **Components:**

##### **State and Community Interventions:**

- ✓ Supporting and implementing programs and policies to influence societal organizations, systems, and networks that encourage and support individuals to make behavior choices consistent with tobacco-free norms.
- ✓ Specific strategies for promoting tobacco use cessation, preventing tobacco use initiation and eliminating exposure to secondhand smoke.
- ✓ Combination of specific strategies with mass-reach health communication interventions and other initiatives to mobilize communities.

##### **Mass-Reach Health Communication Interventions:**

- ✓ Delivery of strategic, culturally appropriate, and high-impact messages through sustained and adequately funded campaigns that are integrated into a comprehensive state tobacco control program.
- ✓ Use of traditional health communication interventions and counter-marketing strategies, as well as innovations in health communication interventions that enable targeting and engagement of specific audiences via multiple communication channels.

##### **Cessation Interventions:**

- ✓ Focus on three goals: (1) promoting health systems change; (2) expanding insurance coverage of evidence-based cessation treatments; (3) supporting state quitline capacity.
- ✓ Making quitline counseling available to all tobacco users willing to access the service.

##### **Surveillance and Evaluation:**

- ✓ Monitoring of tobacco-related attitudes, behaviors, and health outcomes.
- ✓ Monitoring and documenting key short-term, intermediate, and long-term outcomes within populations.
- ✓ Using data to inform program and policy directions, demonstrate program effectiveness, monitor progress on reducing health disparities, ensure accountability, and engage stakeholders.

##### **Infrastructure, Administration and Management:**

- ✓ Having sufficient funding, internal capacity, and skilled staff in tobacco control programs.



**Table 12.**  
**Number of Lung and Bronchus Cancer Cases by Jurisdiction,**  
**Gender, and Race, Maryland, 2013**

Jurisdiction	Total*	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	3,706	1,847	1,857	2,674	926	92
Allegany	77	40	37	77	0	0
Anne Arundel	365	173	192	320	39	<6
Baltimore City	523	266	257	182	336	<6
Baltimore County	645	308	337	511	124	10
Calvert	72	34	37	58	13	0
Caroline	35	19	16	31	<6	0
Carroll	116	64	51	109	s	<6
Cecil	86	37	49	79	7	0
Charles	81	51	30	62	16	<6
Dorchester	40	24	16	28	s	<6
Frederick	106	51	55	97	7	<6
Garrett	19	9	10	19	0	0
Harford	212	111	101	193	16	<6
Howard	146	77	69	112	21	12
Kent	18	6	12	s	<6	0
Montgomery	349	158	191	262	43	39
Prince George's	351	175	176	112	228	9
Queen Anne's	43	21	22	41	<6	<6
St. Mary's	77	42	35	66	11	0
Somerset	21	12	9	14	7	0
Talbot	44	23	21	41	<6	0
Washington	134	72	62	125	6	<6
Wicomico	81	37	44	62	s	<6
Worcester	61	35	26	53	7	0

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

<6 = Case counts of 1-5 are suppressed per DHMH/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

**Table 13.**  
**Lung and Bronchus Cancer Age-Adjusted Incidence Rates\* by**  
**Jurisdiction, Gender, and Race, Maryland, 2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	56.6	64.6	50.8	58.9	55.3	26.7
Allegany	71.6	83.3	61.8	73.8	0.0	0.0
Anne Arundel	61.6	67.1	58.1	64.0	51.7	**
Baltimore City	80.3	97.1	68.9	83.7	80.1	**
Baltimore County	63.9	71.6	58.8	65.2	66.2	**
Calvert	74.6	75.5	70.6	72.7	**	0.0
Caroline	88.0	119.8	67.7	90.5	**	0.0
Carroll	59.0	73.7	46.5	57.5	**	**
Cecil	76.0	73.3	79.9	74.1	**	0.0
Charles	55.8	82.5	36.6	67.9	31.2	**
Dorchester	80.7	107.1	59.2	73.7	**	**
Frederick	42.2	44.0	41.5	42.8	**	**
Garrett	41.6	**	**	41.9	0.0	0.0
Harford	74.6	88.5	64.6	76.9	59.2	**
Howard	48.7	56.5	43.0	51.2	50.3	**
Kent	52.5	**	**	58.5	**	0.0
Montgomery	31.4	32.6	30.6	32.8	25.7	24.6
Prince George's	42.0	49.3	36.5	48.1	40.3	**
Queen Anne's	65.5	66.4	63.0	68.6	**	**
St. Mary's	70.6	84.7	59.0	72.2	**	0.0
Somerset	67.0	**	**	**	**	0.0
Talbot	64.1	73.0	58.0	67.6	**	0.0
Washington	74.3	87.6	65.5	74.2	**	**
Wicomico	69.9	70.8	69.4	68.4	79.5	**
Worcester	64.8	83.0	49.1	62.5	**	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 DHMH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry

**Table 14.**  
**Number of Deaths for Lung and Bronchus Cancer by**  
**Jurisdiction, Gender, and Race, Maryland, 2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	2,673	1,400	1,273	1,938	680	55
Allegany	47	27	20	s	<10	<10
Anne Arundel	267	133	134	241	s	<10
Baltimore City	391	200	191	s	262	<10
Baltimore County	391	213	178	311	s	<10
Calvert	45	21	24	38	<10	<10
Caroline	29	15	14	s	<10	<10
Carroll	88	54	34	84	<10	<10
Cecil	74	32	42	72	<10	<10
Charles	52	34	18	39	s	<10
Dorchester	29	18	11	21	<10	<10
Frederick	97	49	48	89	<10	<10
Garrett	11	<10	<10	s	<10	<10
Harford	128	76	52	118	s	<10
Howard	82	40	42	64	s	<10
Kent	17	<10	s	s	<10	<10
Montgomery	278	133	145	221	31	26
Prince George's	276	144	132	s	176	<10
Queen Anne's	23	11	12	22	<10	<10
St. Mary's	55	32	23	45	s	<10
Somerset	19	s	<10	14	<10	<10
Talbot	28	13	15	27	<10	<10
Washington	108	55	53	104	<10	<10
Wicomico	78	44	34	57	s	<10
Worcester	60	35	25	49	s	<10

<10 = Death counts of 0-9 are suppressed per DHMH/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, 2013

**Table 15.**  
**Lung and Bronchus Cancer Age-Adjusted Mortality Rates\* by**  
**Jurisdiction, Gender, and Race, Maryland, 2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	41.1	49.7	34.8	42.4	41.8	15.5
Allegany	45.6	59.0	35.3	47.2	**	**
Anne Arundel	46.1	51.8	41.7	48.6	33.6	**
Baltimore City	60.6	74.6	51.1	56.9	62.8	**
Baltimore County	38.2	49.2	30.1	38.6	41.1	**
Calvert	51.7	55.3	48.3	52.5	**	**
Caroline	68.6	**	**	80.2	**	**
Carroll	43.6	61.1	30.6	43.3	**	**
Cecil	66.4	65.9	67.6	69.3	**	**
Charles	34.2	53.7	**	40.4	**	**
Dorchester	61.9	**	**	58.6	**	**
Frederick	38.5	42.7	35.9	38.9	**	**
Garrett	**	**	**	**	**	**
Harford	47.0	63.9	34.2	48.8	**	**
Howard	27.3	32.1	25.5	29.5	**	**
Kent	**	**	**	**	**	**
Montgomery	24.5	27.4	22.3	26.5	21.3	16.1
Prince George's	34.3	44.1	28.4	39.7	32.3	**
Queen Anne's	39.4	**	**	41.7	**	**
St. Mary's	52.2	63.7	42.3	50.5	**	**
Somerset	**	**	**	**	**	**
Talbot	41.8	**	**	45.7	**	**
Washington	58.7	68.3	53.5	59.6	**	**
Wicomico	66.4	82.0	54.2	62.8	80.4	**
Worcester	68.7	88.9	51.4	62.8	**	**

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

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

Source: CDC Wonder, 2013

**Table 16.**  
**Number of Lung and Bronchus Cancer Cases by Jurisdiction,**  
**Gender, and Race, Maryland, 2009-2013**

Jurisdiction	Total*	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	17,752	8,873	8,857	12,967	4,296	420
Allegany	406	212	194	390	16	0
Anne Arundel	1,766	871	890	1,564	174	24
Baltimore City	2,478	1,239	1,236	839	1,618	20
Baltimore County	3,208	1,544	1,662	2,665	497	44
Calvert	266	124	139	231	31	<6
Caroline	140	77	63	119	21	0
Carroll	552	284	267	530	s	<6
Cecil	421	206	215	396	20	<6
Charles	367	199	166	265	90	6
Dorchester	164	94	70	121	41	<6
Frederick	597	293	304	556	34	6
Garrett	99	53	46	s	0	<6
Harford	903	458	445	821	71	10
Howard	579	284	295	448	80	47
Kent	93	43	50	82	11	0
Montgomery	1,784	819	964	1,320	251	192
Prince George's	1,697	888	805	598	1,052	40
Queen Anne's	188	98	90	173	s	<6
St. Mary's	332	196	136	281	46	<6
Somerset	145	79	66	108	32	<6
Talbot	166	74	92	150	16	0
Washington	615	319	295	574	34	<6
Wicomico	428	210	218	341	83	<6
Worcester	306	179	127	258	35	9

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

<6 = Case counts of 1-5 are suppressed per DHMH/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

**Table 17.**  
**Lung and Bronchus Cancer Age-Adjusted Incidence Rates\* by**  
**Jurisdiction, Gender, and Race, Maryland, 2009-2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	57.2	65.6	51.0	59.2	55.8	27.8
Allegany	77.5	92.6	66.0	76.8	153.1	0.0
Anne Arundel	62.6	69.4	57.4	65.1	52.8	32.9
Baltimore City	77.8	93.5	67.5	77.8	78.8	34.4
Baltimore County	66.0	74.4	60.0	69.3	60.3	27.4
Calvert	60.4	64.6	56.0	62.7	47.8	**
Caroline	74.0	96.7	59.7	73.2	84.0	0.0
Carroll	57.1	65.2	50.9	57.0	77.2	**
Cecil	77.7	82.8	73.7	77.8	69.4	**
Charles	54.5	65.8	45.1	59.6	45.3	**
Dorchester	70.4	88.2	55.8	67.6	80.9	**
Frederick	50.7	55.5	47.6	52.0	46.4	**
Garrett	46.9	57.3	39.9	46.7	0.0	**
Harford	67.4	77.6	60.2	68.9	59.8	**
Howard	43.3	47.7	40.4	45.4	41.4	29.5
Kent	58.7	58.8	60.4	60.1	**	0.0
Montgomery	34.0	36.2	32.4	34.2	35.6	27.6
Prince George's	43.9	54.8	36.2	50.3	41.4	20.7
Queen Anne's	62.3	70.3	55.4	62.7	**	**
St. Mary's	66.8	84.1	51.8	68.0	65.9	**
Somerset	95.1	110.3	82.1	94.8	84.8	**
Talbot	49.2	47.9	50.5	50.4	43.9	0.0
Washington	70.6	82.3	63.0	69.7	88.6	**
Wicomico	78.3	87.9	71.1	80.2	74.7	**
Worcester	68.5	87.2	52.4	64.8	73.9	**

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

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

Source: Maryland Cancer Registry

**Table 18.**  
**Number of Deaths for Lung and Bronchus Cancer by**  
**Jurisdiction, Gender, and Race, Maryland, 2009-2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	13,695	7,191	6,504	10,013	3,391	291
Allegany	241	135	106	237	<10	<10
Anne Arundel	1,387	721	666	1,226	133	28
Baltimore City	1,942	1,033	909	691	1,236	15
Baltimore County	2,356	1,196	1,160	1,955	376	25
Calvert	215	108	107	189	s	<10
Caroline	110	66	44	99	s	<10
Carroll	452	256	196	434	s	<10
Cecil	344	173	171	332	s	<10
Charles	304	174	130	224	s	<10
Dorchester	144	87	57	97	s	<10
Frederick	473	244	229	428	s	<10
Garrett	95	56	39	s	<10	<10
Harford	655	354	301	598	s	<10
Howard	370	178	192	283	49	38
Kent	89	44	45	s	18	<10
Montgomery	1,316	615	701	1,018	181	117
Prince George's	1,496	819	677	534	924	38
Queen Anne's	135	72	63	125	<10	<10
St. Mary's	262	156	106	224	s	<10
Somerset	106	56	50	84	s	<10
Talbot	138	68	70	119	s	<10
Washington	470	245	225	451	s	<10
Wicomico	324	174	150	265	s	<10
Worcester	271	161	110	234	s	<10

<10 = Death counts of 0-9 are suppressed per DHMH/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, 2009-2013

**Table 19.**  
**Lung and Bronchus Cancer Age-Adjusted Mortality Rates\* by**  
**Jurisdiction, Gender, and Race, Maryland, 2009-2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	44.5	54.1	37.4	45.7	45.4	19.7
Allegany	46.2	59.3	36.5	46.8	**	**
Anne Arundel	50.0	59.0	43.3	51.4	42.8	41.0
Baltimore City	61.8	79.0	49.9	63.5	61.6	**
Baltimore County	47.8	57.7	40.9	49.8	46.9	14.7
Calvert	48.8	55.6	43.5	50.8	39.0	**
Caroline	57.1	78.7	40.8	59.8	**	**
Carroll	47.5	61.6	36.9	47.4	**	**
Cecil	64.4	69.1	59.6	66.0	**	**
Charles	47.0	61.5	36.5	52.5	37.2	**
Dorchester	62.8	82.7	47.2	55.0	96.2	**
Frederick	40.4	47.4	35.2	40.1	55.8	**
Garrett	46.3	60.9	35.3	46.5	**	**
Harford	49.5	61.2	40.8	50.6	44.9	**
Howard	29.0	31.7	27.5	30.4	25.0	23.6
Kent	53.4	57.4	49.9	49.2	**	**
Montgomery	25.0	27.6	23.1	25.9	27.1	17.2
Prince George's	39.8	52.3	31.4	45.9	37.1	20.4
Queen Anne's	47.2	56.2	40.4	48.3	**	**
St. Mary's	53.5	65.5	42.0	54.6	53.0	**
Somerset	71.8	84.7	63.3	76.3	60.0	**
Talbot	40.3	44.6	37.4	38.7	**	**
Washington	53.6	63.8	47.1	54.1	**	**
Wicomico	59.3	73.3	48.8	61.9	51.2	**
Worcester	60.2	78.8	44.8	57.8	78.8	**

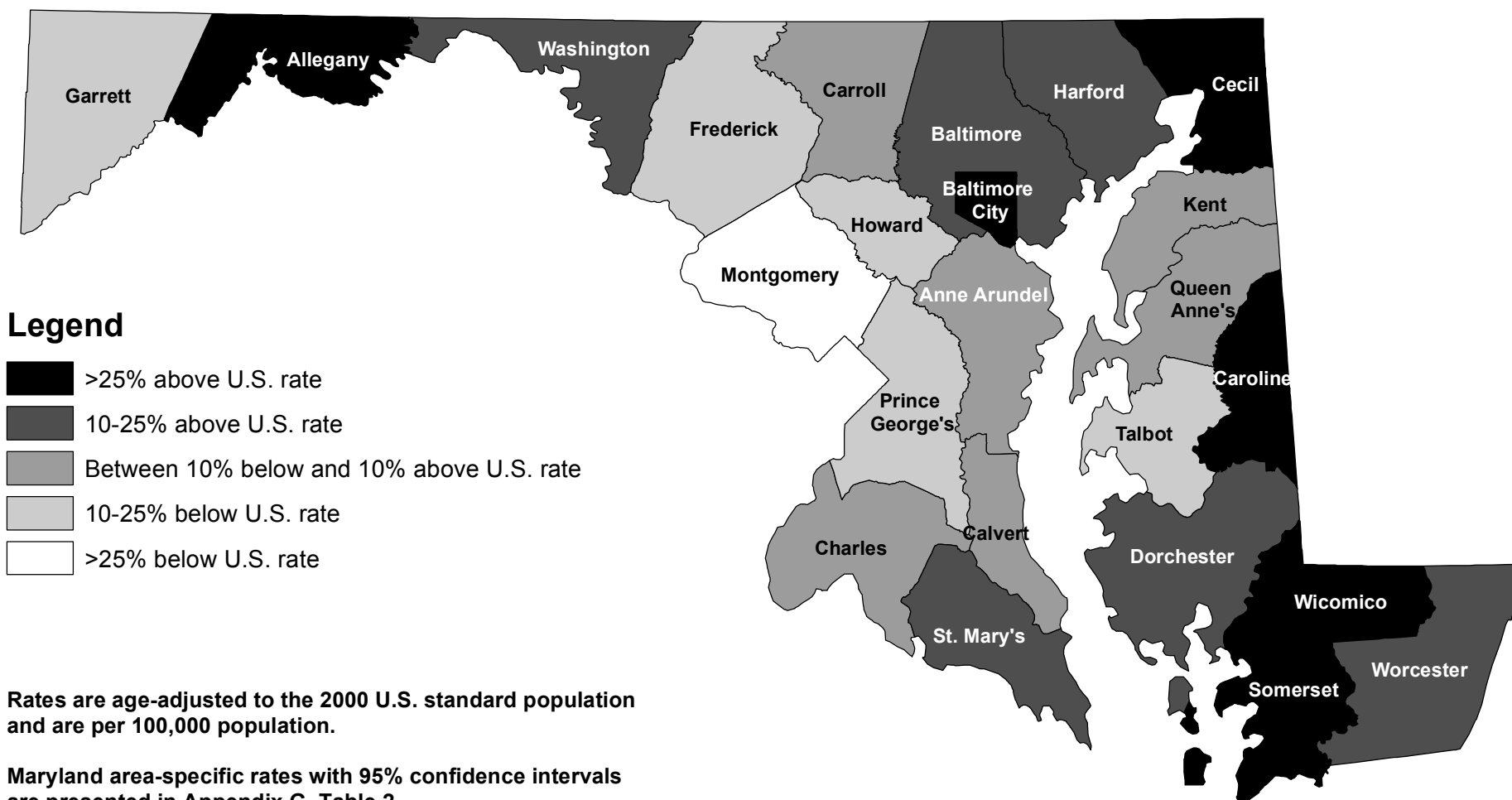
\* Rates are per 100,000 population and age-adjusted to 2000 U.S. standard population

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

Source: CDC Wonder, 2009-2013



# Maryland Lung Cancer Incidence Rates by Geographical Area: Comparison to U.S. Rate, 2009-2013

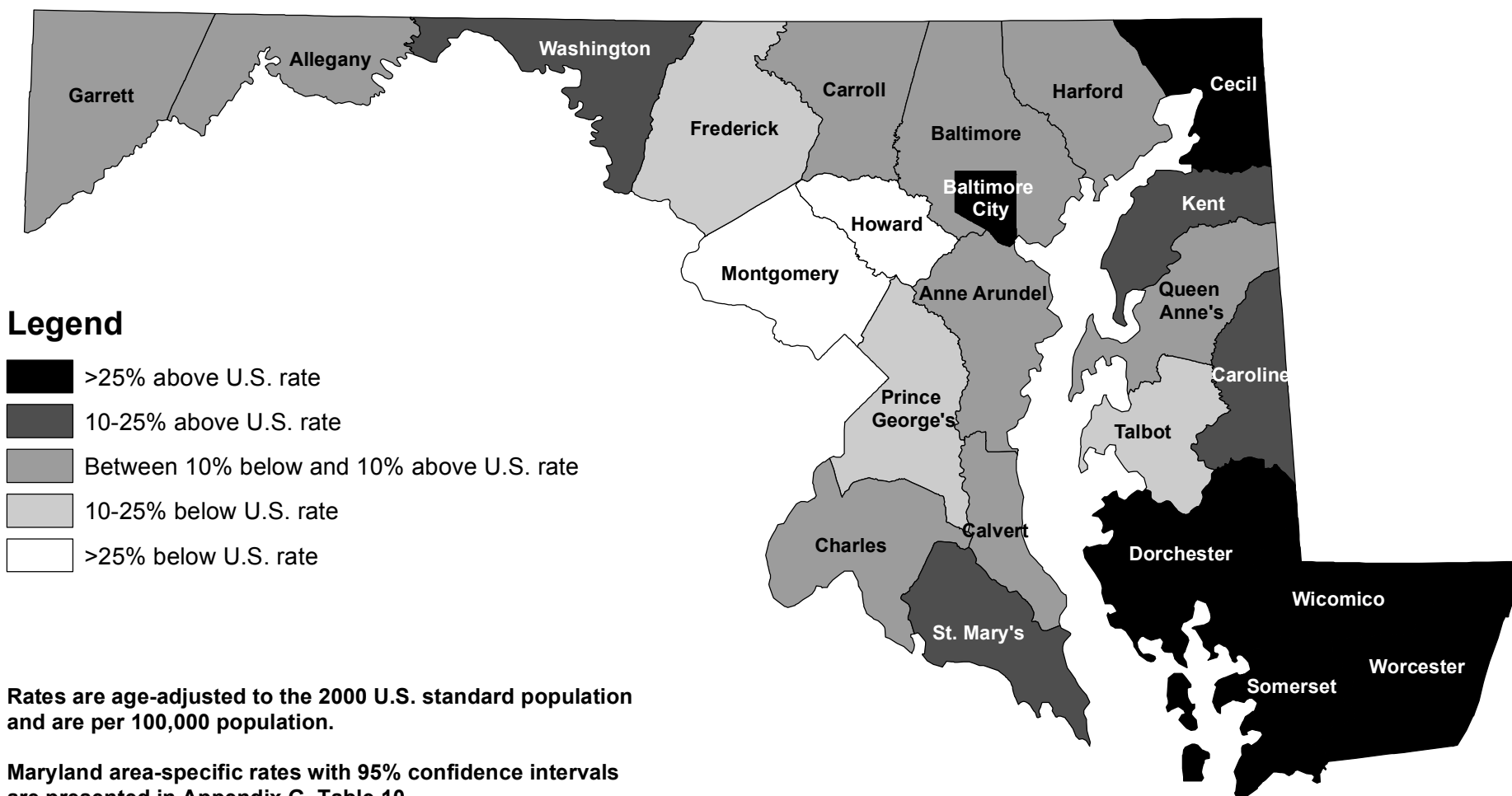


U.S. lung cancer incidence rate, 2009-2013: 57.3 / 100,000

Maryland lung cancer incidence rate, 2009-2013: 57.2 / 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, 2009-2013



U.S. lung cancer mortality rate, 2009-2013: 46.0 / 100,000

Maryland lung cancer mortality rate, 2009-2013: 44.5 / 100,000

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

## B. Colon and Rectum Cancer

### **Incidence (New Cases)**

In 2013, there were 2,346 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 2013 was 35.9 per 100,000 population (34.4-37.4, 95% C.I.), which is statistically significantly lower than the 2013 U.S. SEER age-adjusted colorectal cancer incidence rate of 38.5 per 100,000 population (38.1-38.9, 95% C.I.).

### **Mortality (Deaths)**

A total of 919 persons died of colorectal cancer in 2013 in Maryland. In 2013, colorectal cancer accounted for 8.7% of all cancer deaths and was the second leading cause of cancer death in Maryland. The age-adjusted colorectal cancer mortality rate in Maryland was 14.0 per 100,000 population (13.1-14.9, 95% C.I.). This rate is statistically significantly lower than the 2013 U.S. colorectal cancer mortality rate of 14.5 per 100,000 population (14.3-14.6, 95% C.I.). Maryland had the 27<sup>th</sup> highest colorectal cancer mortality rate among the states and the District of Columbia for the period 2009-2013.

**Table 20.**  
**Colorectal Cancer Incidence and Mortality Rates**  
**by Gender and Race, Maryland and the United States, 2013**

<i>Incidence 2013</i>	<i>Total*</i>	<i>Males</i>	<i>Females</i>	<i>Whites</i>	<i>Blacks</i>	<i>Other</i>
New Cases (count)	2,346	1,136	1,210	1,527	695	85
MD Incidence Rate	35.9	39.2	33.6	34.1	41.3	22.8
U.S. SEER Rate	38.5	44.2	33.7	37.7	47.1	31.6
<i>Mortality 2013</i>	<i>Total</i>	<i>Males</i>	<i>Females</i>	<i>Whites</i>	<i>Blacks</i>	<i>Other</i>
Deaths (count)	919	467	452	598	288	33
MD Mortality Rate	14.0	16.7	12.0	12.8	18.2	10.1
U.S. Mortality Rate	14.5	17.3	12.1	14.1	19.3	N/A

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

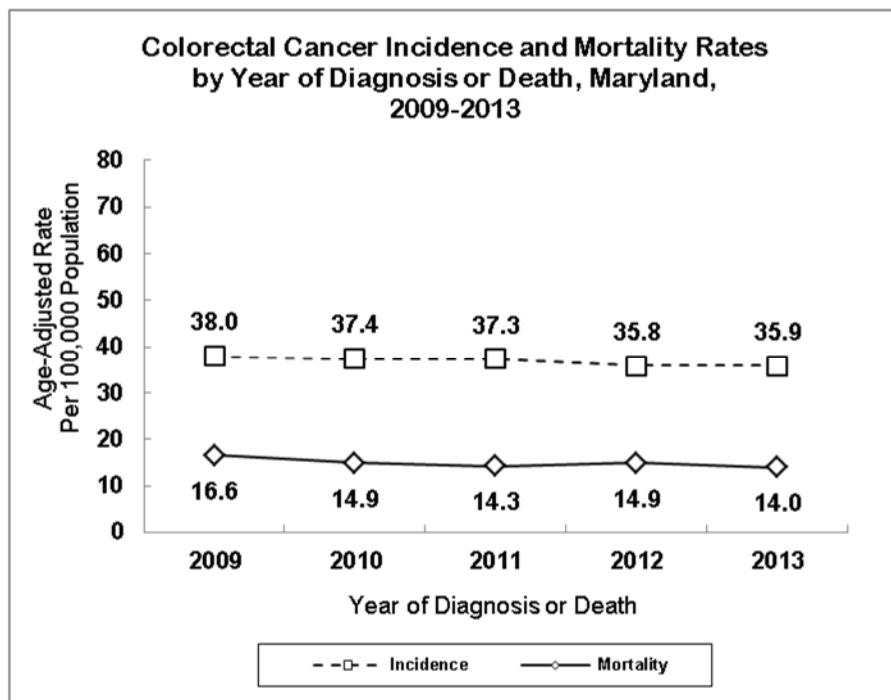
\* Total also includes cases reported as transexual, hermaphrodite, unknown gender, and unknown race

Source: Maryland Cancer Registry

U.S. SEER, SEER\*Stat

NCHS Compressed Mortality File in CDC WONDER, 2013

U.S. SEER, Cancer Statistics Review



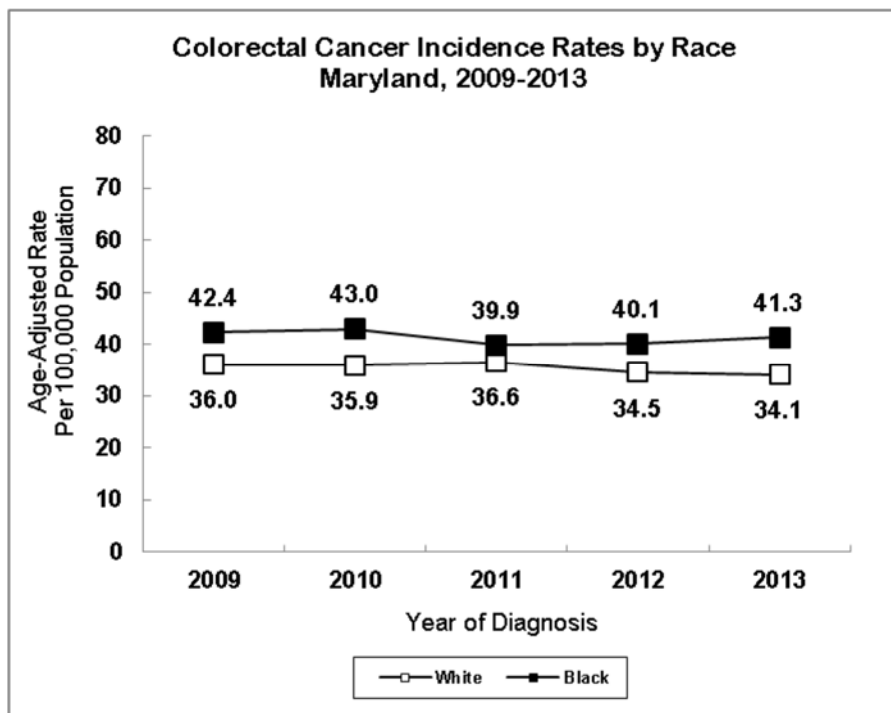
### **Incidence and Mortality Trends**

Incidence rates for colorectal cancer have been declining in Maryland. From 2009 to 2013, incidence rates declined at a rate of 1.5% per year.

Colorectal cancer mortality rates declined at a rate of 3.3% per year from 2009 to 2013.

See Appendix H, Tables 1 and 2.

Source: Maryland Cancer Registry  
NCHS Compressed Mortality File in CDC WONDER, 2012-2013  
Maryland Vital Statistics Administration, 2009-2011

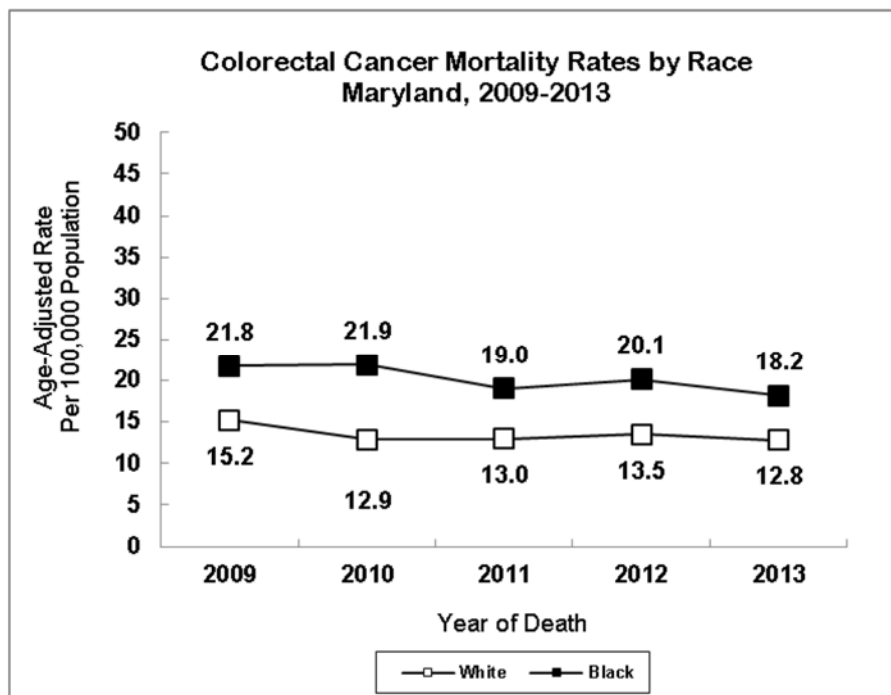


### **Incidence Trends by Race**

From 2009 to 2013, colorectal cancer incidence rates declined at a rate of 1.2% per year for blacks and 1.5% per year for whites. In 2013, the incidence rate for colorectal cancer was 34.1 for whites and 41.3 for blacks in Maryland.

See Appendix H, Table 3.

Source: Maryland Cancer Registry

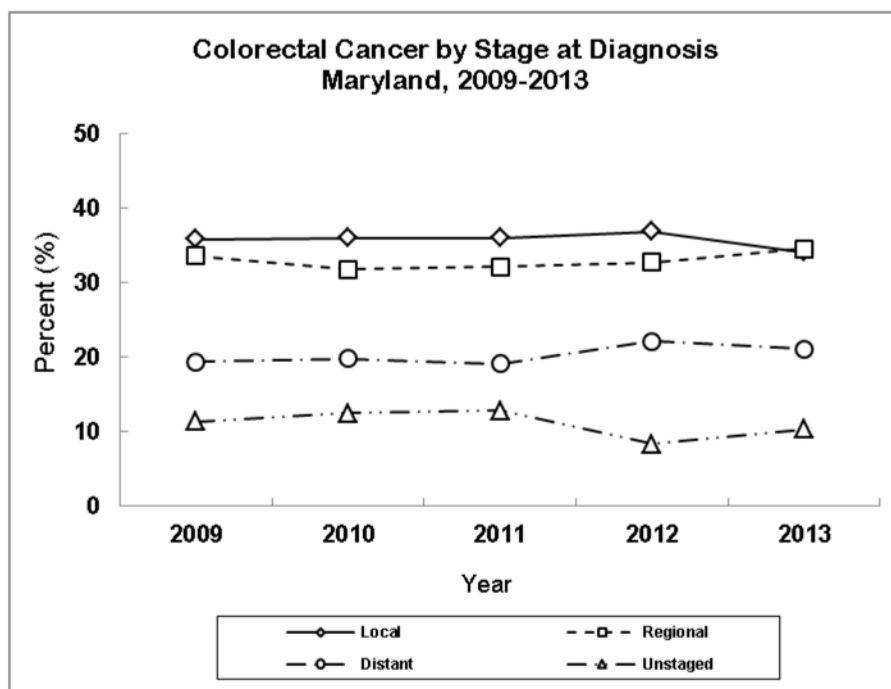


Source: NCHS Compressed Mortality File in CDC WONDER, 2012-2013  
Maryland Vital Statistics Administration, 2009-2011

### **Mortality Trends by Race**

From 2009 to 2013, colorectal cancer mortality rates declined for blacks and whites. Mortality rates in blacks decreased at a rate of 4.4% per year, whereas, among whites, the decline was 2.9% per year.

See Appendix H, Table 5.

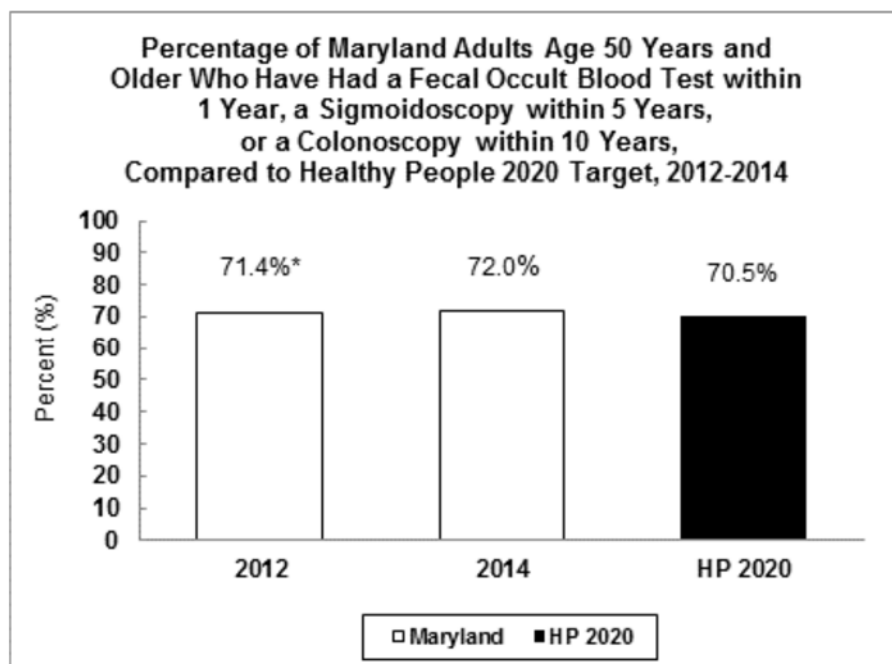


Source: Maryland Cancer Registry

### **Stage at Diagnosis**

In 2013, 34.1% of colorectal cancers diagnosed in Maryland were detected at the local stage, 34.5% were detected at the regional stage, and 21.1% were found at the distant stage. The proportion of colorectal cancers reported as unstaged experienced a decrease in 2012 and rose slightly in 2013.

See Appendix I, Table 3.



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

\* The 2012 BRFSS percent listed in the graph above (71.4%) in the current 2016 CRF Cancer Report differs slightly from the corresponding percent in the same graph in the previous 2014 CRF Cancer Report (69.1%, p.42) due to the correction of minor data errors in the analysis of the current report.

\*\* The guidelines for up-to-date colorectal cancer screening used for the Healthy People 2020 estimate are: persons aged 50 to 75 years who have had a blood stool test in the past year, sigmoidoscopy in the past 5 years and blood stool test in the past 3 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 is to increase to 70.5% the proportion of adults age 50 years and older who are screened based on recent guidelines\*\*. Based on guidelines provided by the American Cancer Society (ACS), up-to-date screening was defined as having a fecal occult blood test (FOBT) within 1 year, a sigmoidoscopy within 5 years, and a colonoscopy within 10 years. The percent of Maryland adults age 50 years and older who were up-to-date for colorectal cancer screening in 2012 (71.4%) and 2014 (72.0%) was above the Healthy People target of 70.5%.

## **Public Health Evidence (quoted from NCI PDQ<sup>®</sup>, 1/15/2016 and 2/11/2016; and USPSTF, 4/2016 and 6/2016)**

### **Prevention**

Based on solid evidence, regular physical activity is associated with a decreased incidence of colorectal cancer (CRC). Based on fair evidence, removal of adenomatous polyps reduces the risk of CRC. Much of this reduction likely comes from removal of large polyps ( $\geq 1$  cm), while the benefit of removing smaller polyps, which are much more common, is unknown. Based on solid evidence, the major harms of polyp removal include perforation of the colon and bleeding. There is no reliable evidence that a diet started in adulthood that is low in fat and meat and high in fiber, fruits, and vegetables reduces the risks of CRC by a clinically important degree. Based on solid evidence, factors associated with increased CRC risk are excessive alcohol use, cigarette smoking, and obesity; cigarette smoking and obesity are also associated with increased mortality from CRC.

### **Screening**

Based on solid evidence, screening for CRC reduces CRC mortality, but there is little evidence that it reduces all-cause mortality, possibly because of an observed increase in other causes of death. The USPSTF recommends screening for CRC starting at age 50 years and continuing until age 75 years. The decision to screen for CRC in adults aged 76 to 85 years should be an individual one, taking into account the patient's overall health and prior screening history. Adults in the 76 to 85 year age group who have never been screened for CRC are more likely to benefit. Also, within this age group, screening would be most appropriate among adults who are healthy enough to undergo treatment if CRC is detected, and do not have comorbid conditions that would significantly limit their life expectancy. The risks and benefits of different screening methods vary. The screening strategies listed in the USPSTF Recommendation Statement are guaiac-based fecal occult blood test (gFOBT), fecal immunochemical test (FIT), multitargeted stool DNA test (FIT-DNA), colonoscopy, CT colonography, flexible sigmoidoscopy, and flexible sigmoidoscopy with FIT. The USPSTF found no head-to-head studies demonstrating that any of the screening strategies it considered are more effective than others, although the tests have varying levels of evidence supporting their effectiveness, as well as different strengths and limitations. Given the lack of evidence from head-to-head comparative trials that any of the screening strategies have a greater net benefit than others, clinicians should consider engaging patients in informed decision making about the screening strategy that would most likely result in completion, with high adherence over time, taking into consideration both the patient's preferences and local availability.

### **Chemoprevention**

Based on solid evidence, daily aspirin (acetylsalicylic acid [ASA]) for at least 5 years reduces CRC incidence and mortality. However, based on solid evidence, harms of ASA use include excessive bleeding, including gastrointestinal bleeds and hemorrhagic stroke. The USPSTF recommends initiating low-dose aspirin use for the primary prevention of cardiovascular disease and colorectal cancer in adults aged 50 to 59 years who have a 10% or greater 10-year cardiovascular disease risk, are not at increased risk for bleeding, have a life expectancy of at least 10 years, and are willing to take low-dose aspirin daily for at least 10 years. Based on solid evidence, combined hormone therapy (conjugated equine estrogen and progestin) decreases the incidence of invasive CRC, but based on fair evidence, it has little or no benefit in reducing mortality from CRC. Based on solid evidence, harms of postmenopausal combined estrogen-plus-progestin hormone use include increased risk of breast cancer, coronary heart disease, and thromboembolic events. There is inadequate evidence that the use of nonsteroidal anti-inflammatory drugs (NSAIDs) reduces the risk of CRC. Based on solid evidence, NSAIDs reduce the risk of adenomas, but the extent to which this translates into a reduction of CRC is uncertain. Also, based on solid evidence, harms of NSAID use are relatively common and potentially serious, and include upper gastrointestinal bleeding, chronic

kidney disease, and serious cardiovascular events such as myocardial infarction, heart failure, and hemorrhagic stroke. Based on solid evidence, statins do not reduce the incidence or mortality from CRC. Based on fair evidence, conjugated equine estrogens do not affect the incidence of, or survival from, invasive CRC. The evidence is inadequate to determine whether calcium supplementation reduces the risk of CRC.

<b>Public Health Intervention for Colorectal Cancer (USPSTF 2016; DHMH Colorectal Cancer Medical Advisory Committee, 2013)</b>
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- |   |
|---|
| <ul style="list-style-type: none"><li>• CRC screening is recommended for those aged 50 to 75 years. The decision to screen for CRC in adults aged 76 to 85 years should be an individual one, taking into account the patient's overall health and prior screening history.</li></ul> |
|---|



**Table 21.**  
**Number of Colon and Rectum Cancer Cases by Jurisdiction,**  
**Gender, and Race, Maryland, 2013**

Jurisdiction	Total*	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	2,346	1,136	1,210	1,527	695	85
Allegany	46	20	26	s	<6	0
Anne Arundel	193	99	94	158	29	6
Baltimore City	260	130	130	78	178	<6
Baltimore County	387	181	206	282	93	10
Calvert	35	23	12	30	<6	0
Caroline	21	13	8	16	<6	<6
Carroll	85	25	60	80	<6	0
Cecil	51	27	24	49	<6	0
Charles	57	26	31	30	26	0
Dorchester	18	6	12	12	6	0
Frederick	92	46	46	84	6	<6
Garrett	16	<6	11	16	0	0
Harford	111	54	57	97	11	<6
Howard	93	44	49	64	17	10
Kent	14	9	<6	12	<6	0
Montgomery	312	144	168	197	58	36
Prince George's	328	168	160	85	223	12
Queen Anne's	14	<6	10	10	<6	<6
St. Mary's	37	23	14	34	<6	<6
Somerset	14	8	6	10	<6	<6
Talbot	23	15	8	20	<6	0
Washington	64	25	39	59	<6	0
Wicomico	40	20	20	30	s	<6
Worcester	30	18	12	25	<6	0

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

<6 = Case counts of 1-5 are suppressed per DHMH/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

**Table 22.**  
**Colon and Rectum Cancer Age-Adjusted Incidence Rates\* by**  
**Jurisdiction, Gender, and Race, Maryland, 2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	35.9	39.2	33.6	34.1	41.3	22.8
Allegany	46.2	44.8	48.7	47.5	**	0.0
Anne Arundel	32.6	39.0	28.8	32.1	39.4	23.3
Baltimore City	40.9	49.4	35.4	37.0	43.5	**
Baltimore County	38.8	42.3	36.1	36.7	48.5	**
Calvert	36.2	54.2	24.2	37.6	**	0.0
Caroline	54.2	**	**	50.3	**	**
Carroll	40.4	26.8	52.0	39.6	**	0.0
Cecil	46.7	53.9	42.9	47.9	**	0.0
Charles	39.2	40.6	38.5	33.2	51.1	0.0
Dorchester	39.9	**	**	**	**	0.0
Frederick	36.6	39.8	34.2	37.2	**	**
Garrett	39.6	**	**	39.9	0.0	0.0
Harford	38.5	41.4	35.9	38.0	**	**
Howard	32.1	33.4	32.0	30.7	40.9	**
Kent	**	**	**	**	**	0.0
Montgomery	27.7	28.6	27.2	24.7	36.6	22.2
Prince George's	36.8	43.6	31.8	35.5	36.2	**
Queen Anne's	**	**	**	**	**	**
St. Mary's	31.4	38.3	**	34.9	**	**
Somerset	**	**	**	**	**	**
Talbot	35.1	**	**	34.6	**	0.0
Washington	35.1	28.7	40.4	34.7	**	0.0
Wicomico	36.0	38.9	33.3	34.4	**	**
Worcester	36.0	48.3	**	34.7	**	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 DHMH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry

**Table 23.**  
**Number of Deaths for Colon and Rectum Cancer by Jurisdiction,**  
**Gender, and Race, Maryland, 2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	919	467	452	598	288	33
Allegany	14	<10	<10	13	<10	<10
Anne Arundel	71	35	36	54	s	<10
Baltimore City	154	84	70	s	94	<10
Baltimore County	132	63	69	109	s	<10
Calvert	12	<10	<10	11	<10	<10
Caroline	<10	<10	<10	<10	<10	<10
Carroll	31	19	12	s	<10	<10
Cecil	11	<10	<10	10	<10	<10
Charles	22	<10	s	12	s	<10
Dorchester	13	<10	<10	<10	<10	<10
Frederick	27	16	11	26	<10	<10
Garrett	<10	<10	<10	<10	<10	<10
Harford	33	15	18	31	<10	<10
Howard	34	23	11	21	<10	<10
Kent	<10	<10	<10	<10	<10	<10
Montgomery	94	41	53	66	13	15
Prince George's	158	77	81	s	106	<10
Queen Anne's	<10	<10	<10	<10	<10	<10
St. Mary's	15	s	<10	12	<10	<10
Somerset	<10	<10	<10	<10	<10	<10
Talbot	<10	<10	<10	<10	<10	<10
Washington	31	11	20	30	<10	<10
Wicomico	21	s	<10	17	<10	<10
Worcester	10	<10	<10	s	<10	<10

<10 = Death counts of 0-9 are suppressed per DHMH/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, 2013

**Table 24.**  
**Colon and Rectum Cancer Age-Adjusted Mortality Rates\* by**  
**Jurisdiction, Gender, and Race, Maryland, 2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	14.0	16.7	12.0	12.8	18.2	10.1
Allegany	**	**	**	**	**	**
Anne Arundel	11.9	13.7	10.5	10.8	**	**
Baltimore City	24.8	34.1	19.1	27.6	23.3	**
Baltimore County	12.3	14.4	11.0	12.7	12.7	**
Calvert	**	**	**	**	**	**
Caroline	**	**	**	**	**	**
Carroll	14.9	**	**	15.5	**	**
Cecil	**	**	**	**	**	**
Charles	17.0	**	**	**	**	**
Dorchester	**	**	**	**	**	**
Frederick	10.5	**	**	11.2	**	**
Garrett	**	**	**	**	**	**
Harford	11.2	**	**	11.8	**	**
Howard	11.5	18.3	**	8.9	**	**
Kent	**	**	**	**	**	**
Montgomery	8.2	8.4	7.8	7.6	**	**
Prince George's	19.1	21.8	16.7	19.6	19.2	**
Queen Anne's	**	**	**	**	**	**
St. Mary's	**	**	**	**	**	**
Somerset	**	**	**	**	**	**
Talbot	**	**	**	**	**	**
Washington	16.8	**	17.9	17.5	**	**
Wicomico	18.8	**	**	**	**	**
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 DHMH/CCPC Mortality Data Suppression Policy

Source: CDC Wonder, 2013

**Table 25.**  
**Number of Colon and Rectum Cancer Cases by Jurisdiction,**  
**Gender, and Race, Maryland, 2009-2013**

Jurisdiction	Total*	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	11,547	5,761	5,772	7,754	3,211	414
Allegany	249	119	130	239	10	0
Anne Arundel	951	491	459	791	129	26
Baltimore City	1,450	688	761	467	965	14
Baltimore County	1,906	897	1,006	1,441	400	46
Calvert	153	83	67	123	28	<6
Caroline	82	43	38	74	s	<6
Carroll	363	178	185	344	15	<6
Cecil	221	125	96	209	9	0
Charles	246	126	120	154	76	6
Dorchester	103	55	48	72	s	<6
Frederick	519	283	235	462	43	9
Garrett	76	38	38	75	0	0
Harford	579	299	280	504	62	<6
Howard	449	234	214	306	85	51
Kent	54	29	25	45	9	0
Montgomery	1,536	755	780	1,050	239	192
Prince George's	1,410	713	695	382	947	44
Queen Anne's	83	32	51	71	s	<6
St. Mary's	170	98	72	152	16	<6
Somerset	75	38	37	53	s	<6
Talbot	108	54	54	98	10	0
Washington	354	163	191	333	17	<6
Wicomico	222	111	111	165	50	<6
Worcester	145	85	60	122	17	<6

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

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

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

**Table 26.**  
**Colon and Rectum Cancer Age-Adjusted Incidence Rates\* by**  
**Jurisdiction, Gender, and Race, Maryland, 2009-2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	36.8	41.8	33.0	35.4	41.2	26.0
Allegany	48.8	52.9	45.6	48.6	**	0.0
Anne Arundel	33.4	38.4	29.5	32.9	38.8	27.2
Baltimore City	45.7	52.7	41.2	42.8	47.6	**
Baltimore County	38.9	42.7	36.1	37.7	45.4	26.3
Calvert	33.3	39.7	27.4	31.9	44.4	**
Caroline	43.7	48.7	37.7	46.6	**	**
Carroll	37.5	41.2	34.7	37.0	**	**
Cecil	40.8	50.8	33.5	41.3	**	0.0
Charles	35.7	41.3	31.6	35.9	31.4	**
Dorchester	46.9	55.5	40.7	43.8	57.5	**
Frederick	43.8	53.4	36.2	43.6	47.9	**
Garrett	37.8	40.6	34.5	37.5	0.0	0.0
Harford	43.0	49.9	37.3	42.2	51.6	**
Howard	32.0	37.4	28.4	29.4	41.9	28.9
Kent	36.6	42.8	33.0	35.9	**	0.0
Montgomery	28.4	31.8	25.5	26.8	32.4	26.3
Prince George's	35.1	41.3	30.5	31.8	36.5	22.9
Queen Anne's	27.2	21.3	32.1	25.5	**	**
St. Mary's	32.6	37.6	27.1	35.0	21.9	**
Somerset	50.0	55.1	48.3	48.6	52.9	**
Talbot	34.7	40.3	29.9	36.3	**	0.0
Washington	40.6	40.9	39.8	40.4	36.5	**
Wicomico	41.2	46.8	37.6	39.5	47.7	**
Worcester	34.0	44.0	25.4	32.2	39.4	**

\* 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 DHMH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry

**Table 27.**  
**Number of Deaths for Colon and Rectum Cancer by Jurisdiction,**  
**Gender, and Race, Maryland, 2009-2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	4,637	2,402	2,235	3,015	1,479	143
Allegany	94	61	33	93	<10	<10
Anne Arundel	365	201	164	279	75	11
Baltimore City	696	338	358	s	476	<10
Baltimore County	737	368	369	579	144	14
Calvert	67	31	36	57	s	<10
Caroline	32	16	16	28	<10	<10
Carroll	153	83	70	150	<10	<10
Cecil	77	49	28	71	<10	<10
Charles	110	58	52	57	s	<10
Dorchester	36	17	19	21	s	<10
Frederick	186	103	83	175	<10	<10
Garrett	28	18	10	s	<10	<10
Harford	190	87	103	162	s	<10
Howard	142	68	74	98	32	12
Kent	26	15	11	21	<10	<10
Montgomery	507	245	262	356	86	65
Prince George's	685	355	330	183	483	19
Queen Anne's	31	20	11	27	<10	<10
St. Mary's	76	46	30	67	<10	<10
Somerset	34	18	16	22	s	<10
Talbot	43	23	20	36	<10	<10
Washington	155	89	66	152	<10	<10
Wicomico	108	62	46	85	s	<10
Worcester	59	31	28	55	<10	<10

<10 = Death counts of 0-9 are suppressed per DHMH/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, 2009-2013

**Table 28.**  
**Colon and Rectum Cancer Age-Adjusted Mortality Rates\* by**  
**Jurisdiction, Gender, and Race, Maryland, 2009-2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	14.9	18.2	12.5	13.5	20.1	9.7
Allegany	17.8	27.0	10.6	18.1	**	**
Anne Arundel	13.1	16.2	10.7	11.8	22.9	**
Baltimore City	22.4	27.3	19.5	19.1	24.5	**
Baltimore County	14.4	17.5	12.0	13.9	17.2	**
Calvert	15.7	16.6	15.3	16.1	**	**
Caroline	17.3	**	**	17.3	**	**
Carroll	16.0	20.4	13.0	16.3	**	**
Cecil	14.6	21.3	9.5	14.2	**	**
Charles	16.9	21.0	14.1	13.4	26.6	**
Dorchester	16.2	**	**	11.9	**	**
Frederick	16.0	21.1	12.1	16.5	**	**
Garrett	13.1	**	**	13.2	**	**
Harford	14.5	15.4	13.6	13.9	22.7	**
Howard	10.7	11.7	10.0	9.6	17.4	**
Kent	16.1	**	**	15.5	**	**
Montgomery	9.2	10.7	8.2	8.7	11.6	9.8
Prince George's	18.1	21.8	15.3	15.5	19.9	**
Queen Anne's	10.6	14.9	**	10.3	**	**
St. Mary's	14.6	18.2	11.1	15.4	**	**
Somerset	23.1	**	**	20.3	**	**
Talbot	12.7	15.7	10.0	11.4	**	**
Washington	17.5	23.4	12.9	18.1	**	**
Wicomico	19.8	27.5	14.6	19.6	22.9	**
Worcester	13.5	16.5	10.7	14.2	**	**

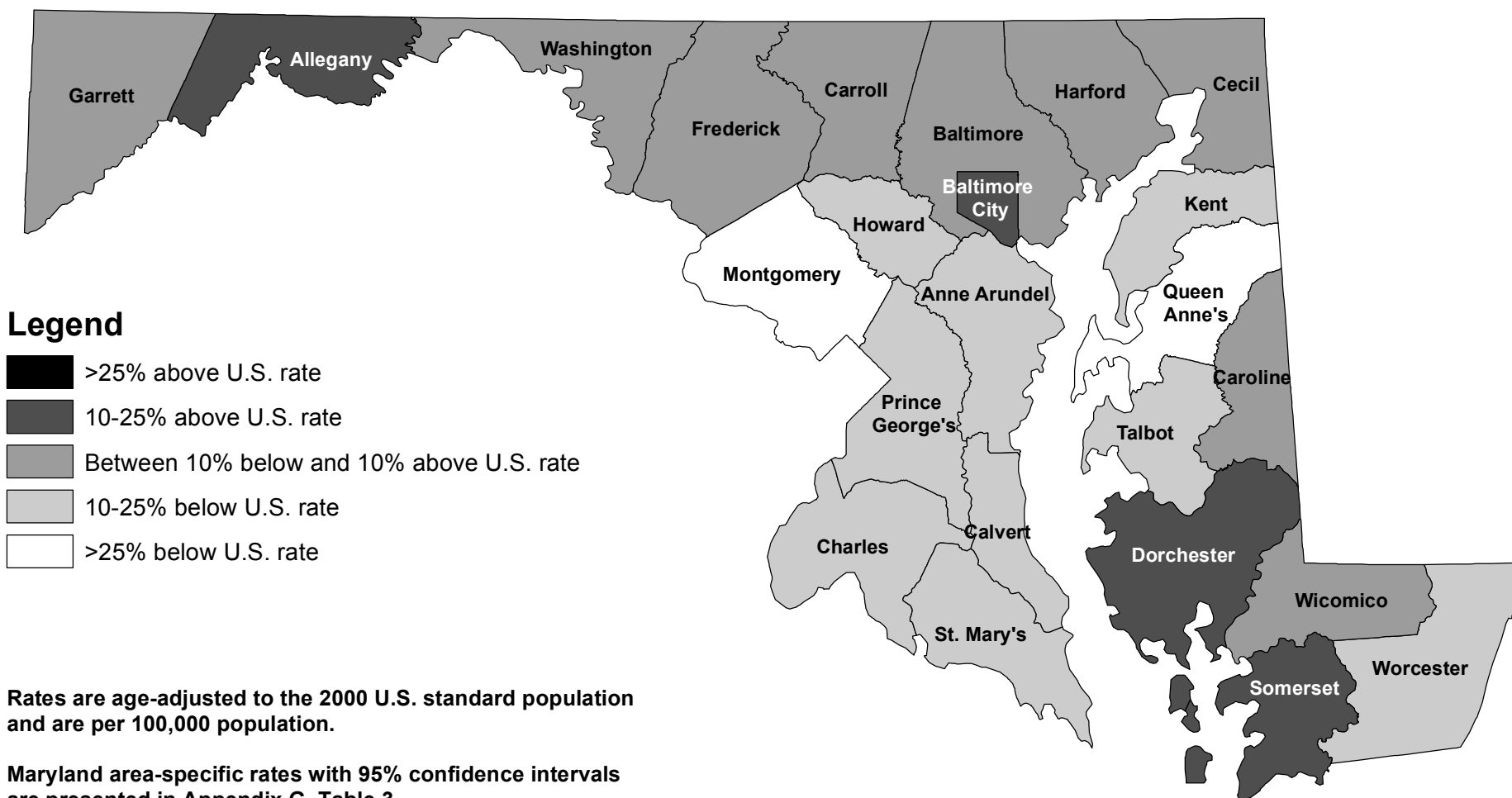
\* Rates are per 100,000 population and age-adjusted to 2000 U.S. standard population

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

Source: CDC Wonder, 2009-2013



# Maryland Colorectal Cancer Incidence Rates by Geographical Area: Comparison to U.S. Rate, 2009-2013

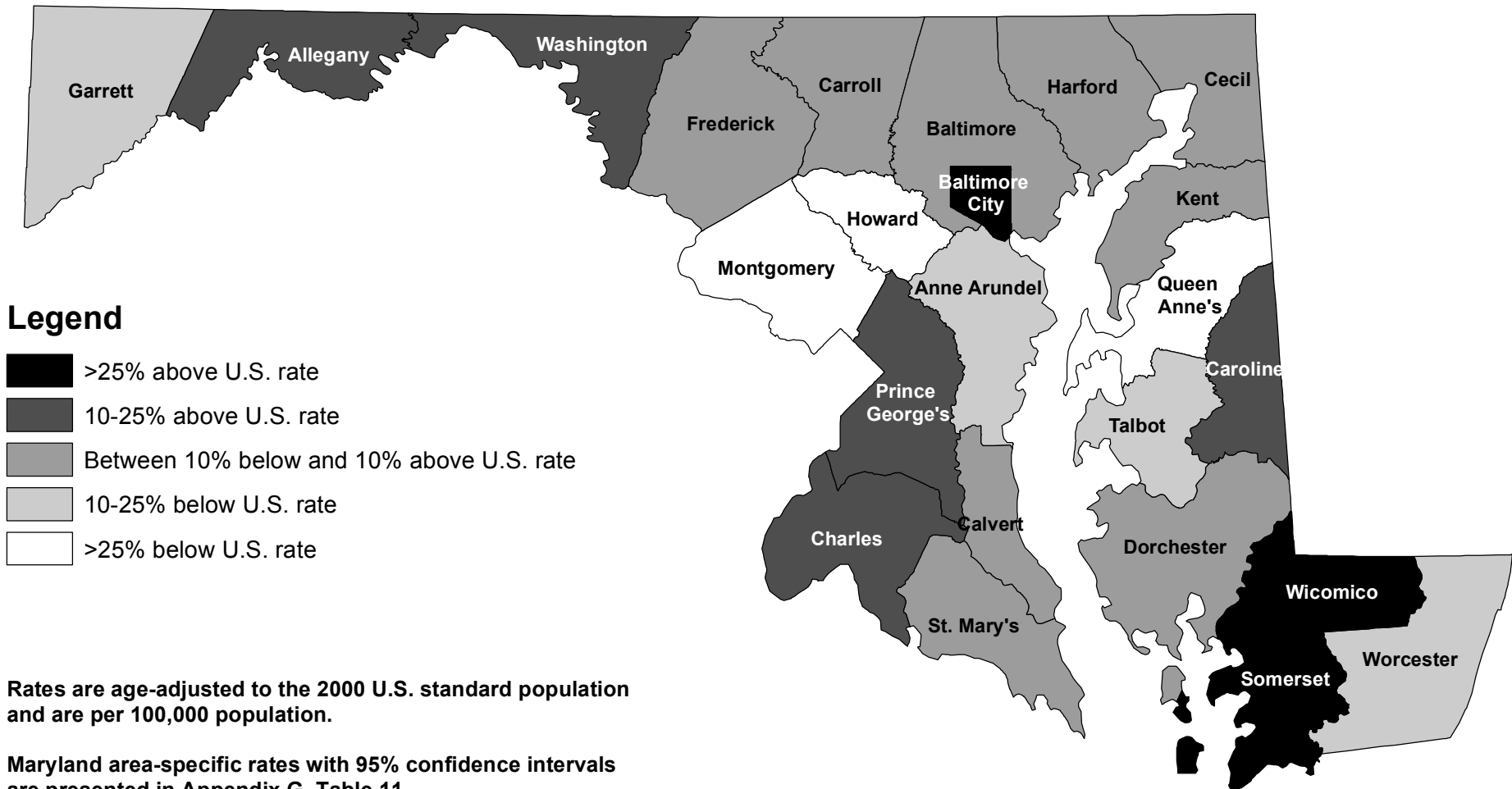


U.S. colorectal cancer incidence rate, 2009-2013: 41.0 / 100,000

Maryland colorectal cancer incidence rate, 2009-2013: 36.8 / 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, 2009-2013



U.S. colorectal cancer mortality rate, 2009-2013: 15.1 / 100,000

Maryland colorectal cancer mortality rate, 2009-2013: 14.9 / 100,000

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

## C. Female Breast Cancer

### **Incidence (New Cases)**

In 2013, a total of 4,810 cases of breast cancer were reported among Maryland women. The 2013 age-adjusted incidence rate in Maryland was 134.6 per 100,000 women (130.7-138.5, 95% C.I.), which is statistically significantly higher than the 2013 U.S. SEER age-adjusted female breast cancer incidence rate of 125.4 per 100,000 women (124.4-126.4, 95% C.I.).

### **Mortality (Deaths)**

In 2013, a total of 783 women died of breast cancer in Maryland. Female breast cancer accounted for 15.0% of cancer deaths among women and 7.3% of all cancer deaths in Maryland in 2013. Breast cancer is the second leading cause of cancer death among women in Maryland after lung cancer. The 2013 age-adjusted mortality rate for female breast cancer in Maryland was 21.5 per 100,000 women (19.9-23.0, 95% C.I.). This rate is statistically significantly higher than the U.S. female breast cancer mortality rate of 20.7 per 100,000 women (20.5-20.9, 95% C.I.). Maryland had the 8<sup>th</sup> highest female breast cancer mortality rate among the states and the District of Columbia for the period 2009-2013.

**Table 29.**  
**Female Breast Cancer Incidence and Mortality Rates**  
**by Race, Maryland and the United States, 2013**

<i>Incidence 2013</i>	<i>Total*</i>	<i>Whites</i>	<i>Blacks</i>	<i>Other</i>
New Cases (count)	4,810	3,143	1,428	185
MD Incidence Rate	134.6	134.8	139.7	79.9
U.S. SEER Rate	125.4	127.8	125.7	96.2
<i>Mortality 2013</i>	<i>Total</i>	<i>Whites</i>	<i>Blacks</i>	<i>Other</i>
Deaths (count)	783	490	275	18
MD Mortality Rate	21.5	19.8	28.1	**
U.S. Mortality Rate	20.7	20.3	28.2	N/A

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

\* Total includes unknown race

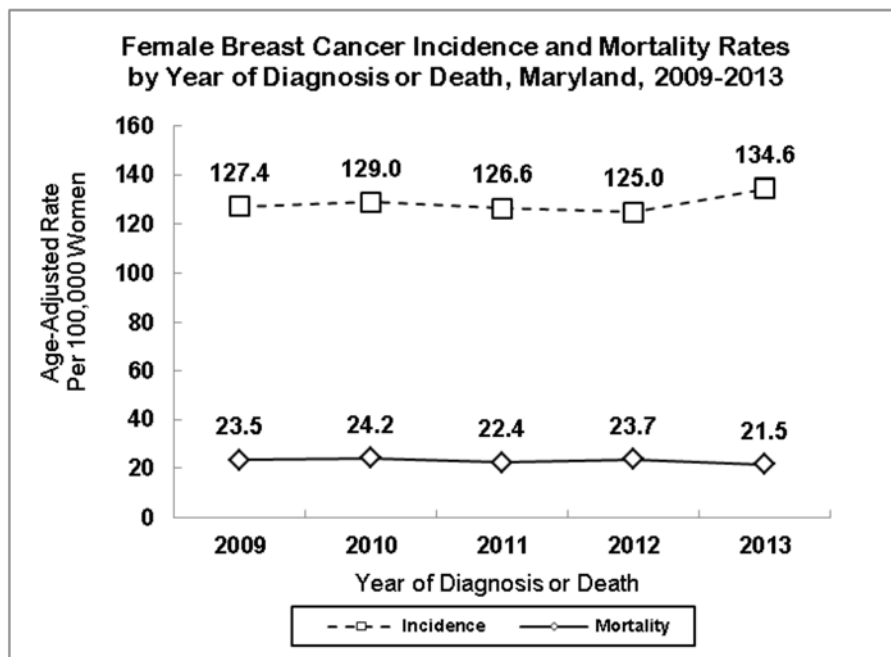
\*\* MD mortality rates based on death counts of 0-19 are suppressed per DHMH/CCPC Mortality Data Suppression Policy

Source: Maryland Cancer Registry

U.S. SEER, SEER\*Stat

NCHS Compressed Mortality File in CDC WONDER, 2013

U.S. SEER, Cancer Statistics Review



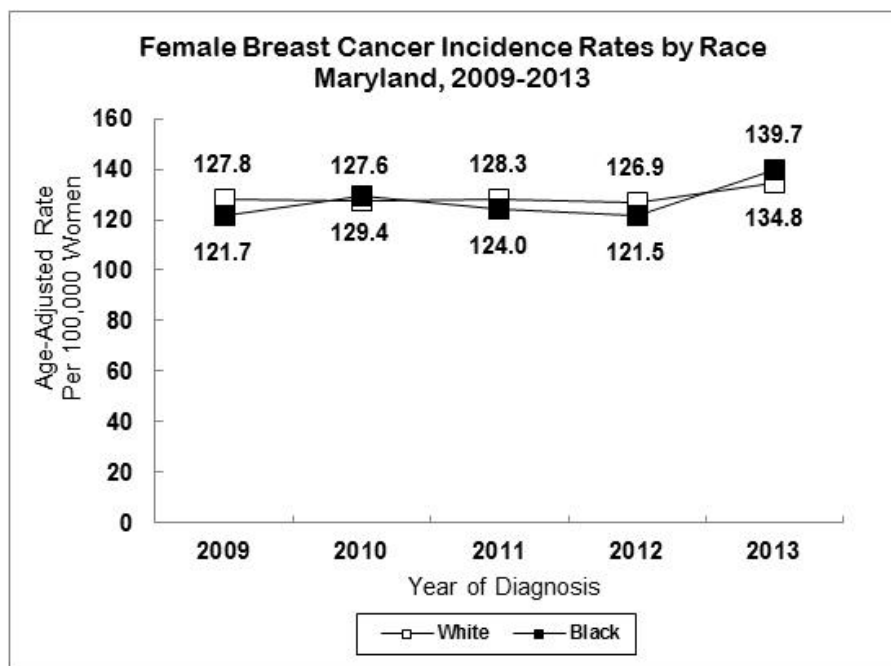
Source: Maryland Cancer Registry  
 NCHS Compressed Mortality File in CDC WONDER, 2012-2013  
 Maryland Vital Statistics Administration from MATCH, 2009-2010  
 Maryland Vital Statistics Administration, 2011

### **Incidence and Mortality Trends**

From 2009 to 2013, incidence rates for female breast cancer increased in Maryland at a rate of 0.8% annually.

Breast cancer mortality rates for females decreased at a rate of 2.0% per year.

See Appendix H, Tables 1 and 2.

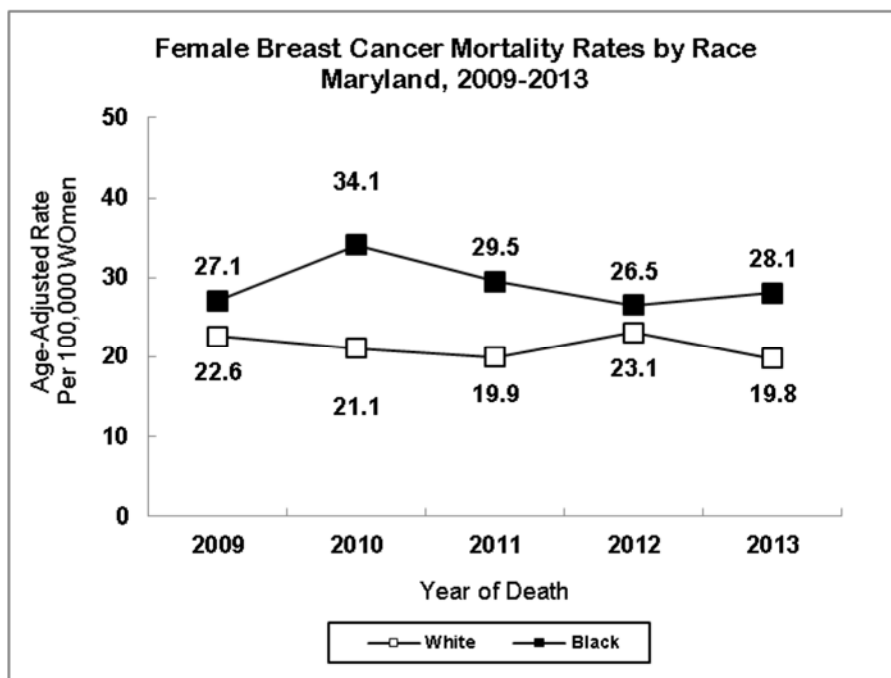


Source: Maryland Cancer Registry

### **Incidence Trends by Race**

The increase in female breast cancer incidence rates differed by race in Maryland from 2009 to 2013. Incidence rates increased at a rate of 1.0% per year among white females and 2.2% among black females. In 2013, the breast cancer incidence rate for white females in Maryland was 134.8 per 100,000 women compared to 139.7 per 100,000 women for black females.

See Appendix H, Table 3.

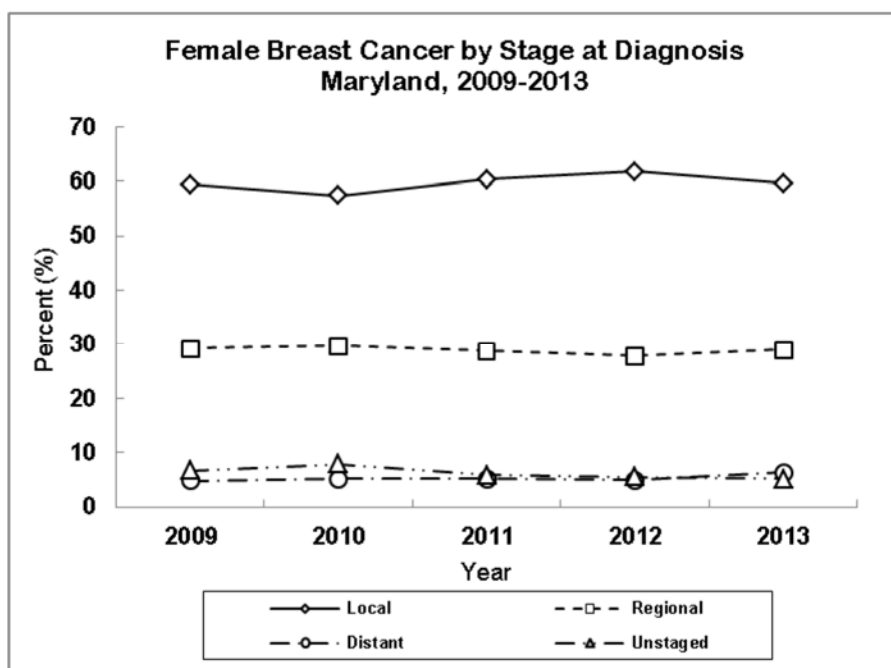


### **Mortality Trends by Race**

Female breast cancer mortality trends differed by race from 2009 to 2013. The mortality rate in blacks increased in 2013, but decreased at a rate of 1.8% per year between 2009-2013. In whites, the mortality rate decreased in 2013 and decreased at a rate of 1.7% per year in the same time period.

See Appendix H, Table 5.

Source: NCHS Compressed Mortality File in CDC WONDER, 2012-2013  
Maryland Vital Statistics Administration from MATCH, 2009-2010  
Maryland Vital Statistics Administration, 2011

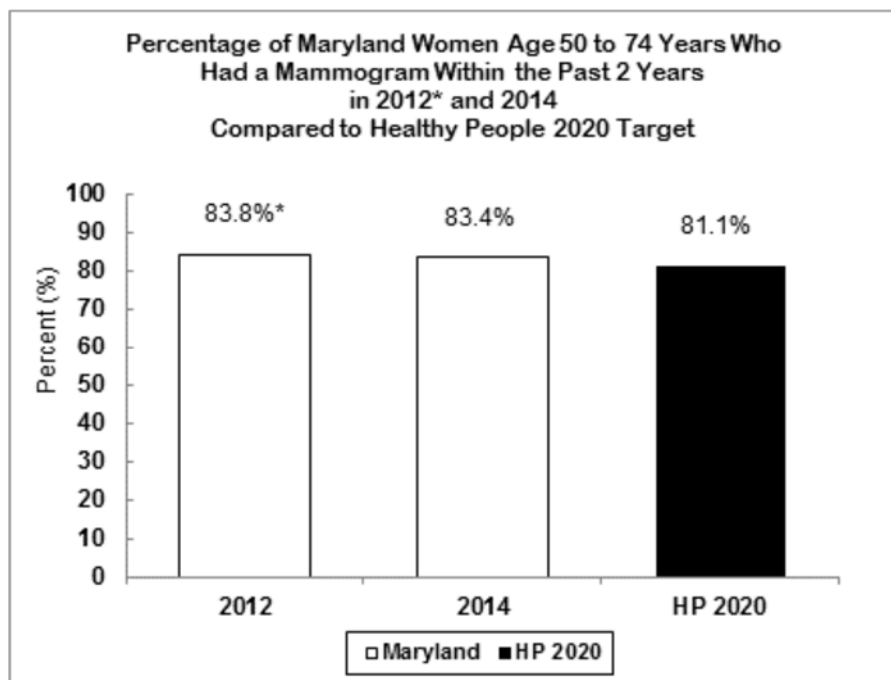


### **Stage at Diagnosis**

In 2013, 59.6% of all female breast cancer cases in Maryland were diagnosed at the local stage, 29.0% were found at the regional stage, and 6.3% were diagnosed at the distant stage. The proportion of female breast cancers reported as unstaged in 2013 was 5.2%.

See Appendix I, Table 4.

Source: Maryland Cancer Registry



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

\* The 2012 BRFSS percent listed in the graph above (83.8%) in the current 2016 CRF Cancer Report differs slightly from the corresponding percent in the same graph in the previous 2014 CRF Cancer Report (83.2%, p.58) due to the exclusion of codes 7=*don't know/not sure* and 9=*refused* to improve the precision of the analysis of variables "hadmam" and "howlong" in the current report.

### **Breast Cancer Screening**

The Healthy People 2020 target for breast cancer is to increase to 81.1% the proportion of women who had a breast cancer screening based on the most recent guidelines. As of May 2012, the USPSTF guideline includes biennial mammography for women age 50 to 74 years. Maryland women have consistently surpassed this target. In 2012 and 2014, 83.8% and 83.4% of Maryland women age 50 to 74 years reported receiving a mammogram within the past 2 years, respectively.

## **Public Health Evidence (quoted from NCI PDQ® 12/16/2015 and 3/4/2016; USPSTF 9/2013 and 1/2016)**

### **Prevention**

Based on solid evidence, factors with adequate evidence of increased risk of breast cancer are: female sex and increasing age; family history of breast cancer (especially in a first-degree relative); women who inherit gene mutations associated with breast cancer; dense breasts; combination hormone therapy (estrogen-progestin); exposure of the breast to ionizing radiation exposure (risk depending on radiation dose and age of exposure); obesity in postmenopausal women who have not used hormone therapy; and alcohol consumption (dose-dependent association). Based on solid evidence, having a full-term pregnancy before age 20, breast-feeding, and exercising strenuously for more than 4 hours per week are all factors that decrease the risk of breast cancer. Based on fair evidence, women who have undergone a prior hysterectomy and who are treated with conjugated equine estrogen have a lower incidence of breast cancer. However, based on solid evidence, women who have undergone hysterectomy and who are taking postmenopausal estrogen have an increased risk of stroke and cardiovascular disease.

### **Screening**

Based on solid evidence, screening mammography may lead to a decrease in breast cancer mortality. For women aged 40 to 74 years, screening with mammography has been associated with a 15-20% relative reduction in mortality from breast cancer. Absolute mortality benefit for women screened annually for 10 years is approximately 1% overall, ranging from 4 per 10,000 women who start screening at age 40 years to 50 per 10,000 women who start at age 50 years. The USPSTF recommends biennial screening mammography for women aged 50 to 74 years. The decision to start screening mammography in women prior to age 50 years 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. 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. Based on solid evidence, screening mammography may lead to the following harms: overdiagnosis and resulting treatment of insignificant cancers; false positives and additional testing and anxiety; false negatives with false sense of security and potential delay in cancer diagnosis; and radiation-induced mutations that can cause breast cancer, especially if exposed before age 30 years and at high doses. The USPSTF concludes that the current evidence is insufficient to assess the benefits and harms of digital breast tomosynthesis (DBT) as a primary screening method for breast cancer. The USPSTF also concluded that the current evidence is insufficient to assess the balance of benefits and harms of adjunctive screening for breast cancer using breast ultrasonography, magnetic resonance imaging, DBT, or other methods in women identified to have dense breasts on an otherwise negative screening mammogram. Clinical breast examination (CBE) has not been tested independently, thus it is not possible to assess the efficacy of CBE as a screening modality when it is used alone versus usual care (no screening activity). CBE may lead to false positives and additional testing and anxiety or false negatives with a potential false reassurance and delay in cancer diagnosis. Breast self-examination has been compared with usual care (no screening activity) and has not been shown to reduce breast cancer mortality. Based on solid evidence, formal instruction and encouragement to perform breast self-examination leads to more breast biopsies and diagnosis of more benign breast lesions.

### **Chemoprevention**

The USPSTF recommends that clinicians engage in shared, informed decision making with women who are at increased risk for breast cancer about medications to reduce their risk. For women who are at increased risk for breast cancer and at low risk for adverse medication effects, clinicians should offer to prescribe risk-reducing medications, such as tamoxifen or raloxifene. The USPSTF recommends against the routine use of medications, such as tamoxifen or raloxifene, for risk reduction of primary breast cancer in women who are

not at increased risk for breast cancer. Based on solid evidence, tamoxifen and raloxifene reduce the incidence of breast cancer in postmenopausal women, and tamoxifen reduces the risk of breast cancer in high-risk premenopausal women. However, based on solid evidence, tamoxifen treatment increases the risk of endometrial cancer (which was apparent in the first 5 years of follow-up, but not beyond), thrombotic vascular events (i.e. pulmonary embolism, stroke, and deep venous thrombosis), and cataracts. Based on solid evidence, raloxifene also increases venous pulmonary embolism and deep venous thrombosis, but not endometrial cancer. Based on solid evidence, aromatase inhibitors or inactivators reduce the incidence of new breast cancers in postmenopausal women who have an increased risk. Based on fair evidence, exemestane (an aromatase inactivator) is associated with hot flashes and fatigue, but not with fractures, osteoporosis, or cardiovascular events. Based on solid evidence, bilateral prophylactic mastectomy reduces the risk of breast cancer in women with a strong family history, and most women experience relief from anxiety about breast cancer risk. Based on solid evidence, premenopausal women with *BRCA* gene mutations who undergo prophylactic oophorectomy have lower breast cancer incidence. Similarly, oophorectomy or ovarian ablation is associated with decreased breast cancer incidence in normal premenopausal women and in women with increased breast cancer risk resulting from thoracic irradiation. Based on solid evidence, oophorectomy or ovarian ablation may cause the abrupt onset of menopausal symptoms such as hot flashes, insomnia, anxiety, and depression. Long-term effects include decreased libido, vaginal dryness, and decreased bone mineral density.

<p><b>Public Health Intervention for Breast Cancer (DHMH Breast Cancer Medical Advisory Committee, 2015)</b></p>
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<p>For early detection of breast cancer:</p>
--

- |   |
|---|
| <ul style="list-style-type: none"> <li>• Screen using mammography and a clinical breast examination by a health professional annually for women aged 40 years and older.</li> </ul> |
|---|



**Table 30.**  
**Number of Female Breast Cancer Cases by**  
**Jurisdiction and Race, Maryland, 2013**

Jurisdiction	Total*	Race		
		Whites	Blacks	Other
Maryland	4,810	3,143	1,428	185
Allegany	73	s	<6	0
Anne Arundel	447	363	74	9
Baltimore City	449	135	306	<6
Baltimore County	705	515	168	15
Calvert	74	63	11	0
Caroline	28	18	s	<6
Carroll	140	138	<6	0
Cecil	62	55	<6	<6
Charles	120	59	57	<6
Dorchester	30	24	6	0
Frederick	178	158	16	<6
Garrett	16	16	0	0
Harford	213	190	19	<6
Howard	263	185	56	21
Kent	23	20	<6	0
Montgomery	857	593	144	92
Prince George's	699	151	515	24
Queen Anne's	47	47	0	0
St. Mary's	68	55	9	<6
Somerset	13	11	<6	0
Talbot	31	27	<6	<6
Washington	131	119	10	<6
Wicomico	81	71	8	<6
Worcester	58	55	<6	0

\* Total includes cases reported as unknown race

<6 = Case counts of 1-5 are suppressed per DHMH/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

**Table 31.**  
**Female Breast Cancer Age-Adjusted Incidence**  
**Rates\* by Jurisdiction and Race, Maryland, 2013**

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	134.6	134.8	139.7	79.9
Allegany	148.4	150.9	**	0.0
Anne Arundel	137.3	136.6	162.2	**
Baltimore City	125.2	123.0	125.8	**
Baltimore County	133.1	136.2	135.9	**
Calvert	129.8	135.3	**	0.0
Caroline	139.3	109.4	**	**
Carroll	123.1	126.8	**	0.0
Cecil	100.8	95.8	**	**
Charles	138.9	126.8	178.9	**
Dorchester	127.3	143.8	**	0.0
Frederick	125.2	125.2	147.1	**
Garrett	88.2	89.0	0.0	0.0
Harford	135.4	139.8	109.0	**
Howard	147.6	155.9	181.0	83.8
Kent	128.2	138.2	**	0.0
Montgomery	138.4	140.8	137.8	89.8
Prince George's	140.9	122.8	145.8	86.4
Queen Anne's	149.0	163.7	0.0	0.0
St. Mary's	117.4	116.4	**	**
Somerset	**	**	**	0.0
Talbot	91.3	83.1	**	**
Washington	146.2	137.2	**	**
Wicomico	139.3	159.8	**	**
Worcester	144.9	155.4	**	0.0

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

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

Source: Maryland Cancer Registry

**Table 32.**  
**Number of Deaths for Female Breast Cancer by**  
**Jurisdiction and Race, Maryland, 2013**

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	783	490	275	18
Allegany	<10	<10	<10	<10
Anne Arundel	77	65	s	<10
Baltimore City	108	s	70	<10
Baltimore County	122	81	s	<10
Calvert	12	<10	<10	<10
Caroline	<10	<10	<10	<10
Carroll	28	27	<10	<10
Cecil	<10	<10	<10	<10
Charles	13	<10	<10	<10
Dorchester	<10	<10	<10	<10
Frederick	19	17	<10	<10
Garrett	<10	<10	<10	<10
Harford	36	29	<10	<10
Howard	31	21	<10	<10
Kent	<10	<10	<10	<10
Montgomery	108	75	26	<10
Prince George's	112	s	91	<10
Queen Anne's	<10	<10	<10	<10
St. Mary's	13	12	<10	<10
Somerset	<10	<10	<10	<10
Talbot	<10	<10	<10	<10
Washington	30	28	<10	<10
Wicomico	14	11	<10	<10
Worcester	10	<10	<10	<10

<10 = Death counts of 0-9 are suppressed per DHMH/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, 2013

**Table 33.**  
**Female Breast Cancer Age-Adjusted Mortality**  
**Rates\* by Jurisdiction and Race, Maryland, 2013**

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	21.5	19.8	28.1	**
Allegany	**	**	**	**
Anne Arundel	23.4	23.4	**	**
Baltimore City	28.8	29.9	28.6	**
Baltimore County	21.4	18.3	30.1	**
Calvert	**	**	**	**
Caroline	**	**	**	**
Carroll	25.9	25.3	**	**
Cecil	**	**	**	**
Charles	**	**	**	**
Dorchester	**	**	**	**
Frederick	**	**	**	**
Garrett	**	**	**	**
Harford	23.0	20.5	**	**
Howard	19.8	18.7	**	**
Kent	**	**	**	**
Montgomery	16.7	16.6	25.8	**
Prince George's	23.2	**	27.4	**
Queen Anne's	**	**	**	**
St. Mary's	**	**	**	**
Somerset	**	**	**	**
Talbot	**	**	**	**
Washington	30.5	28.3	**	**
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 DHMH/CCPC Mortality Data Suppression Policy

Source: CDC Wonder, 2013

**Table 34.**  
**Number of Female Breast Cancer Cases by**  
**Jurisdiction and Race, Maryland, 2009-2013**

Jurisdiction	Total*	Race		
		Whites	Blacks	Other
Maryland	22,228	14,838	6,179	850
Allegany	307	300	7	0
Anne Arundel	2,033	1,722	254	41
Baltimore City	2,228	742	1,435	24
Baltimore County	3,458	2,549	775	94
Calvert	373	325	47	0
Caroline	118	95	s	<6
Carroll	703	678	14	9
Cecil	337	315	20	<6
Charles	491	267	206	11
Dorchester	143	108	s	<6
Frederick	817	734	56	23
Garrett	109	106	0	<6
Harford	1,027	878	118	21
Howard	1,084	758	210	102
Kent	96	79	17	0
Montgomery	3,850	2,696	619	385
Prince George's	2,897	633	2,106	98
Queen Anne's	184	172	s	<6
St. Mary's	293	248	37	7
Somerset	70	52	18	0
Talbot	212	187	23	<6
Washington	583	551	24	7
Wicomico	356	281	65	7
Worcester	282	241	31	7

\* Total includes cases reported as unknown race

<6 = Case counts of 1-5 are suppressed per DHMH/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

**Table 35.**  
**Female Breast Cancer Age-Adjusted Incidence**  
**Rates\* by Jurisdiction and Race, Maryland, 2009-**  
**2013**

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	128.5	129.0	127.4	82.6
Allegany	119.9	121.0	**	0.0
Anne Arundel	128.3	132.1	116.9	59.1
Baltimore City	124.2	132.4	119.9	63.8
Baltimore County	134.0	133.5	135.3	86.0
Calvert	143.3	151.3	118.7	0.0
Caroline	118.1	111.6	163.0	**
Carroll	131.8	132.8	**	**
Cecil	115.0	114.6	137.9	**
Charles	122.6	112.5	141.7	**
Dorchester	122.1	125.6	114.6	**
Frederick	121.3	122.5	110.6	82.3
Garrett	108.0	105.8	0.0	**
Harford	137.5	135.1	154.0	92.8
Howard	129.3	129.2	149.5	95.1
Kent	115.2	113.2	131.2	0.0
Montgomery	128.7	129.3	128.0	84.5
Prince George's	121.7	101.9	127.5	77.2
Queen Anne's	115.6	120.2	**	**
St. Mary's	105.5	109.1	92.2	**
Somerset	96.2	99.8	94.8	0.0
Talbot	137.4	140.4	113.3	**
Washington	130.3	129.9	108.2	**
Wicomico	123.7	127.8	104.0	**
Worcester	142.5	140.5	132.2	**

\* 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 DHMH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry

**Table 36.**  
**Number of Deaths for Female Breast Cancer by**  
**Jurisdiction and Race, Maryland, 2009-2013**

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	4,068	2,606	1,375	87
Allegany	54	53	<10	<10
Anne Arundel	362	292	s	<10
Baltimore City	524	s	364	<10
Baltimore County	668	474	184	10
Calvert	62	51	s	<10
Caroline	25	19	<10	<10
Carroll	124	120	<10	<10
Cecil	66	63	<10	<10
Charles	91	57	s	<10
Dorchester	29	20	<10	<10
Frederick	141	124	s	<10
Garrett	25	s	<10	<10
Harford	169	149	s	<10
Howard	159	125	s	<10
Kent	23	17	<10	<10
Montgomery	567	409	121	37
Prince George's	605	134	459	12
Queen Anne's	32	30	<10	<10
St. Mary's	65	54	s	<10
Somerset	10	<10	<10	<10
Talbot	37	32	<10	<10
Washington	106	103	<10	<10
Wicomico	64	44	s	<10
Worcester	60	50	s	<10

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

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

**Table 37.**  
**Female Breast Cancer Age-Adjusted Mortality**  
**Rates\* by Jurisdiction and Race, Maryland, 2009-**  
**2013**

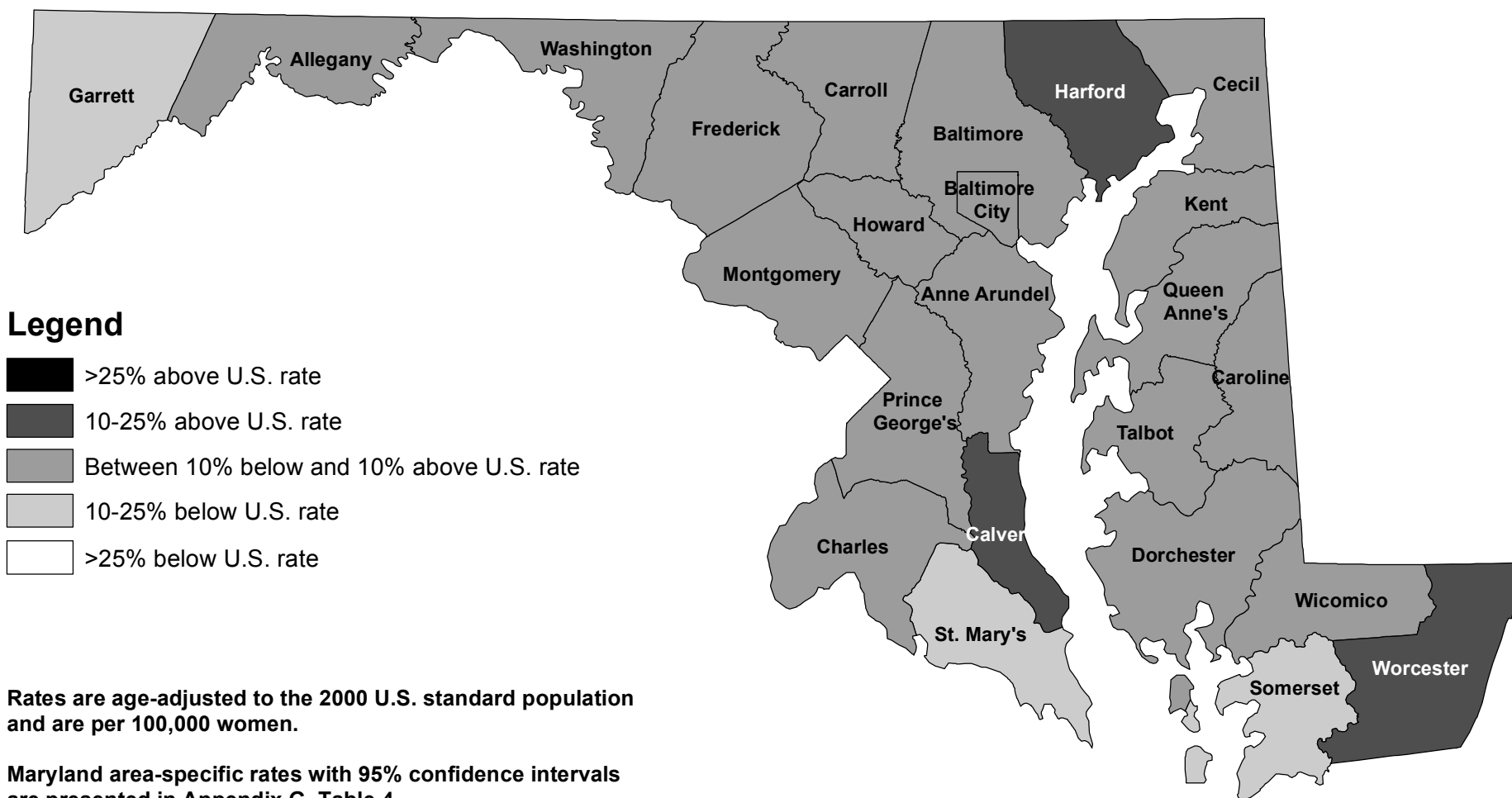
Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	23.1	21.3	29.1	8.4
Allegany	18.7	18.9	**	**
Anne Arundel	23.3	22.5	30.1	**
Baltimore City	29.0	25.2	31.0	**
Baltimore County	23.9	21.8	31.6	**
Calvert	24.9	24.8	**	**
Caroline	24.9	**	**	**
Carroll	22.7	22.7	**	**
Cecil	22.6	22.8	**	**
Charles	23.8	24.0	24.1	**
Dorchester	22.9	19.4	**	**
Frederick	20.7	20.1	**	**
Garrett	21.4	21.5	**	**
Harford	22.2	22.2	**	**
Howard	20.2	21.8	22.4	**
Kent	25.0	**	**	**
Montgomery	18.2	18.2	25.3	7.9
Prince George's	26.3	21.3	29.1	**
Queen Anne's	20.3	21.2	**	**
St. Mary's	23.6	23.5	**	**
Somerset	**	**	**	**
Talbot	22.1	22.1	**	**
Washington	21.7	21.9	**	**
Wicomico	20.9	18.0	31.1	**
Worcester	27.0	26.0	**	**

\* 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 DHMH/CCPC Mortality Data Suppression Policy



# Maryland Female Breast Cancer Incidence Rates by Geographical Area: Comparison to U.S. Rate, 2009-2013

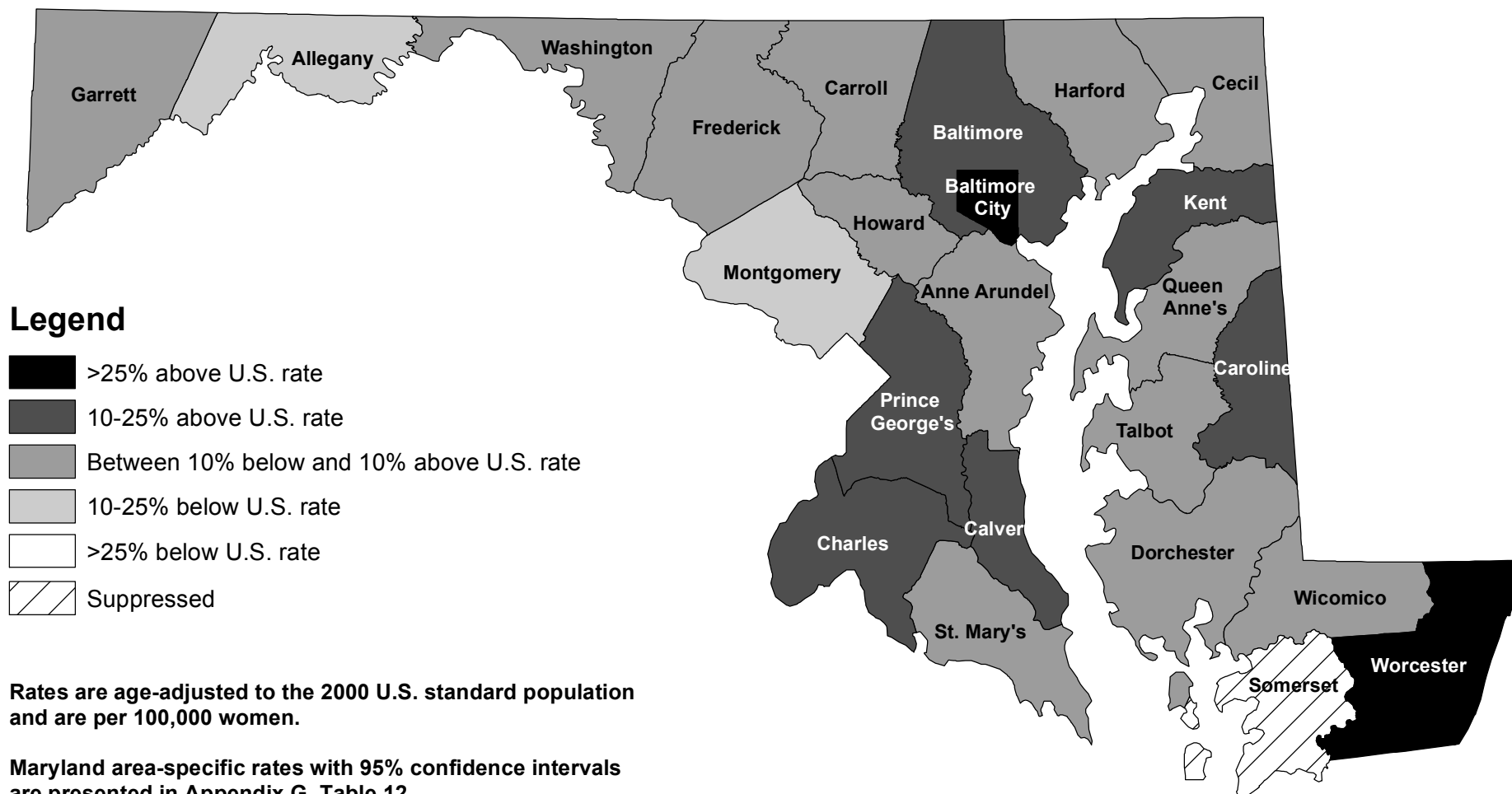


U.S. female breast cancer incidence rate, 2009-2013: 125.0 / 100,000

Maryland female breast cancer incidence rate, 2009-2013: 128.5 / 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, 2009-2013



U.S. female breast cancer mortality rate, 2009-2013: 21.5 / 100,000

Maryland female breast cancer mortality rate, 2009-2013: 23.1 / 100,000

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

Note: Rates based on death counts of 0-19 are suppressed per DHMH / CCPC Mortality Data Suppression Policy.

## D. Prostate Cancer

### Incidence (New Cases)

In 2013, a total of 3,998 cases of prostate cancer were reported among men in Maryland. The age-adjusted prostate cancer incidence rate in Maryland for 2013 was 124.5 per 100,000 men (120.6-128.6, 95% C.I.), which is statistically significantly higher than the 2013 U.S. SEER age-adjusted prostate cancer incidence rate of 107.0 per 100,000 men (106.0-108.0, 95% C.I.).

### Mortality (Deaths)

Prostate cancer is the second leading cause of cancer death among men in Maryland after lung cancer. In 2013, 484 men died of prostate cancer in Maryland, accounting for 4.6% of all cancer deaths and 9.0% of cancer deaths among men in Maryland. The 2013 age-adjusted mortality rate for prostate cancer in Maryland was 19.1 per 100,000 men (17.4-20.9, 95% C.I.). This rate is similar to the 2013 U.S. prostate cancer mortality rate of 19.2 per 100,000 men (19.0-19.5, 95% C.I.). Maryland had the 24<sup>th</sup> highest prostate cancer mortality rate among the states and the District of Columbia for the period 2009-2013.

**Table 38.**  
**Prostate Cancer Incidence and Mortality Rates**  
**by Race, Maryland and the United States, 2013**

<i>Incidence 2013</i>	<i>Total*</i>	<i>Whites</i>	<i>Blacks</i>	<i>Other</i>
New Cases (count)	3,998	2,439	1,433	88
MD Incidence Rate	124.5	108.0	185.6	51.9
U.S. SEER Rate	107.0	99.0	169.7	53.9
<i>Mortality 2013</i>	<i>Total</i>	<i>Whites</i>	<i>Blacks</i>	<i>Other</i>
Deaths (count)	484	307	s	<10
MD Mortality Rate	19.1	16.4	32.8	**
U.S. Mortality Rate	19.2	18.0	39.1	N/A

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

\* Total includes unknown race

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

s = Counts are suppressed to prevent disclosure of data in other cell(s) based on Table 41

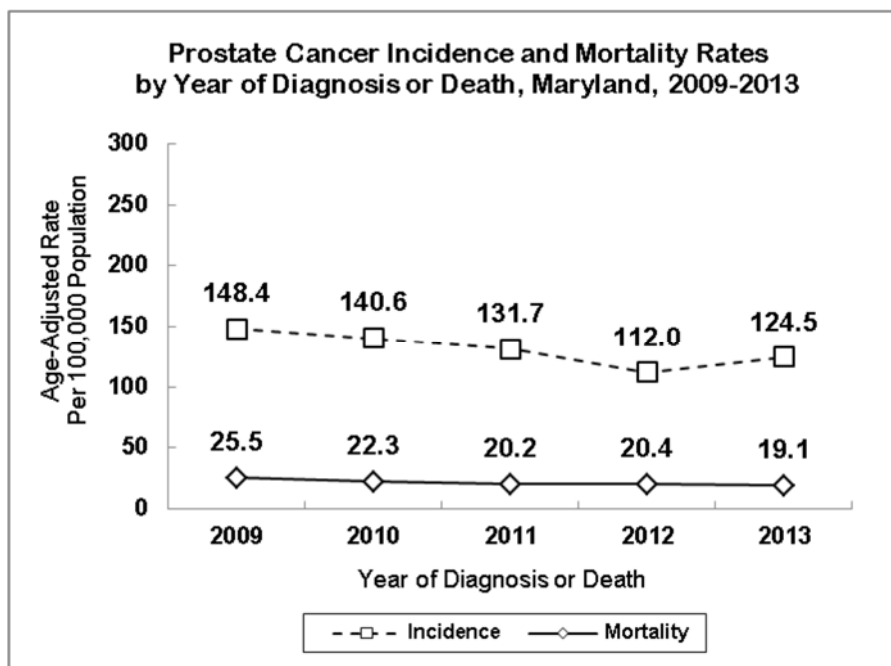
\*\* MD mortality rates based on death counts of 0-19 are suppressed per DHMH/CCPC Mortality Data Suppression Policy

Source: Maryland Cancer Registry

U.S. SEER, SEER\*Stat

NCHS Compressed Mortality File in CDC WONDER, 2013

U.S. SEER, Cancer Statistics Review



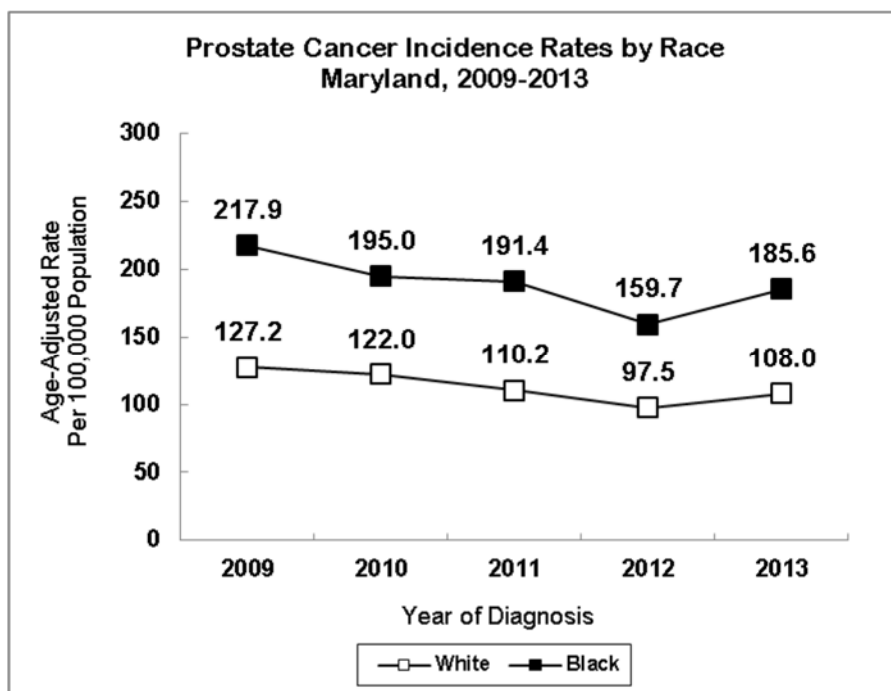
### **Incidence and Mortality Trends**

The prostate cancer incidence rate in Maryland decreased at a rate of 5.6% per year from 2009 to 2013.

Prostate cancer mortality rates decreased from 2009 to 2013, with a yearly decline of 6.5%.

See Appendix H, Tables 1 and 2.

Source: Maryland Cancer Registry  
NCHS Compressed Mortality File in CDC WONDER, 2012-2013  
Maryland Vital Statistics Administration from MATCH, 2009-2010  
Maryland Vital Statistics Administration, 2011



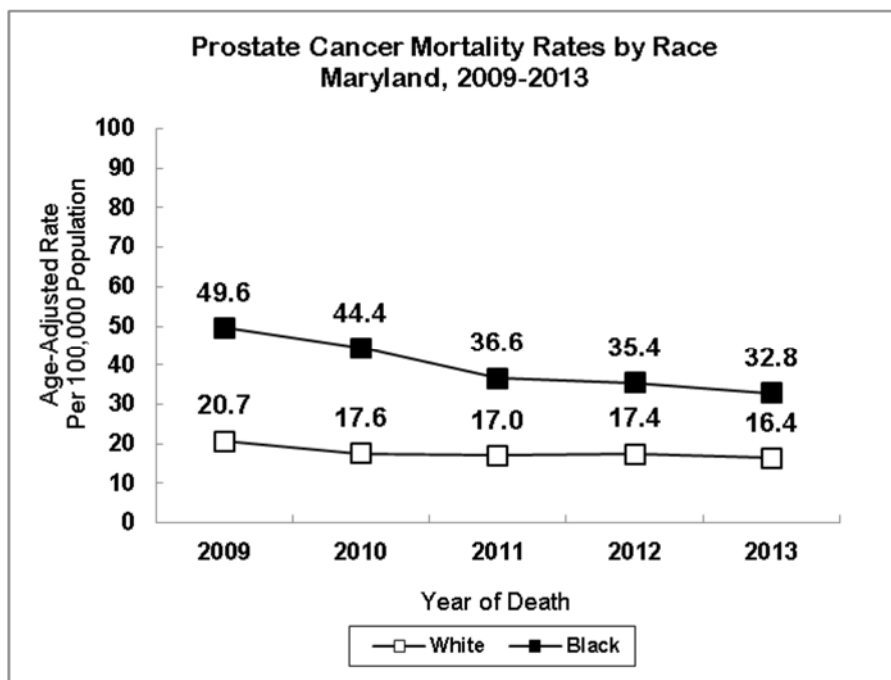
### **Incidence Trends by Race**

From 2009 to 2013, black men had consistently higher prostate cancer incidence rates than white men.

During this 5-year period, incidence rates for black and white men decreased at similar rates with 5.1% per year for black men and 5.4% per year for white men.

See Appendix H, Table 3.

Source: Maryland Cancer Registry



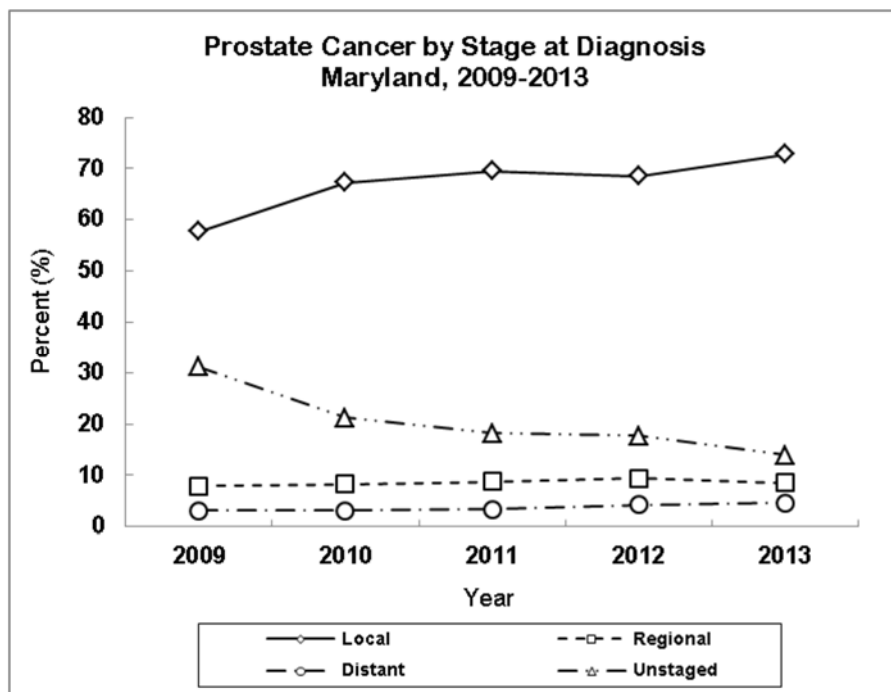
### **Mortality Trends by Race**

From 2009 to 2013, black men had consistently higher prostate cancer mortality rates than white men.

During this 5-year period, mortality rates for black and white men declined at a rate of 10.0% and 4.7%, respectively.

See Appendix H, Table 5.

Source: NCHS Compressed Mortality File in CDC WONDER, 2012-2013  
Maryland Vital Statistics Administration from MATCH, 2009-2010  
Maryland Vital Statistics Administration, 2011

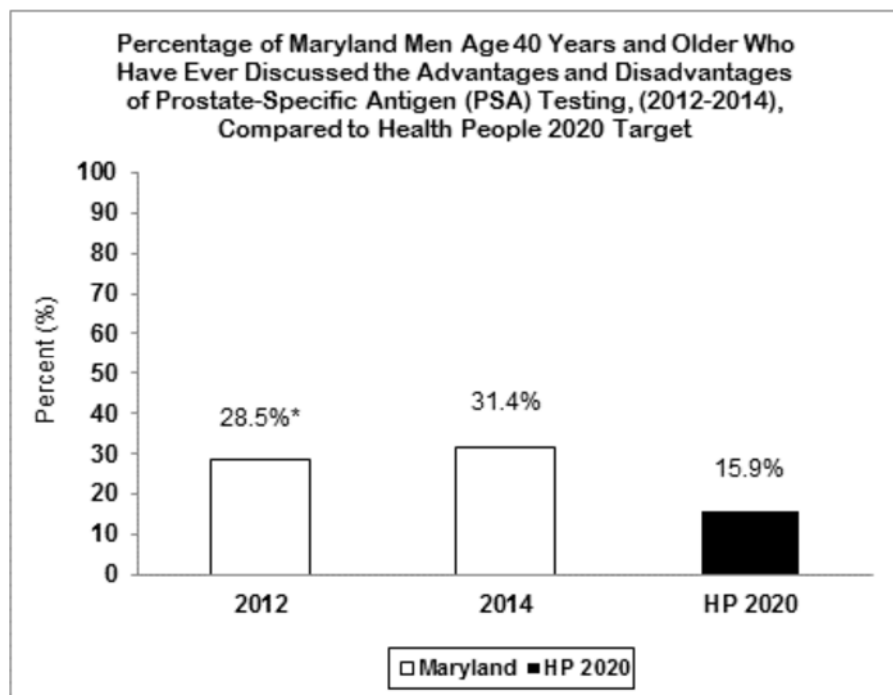


### **Stage at Diagnosis**

Of prostate cancers diagnosed in Maryland in 2013, 72.8% were detected at the local stage, 8.6% were found at the regional stage, and 4.7% were diagnosed at the distant stage. The proportion of prostate cancers reported as unstaged decreased in 2013 to 14.0% of cases.

See Appendix I, Table 5.

Source: Maryland Cancer Registry



### **Prostate-Specific Antigen Test**

In 2012 and 2014, 28.5% and 31.4% of Maryland men age 40 years and older, respectively, reported that they had discussed both the advantages and the disadvantages of a prostate-specific antigen (PSA) test with a health care provider, which surpasses the Healthy People 2020 target of 15.9%.

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

\* The 2012 BRFSS percent listed in the graph above (28.5%) in the current 2016 CRF Cancer Report differs slightly from the corresponding percent in the same graph in the previous 2014 CRF Cancer Report (28.8%, page 74) due to the correction of minor data errors in the analysis of the current report.

## **Public Health Evidence (quoted from NCI PDQ<sup>®</sup>, 3/4/2016 and 4/8/2016, and USPSTF, 5/2012)**

### **Screening**

The evidence is insufficient to determine whether screening for prostate cancer with prostate-specific antigen (PSA) or digital rectal exam (DRE) reduces mortality from prostate cancer. Screening tests are able to detect prostate cancer at an early stage, but it is not clear whether this earlier detection and consequent earlier treatment leads to any change in the natural history and outcome of the disease. Observational evidence shows a trend toward lower mortality for prostate cancer in some countries, but the relationship between these trends and intensity of screening is not clear, and associations with screening patterns are inconsistent. The observed trends may be due to screening or to other factors, such as improved treatment. Based on solid evidence, screening with PSA and/or DRE detects some prostate cancers that would never have caused important clinical problems. Thus, screening leads to some degree of overtreatment. Based on solid evidence, current prostate cancer treatments, including radical prostatectomy and radiation therapy, result in permanent side effects in many men, including erectile dysfunction and urinary incontinence. The screening process itself can lead to adverse psychological effects in men who have a prostate biopsy, but do not have identified prostate cancer; prostate biopsies are associated with complications including fever, hematospermia/hematuria, positive urine cultures, and rarely, sepsis. The USPSTF recommends against PSA-based screening for prostate cancer, and this recommendation applies to men in the general U.S. population. The decision to initiate or continue PSA screening should reflect an explicit understanding of the possible benefits and harms and respect patients' preferences.

### **Chemoprevention**

Chemoprevention with finasteride and dutasteride reduces the incidence of prostate cancer, but the evidence is inadequate to determine whether chemoprevention with finasteride or dutasteride reduces mortality from prostate cancer. The Oncology Drugs Advisory Committee of the U.S Food and Drug Administration (FDA) examined both finasteride and dutasteride in 2010, and declared that neither agent was recommended for use for chemoprevention of prostate cancer. There are significant complications associated with finasteride and dutasteride including erectile dysfunction, decreased or loss of libido, and gynecomastia. The Selenium and Vitamin E Cancer Prevention Trial showed no reduction in prostate cancer period prevalence, but an increased risk of prostate cancer with vitamin E alone.

<b>Public Health Intervention for Prostate Cancer (DHMH Prostate Medical Advisory Committee, 2012)</b>
<ul style="list-style-type: none"><li>• 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.</li></ul>

**Table 39.**  
**Number of Prostate Cancer Cases by**  
**Jurisdiction and Race, Maryland, 2013**

Jurisdiction	Total*	Race		
		Whites	Blacks	Other
Maryland	3,998	2,439	1,433	88
Allegany	49	46	<6	<6
Anne Arundel	384	317	62	<6
Baltimore City	429	99	324	<6
Baltimore County	615	423	171	16
Calvert	58	46	12	0
Caroline	27	18	s	<6
Carroll	132	126	6	0
Cecil	87	84	<6	<6
Charles	101	51	49	0
Dorchester	42	27	15	0
Frederick	110	93	15	<6
Garrett	18	18	0	0
Harford	202	166	36	0
Howard	163	112	38	11
Kent	13	s	<6	0
Montgomery	584	389	141	39
Prince George's	597	107	473	9
Queen Anne's	35	33	<6	0
St. Mary's	58	44	s	<6
Somerset	18	9	9	0
Talbot	39	36	<6	0
Washington	101	90	9	<6
Wicomico	76	49	26	0
Worcester	52	38	14	0

\* Total includes cases reported as unknown race

<6 = Case counts of 1-5 are suppressed per DHMH/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



**Table 40.**  
**Prostate Cancer Age-Adjusted Incidence Rates\***  
**by Jurisdiction and Race, Maryland, 2013**

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	124.5	108.0	185.6	51.9
Allegany	98.0	96.6	**	**
Anne Arundel	123.4	120.6	156.2	**
Baltimore City	144.7	92.1	178.2	**
Baltimore County	132.0	116.7	204.1	88.1
Calvert	114.4	101.1	**	0.0
Caroline	138.5	109.0	**	**
Carroll	128.6	128.5	**	0.0
Cecil	145.8	150.4	**	**
Charles	136.1	106.3	198.7	0.0
Dorchester	175.6	148.9	**	0.0
Frederick	84.4	78.3	**	**
Garrett	76.9	77.4	0.0	0.0
Harford	139.0	129.8	274.8	0.0
Howard	102.5	94.6	183.1	**
Kent	**	**	**	0.0
Montgomery	107.3	99.3	193.2	49.6
Prince George's	146.3	91.9	175.1	**
Queen Anne's	102.3	105.7	**	0.0
St. Mary's	97.4	88.2	**	**
Somerset	109.3	**	**	0.0
Talbot	117.1	123.0	**	0.0
Washington	116.3	109.0	309.5	**
Wicomico	136.3	113.5	**	0.0
Worcester	115.6	95.8	370.6	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 DHMH/MCR Data

Use Policy and Procedures

Source: Maryland Cancer Registry

**Table 41.**  
**Number of Deaths for Prostate Cancer by**  
**Jurisdiction and Race, Maryland, 2013**

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	484	307	s	<10
Allegany	<10	<10	<10	<10
Anne Arundel	51	43	<10	<10
Baltimore City	70	s	48	<10
Baltimore County	60	47	s	<10
Calvert	10	<10	<10	<10
Caroline	<10	<10	<10	<10
Carroll	11	10	<10	<10
Cecil	<10	<10	<10	<10
Charles	12	<10	<10	<10
Dorchester	<10	<10	<10	<10
Frederick	17	s	<10	<10
Garrett	<10	<10	<10	<10
Harford	20	17	<10	<10
Howard	19	16	<10	<10
Kent	<10	<10	<10	<10
Montgomery	60	47	<10	<10
Prince George's	76	s	62	<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	13	11	<10	<10
Wicomico	12	<10	<10	<10
Worcester	<10	<10	<10	<10

<10 = Death counts of 0-9 are suppressed per DHMH/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, 2013

**Table 42.**  
**Prostate Cancer Age-Adjusted Mortality Rates\***  
**by Jurisdiction and Race, Maryland, 2013**

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	19.1	16.4	32.8	**
Allegany	**	**	**	**
Anne Arundel	23.6	23.2	**	**
Baltimore City	30.7	23.7	36.3	**
Baltimore County	14.1	13.2	**	**
Calvert	**	**	**	**
Caroline	**	**	**	**
Carroll	**	**	**	**
Cecil	**	**	**	**
Charles	**	**	**	**
Dorchester	**	**	**	**
Frederick	**	**	**	**
Garrett	**	**	**	**
Harford	18.8	**	**	**
Howard	**	**	**	**
Kent	**	**	**	**
Montgomery	13.0	13.4	**	**
Prince George's	27.1	**	35.3	**
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 DHMH/CCPC Mortality

Data Suppression Policy

Source: CDC Wonder, 2013

**Table 43.**  
**Number of Prostate Cancer Cases by**  
**Jurisdiction and Race, Maryland, 2009-2013**

Jurisdiction	Total*	Race		
		Whites	Blacks	Other
Maryland	19,811	12,101	6,727	410
Allegany	290	262	24	<6
Anne Arundel	1,995	1,601	347	16
Baltimore City	1,982	472	1,458	12
Baltimore County	2,709	1,873	736	41
Calvert	267	211	48	<6
Caroline	120	89	29	<6
Carroll	539	488	30	<6
Cecil	334	315	16	<6
Charles	468	246	204	7
Dorchester	169	120	49	0
Frederick	648	544	81	8
Garrett	77	77	0	0
Harford	899	747	129	6
Howard	852	598	188	33
Kent	110	86	23	0
Montgomery	3,124	2,106	626	200
Prince George's	2,991	541	2,310	63
Queen Anne's	201	183	18	0
St. Mary's	260	197	51	<6
Somerset	96	60	34	<6
Talbot	231	203	26	0
Washington	442	395	37	<6
Wicomico	429	294	126	<6
Worcester	307	249	52	0

\* Total includes cases reported as unknown race

<6 = Case counts of 1-5 are suppressed per DHMH/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

**Table 44.**  
**Prostate Cancer Age-Adjusted Incidence Rates\***  
**by Jurisdiction and Race, Maryland, 2009-2013**

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	130.9	112.6	188.7	53.6
Allegany	120.7	113.9	320.8	**
Anne Arundel	136.9	128.7	202.1	40.2
Baltimore City	140.0	90.6	168.9	**
Baltimore County	120.5	106.0	190.1	48.9
Calvert	113.1	104.4	162.3	**
Caroline	126.4	108.0	240.1	**
Carroll	110.7	104.8	192.8	**
Cecil	120.1	119.9	118.4	**
Charles	136.1	107.4	199.7	**
Dorchester	151.9	139.1	197.0	0.0
Frederick	111.5	103.1	231.2	**
Garrett	72.6	73.1	0.0	0.0
Harford	131.0	122.7	217.5	**
Howard	112.9	105.7	192.0	36.5
Kent	143.4	129.1	230.3	0.0
Montgomery	123.1	113.4	193.8	57.1
Prince George's	156.6	94.5	188.2	68.1
Queen Anne's	128.6	127.2	167.3	0.0
St. Mary's	93.2	82.8	144.9	**
Somerset	124.2	103.8	180.6	**
Talbot	144.6	143.0	154.7	0.0
Washington	105.5	100.7	187.1	**
Wicomico	167.9	148.4	246.0	**
Worcester	139.8	125.6	266.8	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 DHMH/MCR Data

Use Policy and Procedures

Source: Maryland Cancer Registry

**Table 45.**  
**Number of Deaths for Prostate Cancer by**  
**Jurisdiction and Race, Maryland, 2009-2013**

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	2,510	1,566	918	26
Allegany	28	26	<10	<10
Anne Arundel	212	168	40	<10
Baltimore City	385	81	302	<10
Baltimore County	374	291	s	<10
Calvert	42	29	s	<10
Caroline	12	<10	<10	<10
Carroll	59	57	<10	<10
Cecil	41	37	<10	<10
Charles	56	s	30	<10
Dorchester	20	12	<10	<10
Frederick	98	87	s	<10
Garrett	16	s	<10	<10
Harford	88	74	s	<10
Howard	80	58	s	<10
Kent	18	17	<10	<10
Montgomery	333	263	54	16
Prince George's	372	s	276	<10
Queen Anne's	26	24	<10	<10
St. Mary's	43	32	s	<10
Somerset	14	11	<10	<10
Talbot	39	33	<10	<10
Washington	59	55	<10	<10
Wicomico	54	41	s	<10
Worcester	41	25	s	<10

<10 = Death counts of 0-9 are suppressed per DHMH/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, 2013

**Table 46.**  
**Prostate Cancer Age-Adjusted Mortality Rates\***  
**by Jurisdiction and Race, Maryland, 2009-2013**

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	21.3	17.6	38.9	4.9
Allegany	12.5	11.8	**	**
Anne Arundel	20.1	18.3	35.9	**
Baltimore City	33.7	17.3	45.7	**
Baltimore County	18.3	16.6	32.7	**
Calvert	27.9	22.8	**	**
Caroline	**	**	**	**
Carroll	16.6	16.7	**	**
Cecil	22.2	21.6	**	**
Charles	23.7	16.1	49.7	**
Dorchester	20.7	**	**	**
Frederick	21.7	21.0	**	**
Garrett	**	**	**	**
Harford	18.4	16.9	**	**
Howard	17.8	17.6	35.1	**
Kent	**	**	**	**
Montgomery	15.8	15.9	25.1	**
Prince George's	29.8	20.8	37.9	**
Queen Anne's	23.6	23.6	**	**
St. Mary's	21.3	19.6	**	**
Somerset	**	**	**	**
Talbot	26.5	24.9	**	**
Washington	17.0	16.4	**	**
Wicomico	26.0	24.5	**	**
Worcester	20.0	13.0	**	**

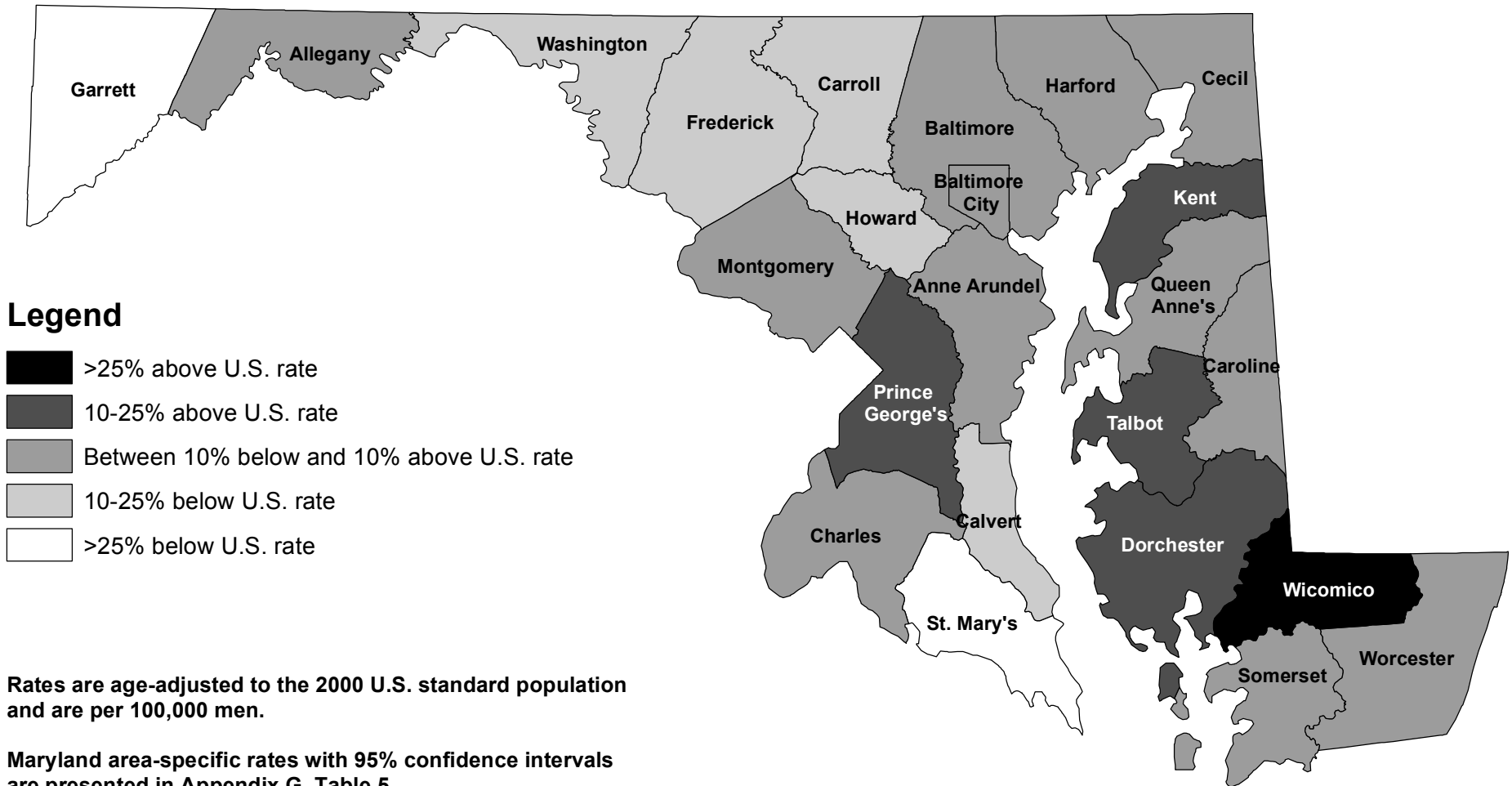
\* Rates are per 100,000 men and age-adjusted to 2000 U.S. standard population

\*\* Rates based on death counts of 0-19 are suppressed per DHMH/CCPC Mortality

Data Suppression Policy

Source: CDC Wonder, 2013

# Maryland Prostate Cancer Incidence Rates by Geographical Area: Comparison to U.S. Rate, 2009-2013



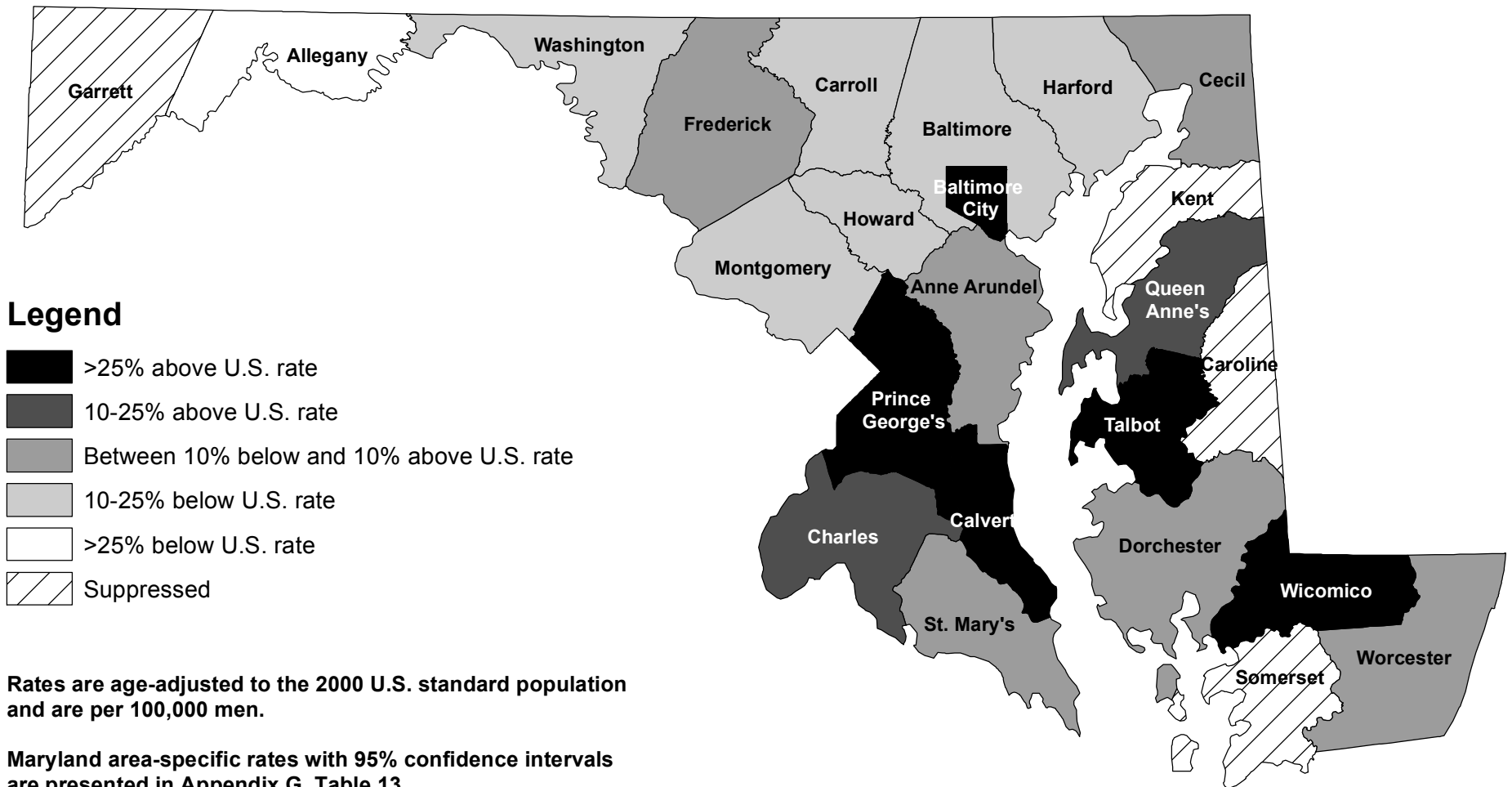
U.S. prostate cancer incidence rate, 2009-2013: 129.4 / 100,000

Maryland prostate cancer incidence rate, 2009-2013: 130.9 / 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, 2009-2013



U.S. prostate cancer mortality rate, 2009-2013: 20.7 / 100,000

Maryland prostate cancer mortality rate, 2009-2013: 21.3 / 100,000

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

Note: Rates based on death counts of 0-19 are suppressed per DHMH / CCPC Mortality Data Suppression Policy.

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## E. Oral Cancer

### **Incidence (New Cases)**

In 2013, a total of 730 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 2013 was 10.8 per 100,000 population (10.0-11.6, 95% C.I.), which is statistically significantly lower than the 2013 U.S. SEER age-adjusted oral cancer incidence rate of 11.2 per 100,000 population (11.0-11.5, 95% C.I.).

### **Mortality (Deaths)**

In 2013, 165 persons in Maryland died of oral cancer. The 2013 age-adjusted mortality rate for oral cancer in Maryland was 2.5 per 100,000 population (2.1-2.9, 95% C.I.), accounting for 1.6% of Maryland cancer deaths in 2013. This rate is similar to the U.S. oral cancer mortality rate of 2.4 per 100,000 population (2.4-2.5, 95% C.I.). Maryland had the 20<sup>th</sup> highest oral cancer mortality rate among the states and the District of Columbia for the period 2009-2013.

**Table 47.**  
**Oral Cancer Incidence and Mortality Rates**  
**by Gender and Race, Maryland and the United States, 2013**

<i>Incidence 2013</i>	<i>Total*</i>	<i>Males</i>	<i>Females</i>	<i>Whites</i>	<i>Blacks</i>	<i>Other</i>
New Cases (count)	730	507	223	546	139	43
MD Incidence Rate	10.8	16.3	6.2	12.0	7.7	10.2
U.S. SEER Rate	11.2	17.1	6.2	11.8	8.7	7.9
<i>Mortality 2013</i>	<i>Total</i>	<i>Males</i>	<i>Females</i>	<i>Whites</i>	<i>Blacks</i>	<i>Other</i>
Deaths (count)	165	114	51	109	s	<10
MD Mortality Rate	2.5	3.8	1.4	2.3	2.9	**
U.S. Mortality Rate	2.4	3.7	1.3	2.4	2.8	N/A

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

\* Total also includes cases reported as transexual, hermaphrodite, unknown gender, and unknown race

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

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

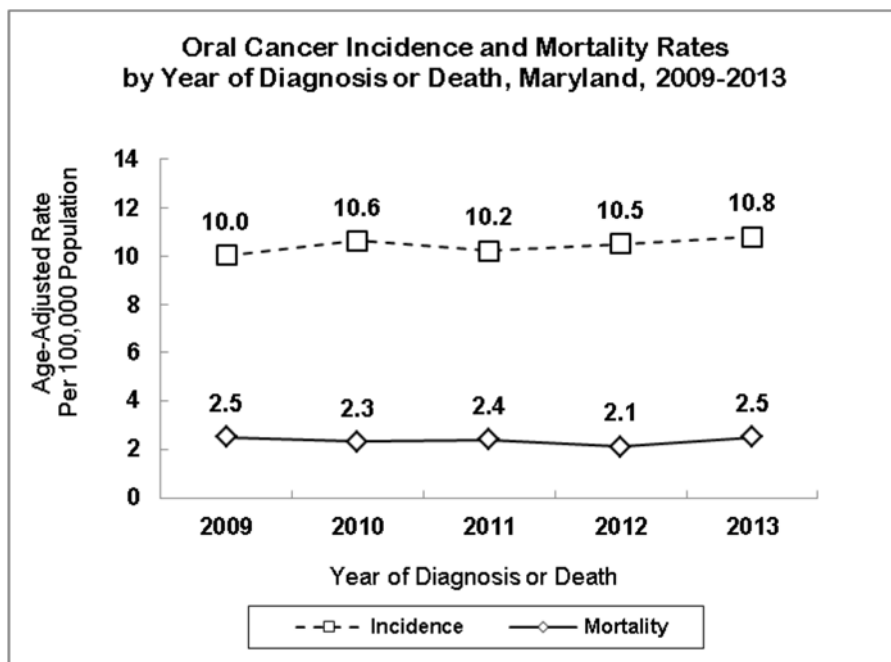
\*\* MD mortality rates based on death counts of 0-19 are suppressed per DHMH/CCPC Mortality Data Suppression Policy.

Source: Maryland Cancer Registry

U.S. SEER, SEER\*Stat

NCHS Compressed Mortality File in CDC WONDER, 2013

U.S. SEER, Cancer Statistics Review



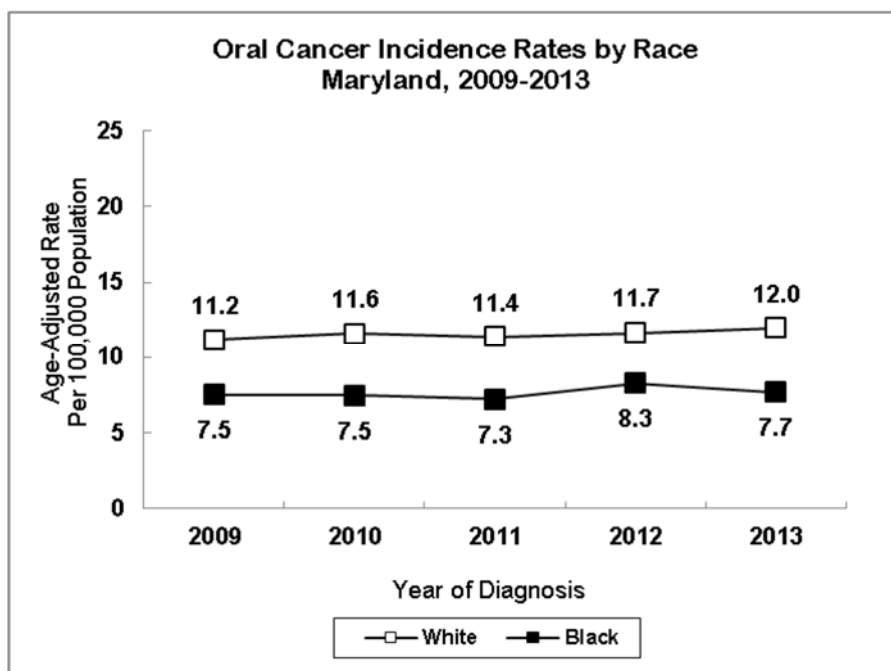
### **Incidence and Mortality Trends**

The incidence of oral cancer in Maryland increased at a rate of 1.4% per year from 2009 to 2013.

Oral cancer mortality rates have decreased from 2009 to 2013, with a rate decrease of 0.9% annually.

See Appendix H, Tables 1 and 2.

Source: Maryland Cancer Registry  
NCHS Compressed Mortality File in CDC WONDER, 2012-2013  
Maryland Vital Statistics Administration from MATCH, 2009-2010  
Maryland Vital Statistics Administration, 2011

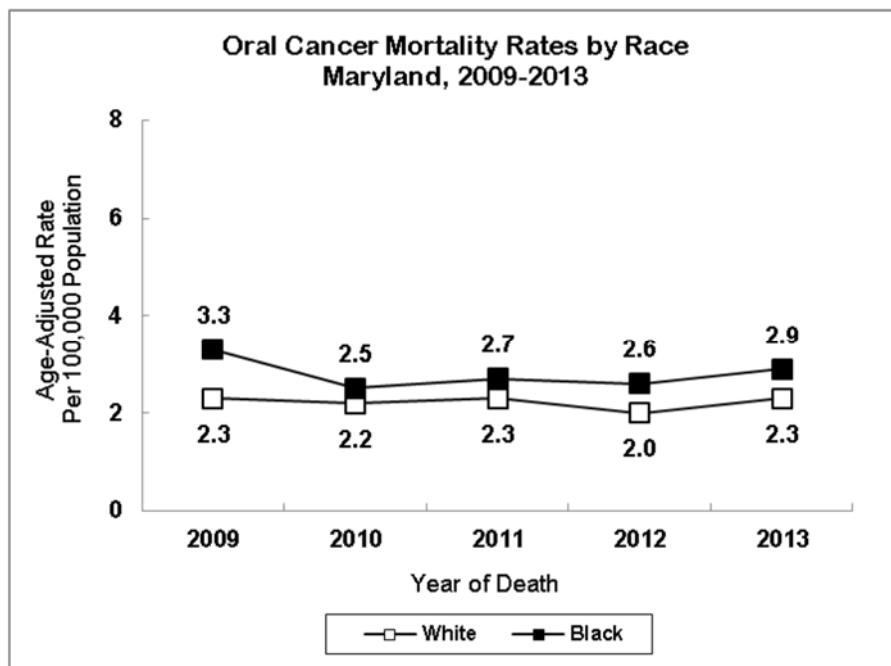


### **Incidence Trends by Race**

Over the 5-year period from 2009 to 2013, oral cancer incidence rates in Maryland increased at a rate of 1.5% per year for both blacks and whites.

See Appendix H, Table 3.

Source: Maryland Cancer Registry

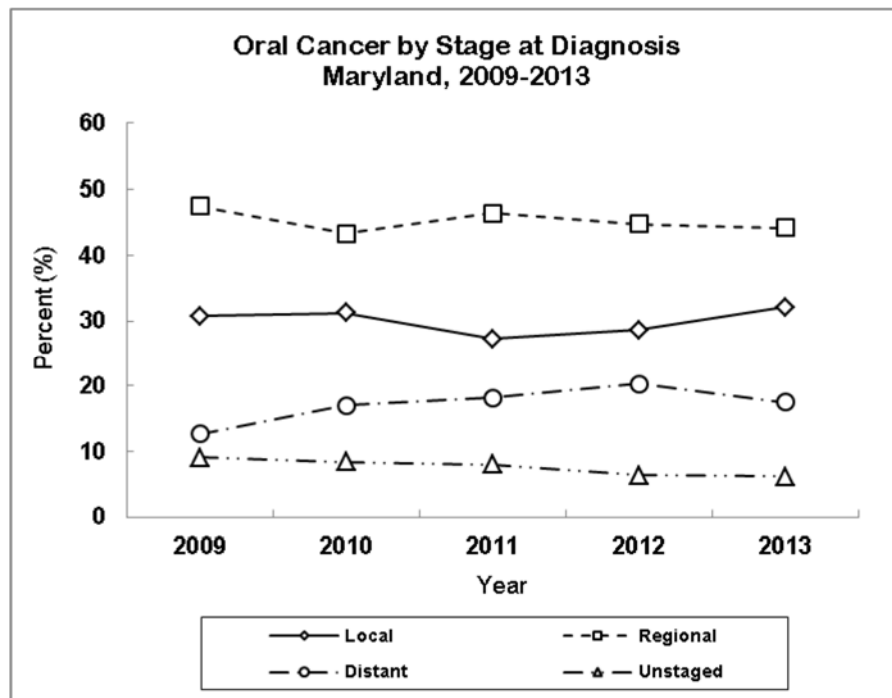


Source: NCHS Compressed Mortality File in CDC WONDER, 2012-2013  
Maryland Vital Statistics Administration from MATCH, 2009-2010  
Maryland Vital Statistics Administration, 2011

### **Mortality Trends by Race**

Over the 5-year period from 2009 to 2013, oral cancer mortality rates decreased at a rate of 2.2% per year for blacks and 0.9% per year for whites.

See Appendix H, Table 5.

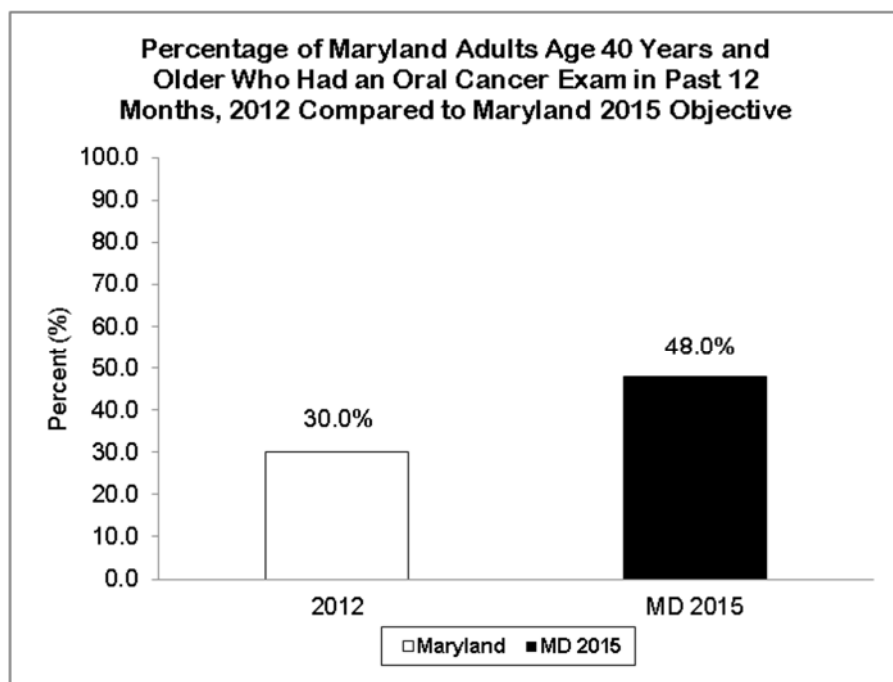


Source: Maryland Cancer Registry

### **Stage at Diagnosis**

In 2013, 32.1% of oral cancers in Maryland were diagnosed at the local stage, 44.2% were diagnosed at the regional stage, and 17.5% were diagnosed at the distant stage. From 2009 to 2013, the proportion of oral cancers reported as unstaged gradually decreased.

See Appendix I, Table 6.



Source: Maryland BRFSS, 2012  
Maryland Comprehensive Cancer Control Plan, 2011-2015

### **Oral Cancer Screening**

There is no current Healthy People 2020 target for oral cancer screening. The Maryland 2015 objective from the Comprehensive Cancer Control Plan is to increase to 48.0% the proportion of adults age 40 years and older who report having an oral cancer screening examination in the past 12 months.

In 2012, only 30.0% of persons in Maryland 40 years of age and older reported they had an oral cancer exam in the past year, therefore not attaining the Maryland 2015 target of 48.0%.

## **Public Health Evidence (quoted from NCI PDQ®, 2/4/2016 and 4/1/2016, and USPSTF, 11/2013)**

### **Prevention**

Oral cancer is a disease in which malignant cells form in the lips, oral cavity, or oropharynx. People who use tobacco in any of the commonly available forms (cigarettes, cigars, pipes, and smokeless tobacco) or have a high alcohol intake are at elevated risk for oral cavity cancer and oropharyngeal cancer. Oral cavity and oropharyngeal cancer risk is highest in people who consume large amounts of both alcohol and tobacco. When both risk factors are present, the risk of oral cavity and oropharyngeal cancer is greater than a simple multiplicative effect of the two individual risks. Based on solid evidence, cessation of exposure to tobacco leads to a decrease in the risk of oral cavity and oropharyngeal cancers. Based on fair evidence, cessation of alcohol consumption leads to a decrease in oral cavity cancer (but not until approximately 10 years after cessation) and oropharyngeal cancer (but not until approximately 20 years after cessation). Based on solid evidence, chewing betel quid alone or with added tobacco (gutka) increases the risk of both oral cavity and oropharyngeal cancers. Of the three primary components of betel quid (betel leaf, areca nut, and lime), the areca nut is the only one considered to be carcinogenic when chewed. Based on solid evidence, HPV 16 infection causes oropharyngeal cancer. Other high-risk HPV subtypes, including HPV 18, have been found in a small percentage of oropharyngeal cancers. Vaccination against HPV 16 and 18 has been shown to prevent more than 90% of oral HPV16/18 infections within 4 years of vaccination. However, no data are available to assess whether vaccination at any age will lead to reduced risk of oropharyngeal cancer at current typical ages of diagnosis.

### **Screening**

The routine oral examination of asymptomatic and symptomatic patients may lead to detection of earlier stage oral cancers and premalignant oral lesions. However, there is inadequate evidence to establish whether screening would result in a decrease in mortality from oral cancer. Harms have not been systemically studied and cannot be quantified based upon the literature. However, there are some unavoidable harms that would be associated with routine screening, including unnecessary treatment associated with overdiagnosis and psychological consequences of false-positive tests. 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.

<b>Public Health Interventions for Oral Cancer (DHMH Oral Cancer Medical Advisory Committee, 2014)</b>
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- |   |
|---|
| <ul style="list-style-type: none"><li>• Avoidance or cessation of tobacco use.</li><li>• Eliminate chewing betel nut.</li><li>• Avoidance or reduction of alcohol consumption.</li><li>• Use of sunscreen lip balm to reduce sun exposure.</li><li>• A diet that includes a high proportion of fruits and vegetables.</li><li>• Opportunistic screening adults for oral cancer during routine dental and medical visits; targeted screening in public health settings adults at increased risk who are unlikely to have routine dental or medical care.</li></ul> |
|---|

**Table 48.**  
**Number of Oral Cancer Cases by Jurisdiction, Gender, and Race,**  
**Maryland, 2013**

Jurisdiction	Total*	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	730	507	223	546	139	43
Allegany	17	10	7	17	0	0
Anne Arundel	71	46	25	65	<6	<6
Baltimore City	80	50	30	s	49	<6
Baltimore County	120	89	31	99	17	<6
Calvert	18	14	<6	15	<6	0
Caroline	6	6	0	6	0	0
Carroll	33	25	8	33	0	0
Cecil	15	13	<6	s	<6	<6
Charles	13	9	<6	9	<6	0
Dorchester	9	8	<6	s	<6	0
Frederick	27	17	10	25	<6	0
Garrett	<6	<6	<6	<6	0	0
Harford	23	14	9	23	0	0
Howard	35	22	13	28	<6	<6
Kent	<6	<6	<6	<6	0	0
Montgomery	104	65	39	73	10	21
Prince George's	63	47	16	21	34	7
Queen Anne's	9	7	<6	s	<6	0
St. Mary's	13	8	<6	9	<6	0
Somerset	<6	<6	<6	<6	<6	0
Talbot	9	s	<6	s	<6	0
Washington	22	17	<6	s	<6	0
Wicomico	21	16	<6	15	<6	<6
Worcester	9	7	<6	s	0	<6

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

<6 = Case counts of 1-5 are suppressed per DHMH/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



**Table 49.**  
**Oral Cancer Age-Adjusted Incidence Rates\* by Jurisdiction,**  
**Gender, and Race, Maryland, 2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	10.8	16.3	6.2	12.0	7.7	10.2
Allegany	16.5	**	**	17.5	0.0	0.0
Anne Arundel	11.6	16.1	7.9	12.7	**	**
Baltimore City	11.8	16.7	7.9	13.7	10.9	**
Baltimore County	11.9	19.7	5.3	13.5	8.8	**
Calvert	16.2	**	**	**	**	0.0
Caroline	**	**	0.0	**	0.0	0.0
Carroll	15.8	25.2	**	16.6	0.0	0.0
Cecil	**	**	**	**	**	**
Charles	**	**	**	**	**	0.0
Dorchester	**	**	**	**	**	0.0
Frederick	10.5	14.6	**	10.9	**	0.0
Garrett	**	**	**	**	0.0	0.0
Harford	7.2	**	**	8.3	0.0	0.0
Howard	10.2	13.1	**	12.0	**	**
Kent	**	**	**	**	0.0	0.0
Montgomery	9.3	12.6	6.7	9.3	**	12.4
Prince George's	6.9	11.6	3.4	8.3	6.0	**
Queen Anne's	**	**	**	**	**	0.0
St. Mary's	**	**	**	**	**	0.0
Somerset	**	**	**	**	**	0.0
Talbot	**	**	**	**	**	0.0
Washington	11.3	18.3	**	11.7	**	0.0
Wicomico	18.8	32.5	**	**	**	**
Worcester	**	**	**	**	0.0	**

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

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

Source: Maryland Cancer Registry

**Table 50.**  
**Number of Deaths for Oral Cancer by Jurisdiction, Gender, and**  
**Race, Maryland, 2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	165	114	51	109	s	<10
Allegany	<10	<10	<10	<10	<10	<10
Anne Arundel	19	s	<10	15	<10	<10
Baltimore City	34	21	13	s	22	<10
Baltimore County	17	s	<10	12	<10	<10
Calvert	<10	<10	<10	<10	<10	<10
Caroline	<10	<10	<10	<10	<10	<10
Carroll	<10	<10	<10	<10	<10	<10
Cecil	<10	<10	<10	<10	<10	<10
Charles	<10	<10	<10	<10	<10	<10
Dorchester	<10	<10	<10	<10	<10	<10
Frederick	<10	<10	<10	<10	<10	<10
Garrett	<10	<10	<10	<10	<10	<10
Harford	<10	<10	<10	<10	<10	<10
Howard	<10	<10	<10	<10	<10	<10
Kent	<10	<10	<10	<10	<10	<10
Montgomery	20	s	<10	13	<10	<10
Prince George's	21	s	<10	s	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 DHMH/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, 2013

**Table 51.**  
**Oral Cancer Age-Adjusted Mortality Rates\* by Jurisdiction,**  
**Gender, and Race, Maryland, 2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	2.5	3.8	1.4	2.3	2.9	**
Allegany	**	**	**	**	**	**
Anne Arundel	**	**	**	**	**	**
Baltimore City	5.5	8.1	**	**	5.6	**
Baltimore County	**	**	**	**	**	**
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 DHMH/CCPC Mortality Data Suppression Policy

Source: CDC Wonder, 2013

**Table 52.**  
**Number of Oral Cancer Cases by Jurisdiction, Gender, and Race,**  
**Maryland, 2009-2013**

Jurisdiction	Total*	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	3,403	2,392	1,010	2,581	654	132
Allegany	66	44	22	s	<6	0
Anne Arundel	368	258	110	330	25	8
Baltimore City	417	290	126	165	247	<6
Baltimore County	512	368	144	437	64	9
Calvert	73	52	21	65	7	0
Caroline	27	21	6	s	<6	0
Carroll	111	83	28	108	<6	0
Cecil	81	65	16	72	<6	<6
Charles	74	52	22	56	s	<6
Dorchester	32	24	8	27	<6	0
Frederick	126	89	37	113	10	<6
Garrett	24	16	8	24	0	0
Harford	149	110	39	140	7	<6
Howard	166	107	59	137	13	15
Kent	18	6	12	s	<6	0
Montgomery	447	295	152	319	49	68
Prince George's	310	226	84	129	161	13
Queen Anne's	38	28	10	36	<6	0
St. Mary's	61	37	24	52	8	0
Somerset	21	16	<6	18	<6	0
Talbot	37	26	11	32	<6	0
Washington	107	78	29	103	<6	0
Wicomico	63	43	20	50	11	<6
Worcester	47	38	9	39	<6	<6

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

<6 = Case counts of 1-5 are suppressed per DHMH/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

**Table 53.**  
**Oral Cancer Age-Adjusted Incidence Rates\* by Jurisdiction,**  
**Gender, and Race, Maryland, 2009-2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	10.4	16.0	5.8	11.6	7.7	7.0
Allegany	13.9	19.1	8.6	14.3	**	0.0
Anne Arundel	12.4	18.4	7.3	13.2	6.4	**
Baltimore City	12.8	20.4	7.0	15.2	11.7	**
Baltimore County	10.6	16.9	5.4	11.9	6.7	**
Calvert	14.3	21.1	8.2	14.9	**	0.0
Caroline	14.3	24.5	**	16.3	**	0.0
Carroll	11.0	17.1	5.1	11.2	**	0.0
Cecil	13.5	21.3	6.0	13.0	**	**
Charles	10.2	14.2	6.2	12.0	6.5	**
Dorchester	15.2	26.3	**	17.2	**	0.0
Frederick	10.0	15.2	5.6	10.0	**	**
Garrett	12.1	18.2	**	12.2	0.0	0.0
Harford	9.9	15.7	5.0	10.7	**	**
Howard	10.2	13.4	7.3	11.8	**	**
Kent	10.9	**	**	12.3	**	0.0
Montgomery	8.1	11.7	5.3	8.1	6.1	8.1
Prince George's	7.2	11.7	3.6	10.6	5.7	**
Queen Anne's	11.8	18.7	**	12.3	**	0.0
St. Mary's	10.6	13.2	8.1	10.7	**	0.0
Somerset	12.8	19.5	**	15.0	**	0.0
Talbot	11.2	17.6	**	11.3	**	0.0
Washington	11.9	18.4	6.2	12.3	**	0.0
Wicomico	11.7	17.6	6.8	12.5	**	**
Worcester	12.9	22.6	**	11.7	**	**

\* 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 DHMH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry

**Table 54.**  
**Number of Deaths for Oral Cancer by Jurisdiction, Gender, and**  
**Race, Maryland, 2009-2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	748	508	240	498	226	24
Allegany	19	s	<10	s	<10	<10
Anne Arundel	89	57	32	72	s	<10
Baltimore City	137	87	50	s	95	<10
Baltimore County	93	56	37	70	s	<10
Calvert	15	s	<10	13	<10	<10
Caroline	<10	<10	<10	<10	<10	<10
Carroll	13	<10	<10	11	<10	<10
Cecil	15	s	<10	12	<10	<10
Charles	22	s	<10	17	<10	<10
Dorchester	<10	<10	<10	<10	<10	<10
Frederick	14	s	<10	10	<10	<10
Garrett	<10	<10	<10	<10	<10	<10
Harford	29	s	<10	27	<10	<10
Howard	20	s	<10	19	<10	<10
Kent	<10	<10	<10	<10	<10	<10
Montgomery	74	48	26	57	<10	s
Prince George's	102	77	25	s	62	<10
Queen Anne's	<10	<10	<10	<10	<10	<10
St. Mary's	13	s	<10	12	<10	<10
Somerset	<10	<10	<10	<10	<10	<10
Talbot	12	<10	<10	<10	<10	<10
Washington	26	s	<10	24	<10	<10
Wicomico	23	s	<10	19	<10	<10
Worcester	11	<10	<10	<10	<10	<10

<10 = Death counts of 0-9 are suppressed per DHMH/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, 2009-2013

**Table 55.**  
**Oral Cancer Age-Adjusted Mortality Rates\* by Jurisdiction,**  
**Gender, and Race, Maryland, 2009-2013**

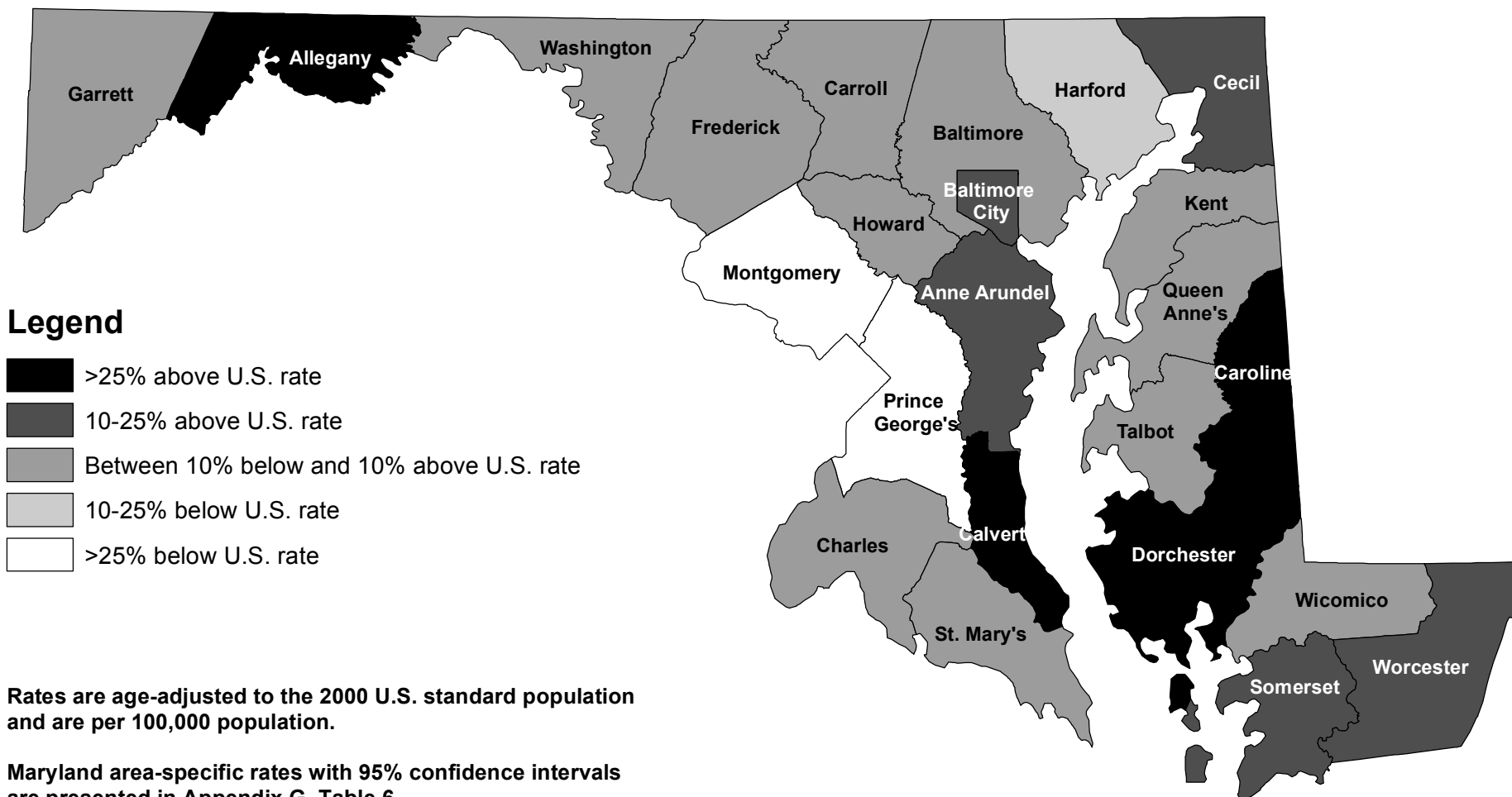
Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	2.4	3.6	1.3	2.2	2.8	1.3
Allegany	**	**	**	**	**	**
Anne Arundel	3.0	4.3	2.0	2.9	**	**
Baltimore City	4.3	6.5	2.7	3.9	4.6	**
Baltimore County	1.9	2.7	1.2	1.8	**	**
Calvert	**	**	**	**	**	**
Caroline	**	**	**	**	**	**
Carroll	**	**	**	**	**	**
Cecil	**	**	**	**	**	**
Charles	3.4	**	**	**	**	**
Dorchester	**	**	**	**	**	**
Frederick	**	**	**	**	**	**
Garrett	**	**	**	**	**	**
Harford	2.1	3.8	**	2.2	**	**
Howard	1.3	**	**	**	**	**
Kent	**	**	**	**	**	**
Montgomery	1.4	2.1	0.9	1.5	**	**
Prince George's	2.6	4.3	1.3	3.3	2.5	**
Queen Anne's	**	**	**	**	**	**
St. Mary's	**	**	**	**	**	**
Somerset	**	**	**	**	**	**
Talbot	**	**	**	**	**	**
Washington	2.9	**	**	2.9	**	**
Wicomico	4.0	**	**	**	**	**
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 DHMH/CCPC Mortality Data Suppression Policy

Source: CDC Wonder, 2009-2013

# Maryland Oral Cancer Incidence Rates by Geographical Area: Comparison to U.S. Rate, 2009-2013



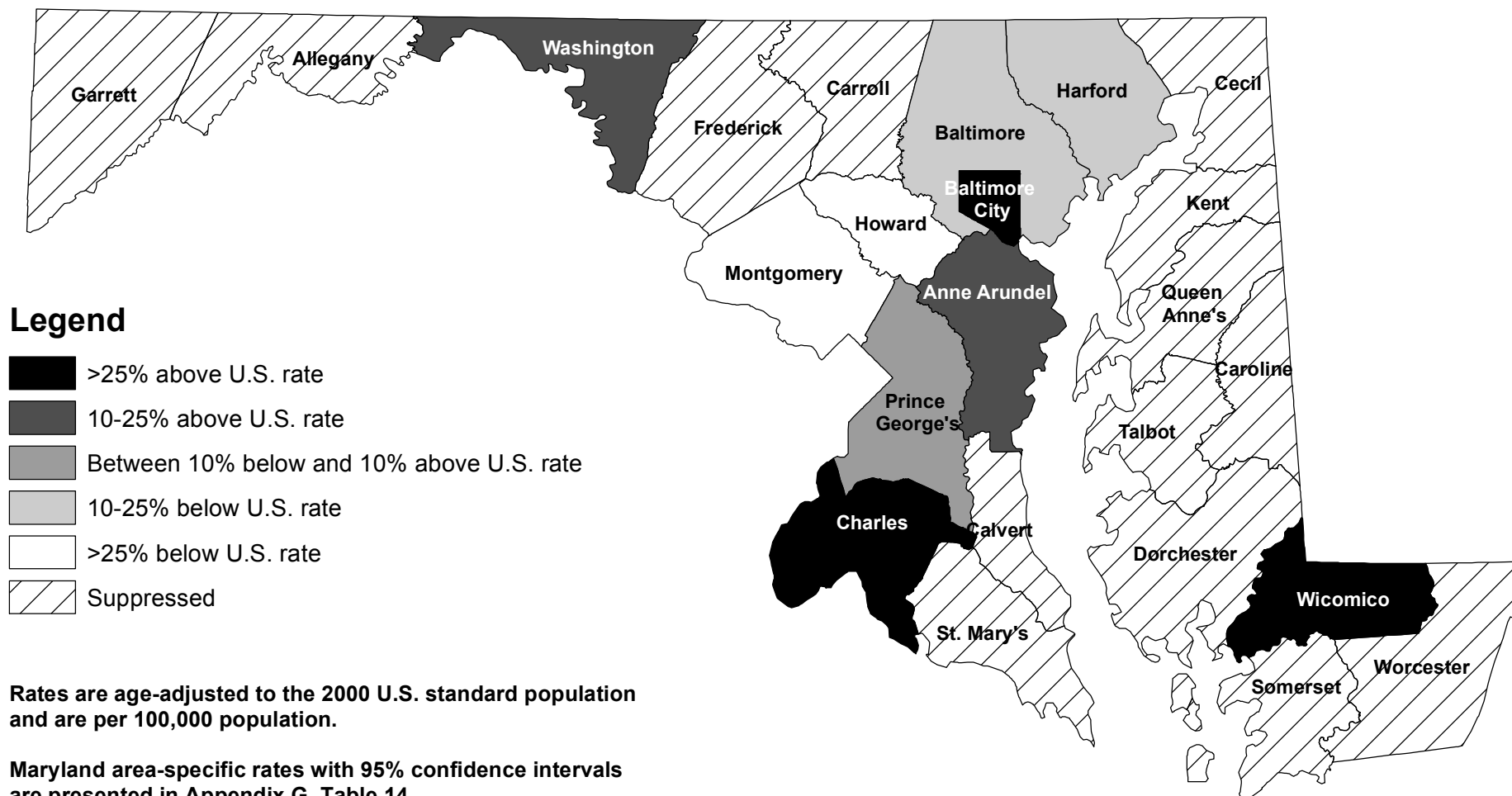
U.S. oral cancer incidence rate, 2009-2013: 11.1 / 100,000

Maryland oral cancer incidence rate, 2009-2013: 10.4 / 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, 2009-2013



U.S. oral cancer mortality rate, 2009-2013: 2.4 / 100,000

Maryland oral cancer mortality rate, 2009-2013: 2.4 / 100,000

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

Note: Rates based on death counts of 0-19 are suppressed per DHMH / CCPC Mortality Data Suppression Policy.

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## 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 Maryland Cancer Registry (MCR). Melanoma is less frequent but is the most serious type of skin cancer and is reportable to the MCR.

### **Incidence (New Cases)**

In 2013, a total of 1,454 cases of melanoma of the skin were reported in Maryland. The age-adjusted incidence rate for melanoma for 2013 was 22.3 per 100,000 population (21.1-23.5, 95% C.I.), which is similar to the 2013 U.S. SEER age-adjusted melanoma incidence rate of 22.4 per 100,000 population (22.1-22.7, 95% C.I.).

### **Mortality (Deaths)**

In 2013, a total of 161 persons died of melanoma in Maryland. The 2013 age-adjusted mortality rate for melanoma in Maryland was 2.6 per 100,000 population (2.2-3.0, 95% C.I.). This rate is similar to the 2013 U.S. melanoma of the skin mortality rate of 2.7 per 100,000 population (2.6-2.7, 95% C.I.). Maryland had the 33<sup>rd</sup> highest melanoma cancer mortality rate among the states and the District of Columbia for the period 2009-2013.

**Table 56.**  
**Melanoma Incidence and Mortality Rates**  
**by Gender and Race, Maryland and the United States, 2013**

<i>Incidence 2013</i>	<i>Total*</i>	<i>Males</i>	<i>Females</i>	<i>Whites</i>	<i>Blacks</i>	<i>Other</i>
New Cases (count)	1,454	857	597	1,424	10	<6
MD Incidence Rate	22.3	29.4	17.4	32.4	**	**
U.S. SEER Rate	22.4	29.5	17.2	26.5	1.0	1.6
<i>Mortality 2013</i>	<i>Total</i>	<i>Males</i>	<i>Females</i>	<i>Whites</i>	<i>Blacks</i>	<i>Other</i>
Deaths (count)	161	110	51	151	<10	<10
MD Mortality Rate	2.6	4.3	1.4	3.4	**	**
U.S. Mortality Rate	2.7	4.0	1.6	3.1	0.4	N/A

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

\* Total also includes cases reported as transexual, hermaphrodite, unknown gender, and unknown race

<6 = Case counts of 1-5 are suppressed per DHMH/Maryland Cancer Registry Data Use Policy

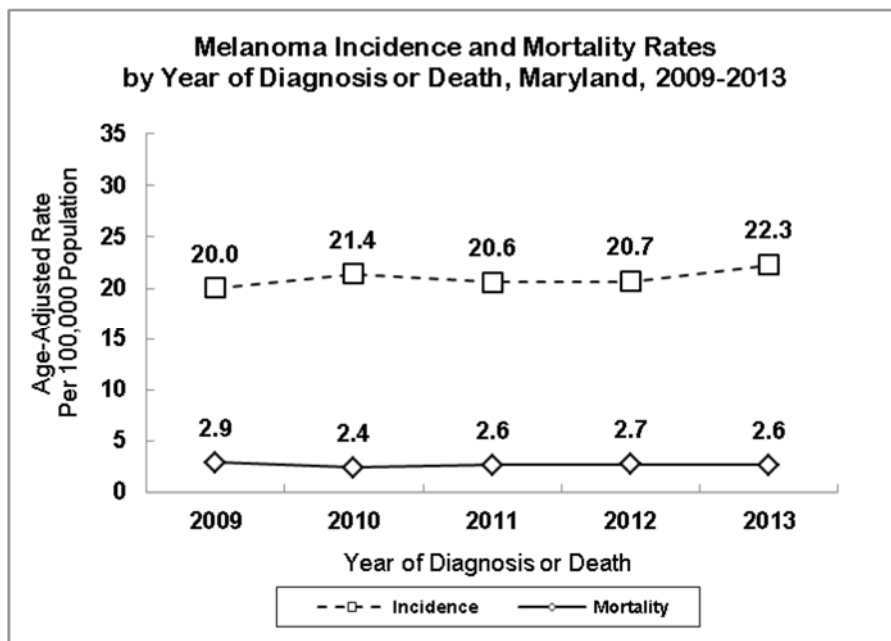
\*\* MD incidence rates based on case counts of 1-15 are suppressed per DHMH/MCR Data Use Policy and Procedures; MD mortality rates based on death counts of 0-19 are suppressed per DHMH/CCPC Mortality Data Suppression Policy

Source: Maryland Cancer Registry

U.S. SEER, SEER\*Stat

NCHS Compressed Mortality File in CDC WONDER, 2013

U.S. SEER, Cancer Statistics Review



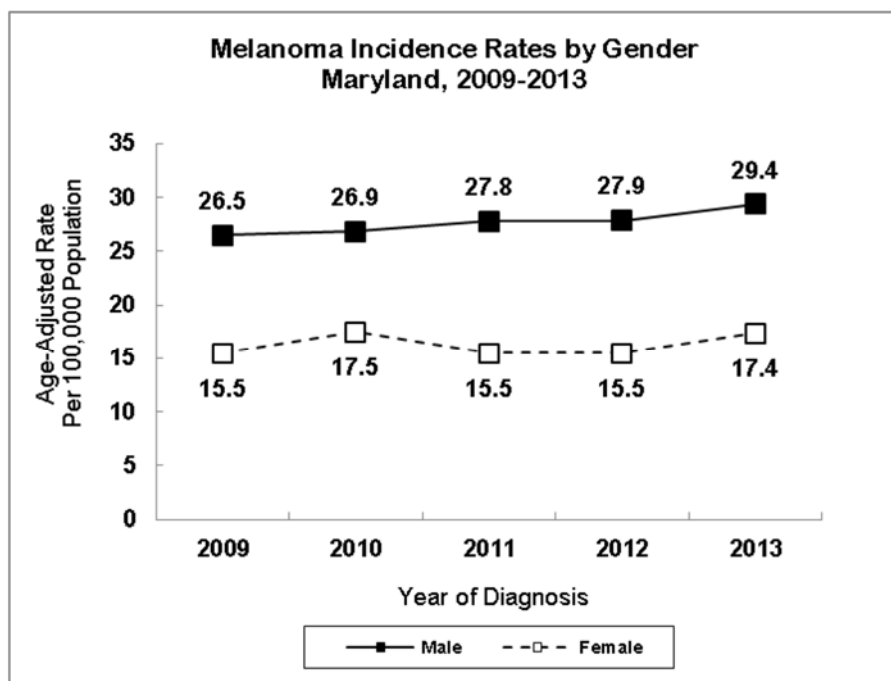
### **Incidence and Mortality Trends**

Melanoma incidence rates in Maryland increased at a rate of 1.8% per year from 2009 to 2013.

Melanoma mortality rates decreased at a rate of 1.0% per year from 2009 to 2013.

See Appendix H, Tables 1 and 2.

Source: Maryland Cancer Registry  
NCHS Compressed Mortality File in CDC WONDER, 2012-2013  
Maryland Vital Statistics Administration from MATCH, 2009-2010  
Maryland Vital Statistics Administration, 2011

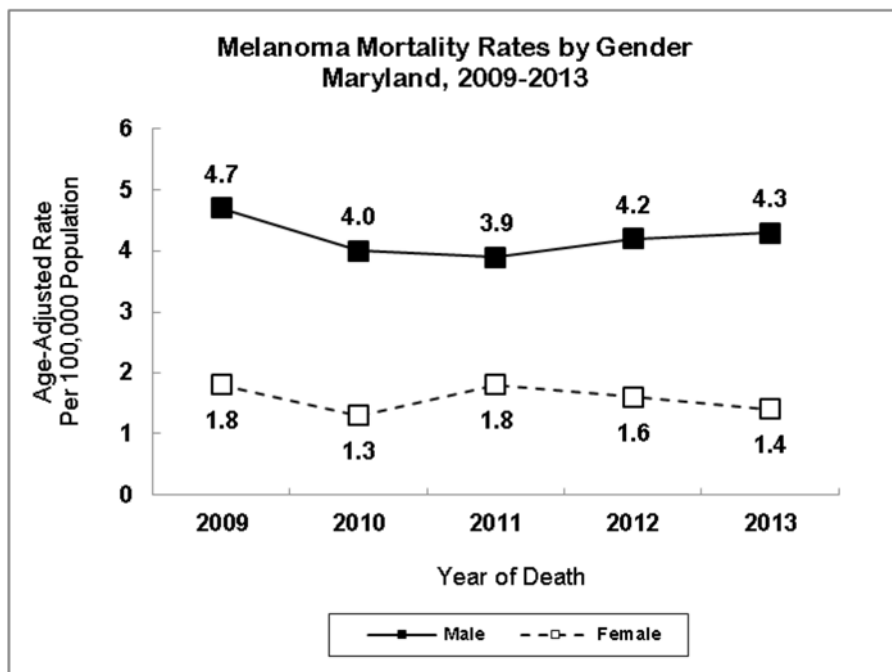


### **Incidence Trends by Gender**

Over the period 2009 to 2013, incidence rates for males increased at a rate of 2.5% per year, and rates among females increased at a rate of 1.1% per year. In 2013, melanoma incidence rates were 69% higher among males than females in Maryland.

See Appendix H, Table 4.

Source: Maryland Cancer Registry

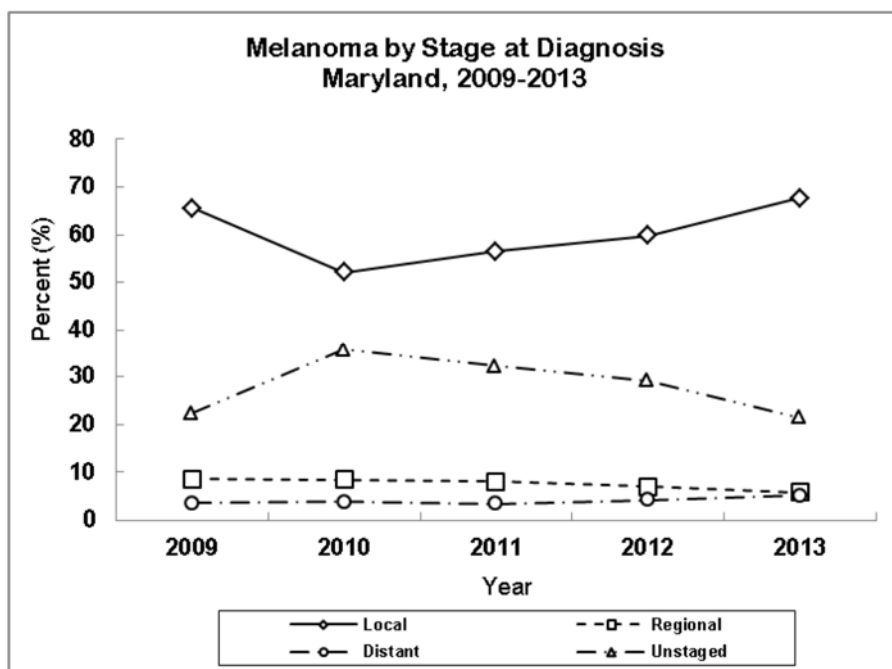


### **Mortality Trends by Gender**

Melanoma mortality rates in males decreased at a rate of 1.3% per year from 2009 to 2013. Female melanoma mortality rates also decreased with a rate of 2.9% per year.

See Appendix H, Table 6.

Source: NCHS Compressed Mortality File in CDC WONDER, 2012-2013  
 Maryland Vital Statistics Administration from MATCH, 2009-2010  
 Maryland Vital Statistics Administration, 2011

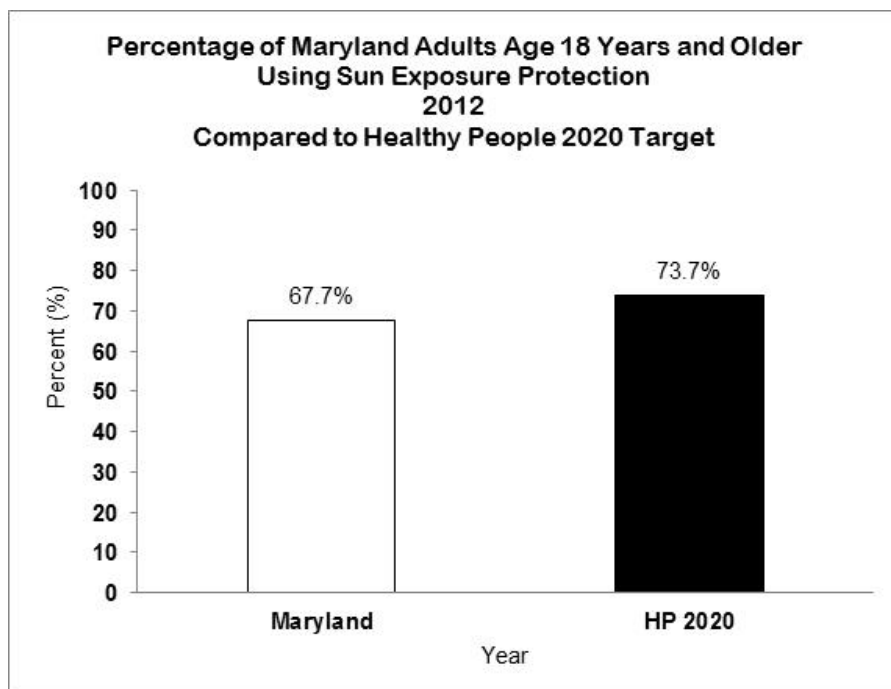


### **Stage at Diagnosis**

In 2013, 67.7% of all melanoma was diagnosed at the local stage, 5.8% was found at the regional stage, and 5.1% was found at the distant stage. The proportion of melanoma reported as unstaged decreased to 21.5% in 2013.

See Appendix I, Table 7.

Source: Maryland Cancer Registry



### **Sun Exposure Protection**

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

In 2012, 67.7% of adults age 18 years and older used at least one method of protection against sun exposure.\*\*

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

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

\*\* The Maryland BRFSS 2012 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.

## **Public Health Evidence (quoted from NCI PDQ®, 4/8/2016 and 3/4/2016; and USPSTF, 2/2009)**

### **Prevention**

Melanoma skin cancer is less common but more aggressive than the other two types of skin cancer, basal cell carcinoma (BCC) and squamous cell carcinoma (SCC), which are known together as “nonmelanoma skin cancer”. Individuals whose skin freckles, tans poorly or burns easily after sun exposure are particularly susceptible to developing skin cancer. Organ transplant recipients receiving immunosuppressive drugs are at an elevated risk of skin cancer, particularly SCC. Arsenic exposure also increases the risk of cutaneous SCC. Having a large number of benign melanocytic nevi and atypical nevi may increase the risk of developing cutaneous melanoma. Based on solid evidence, sun and ultraviolet (UV) radiation exposure are associated with an increased risk of SCC and BCC. Based on fair evidence, intermittent acute sun exposure leading to sunburn is associated with an increased risk of melanoma. It also appears that intermittent acute sun exposure leading to sunburn is more important than cumulative sun exposure, and that exposures during childhood or adolescence may be particularly important. The prevention of skin cancer involves the avoidance of, or protection from sun exposure, sunburn, and UV light. However, the evidence that interventions designed to reduce exposure to UV radiation by the use of sunscreen, protective clothing, or limitation of sun exposure time decrease the incidence of nonmelanoma skin cancer is inadequate. There is also inadequate evidence to determine whether the avoidance of sunburns or the use of sunscreen alters the incidence of cutaneous melanoma. The harms of sunscreen use are poorly quantified, but are likely to be small, including allergic reactions to skin creams and lower production of vitamin D by the skin with less exposure. It is possible that individuals who use sunscreen may experience excess sun exposure because they avoid sunburn, but do not avoid harmful UV radiation. The International Agency for Research on Cancer classifies ultraviolet-emitting tanning devices as a Group 1 agent (carcinogenic to humans). The World Health Organization recommends a restriction of use of tanning beds by persons under 18 years. In Maryland, an owner, employee, or operator of a tanning facility in the state may not allow a minor under the age of 18 years to use a tanning device unless the minor's parent or legal guardian provides written consent on the premises and in the presence of an owner, employee, or operator of the facility.

### **Screening**

The only widely proposed screening procedure for skin cancer is visual examination of the skin, including both self-examination and clinical examination. In asymptomatic populations, the effect of visual skin examination on mortality from nonmelanoma skin cancers is unknown. Further, the evidence is inadequate to determine whether visual examination of the skin in asymptomatic individuals would lead to a reduction in mortality from melanoma skin cancer. Based on fair though unquantified evidence, visual examination of the skin in asymptomatic individuals may lead to unavoidable increases in harmful consequences. These include complications of diagnostic or treatment interventions and the psychological effects of being labeled with a potentially fatal disease. Another harmful consequence is overdiagnosis, leading to the detection of biologically benign disease that would otherwise go undetected, and the possibility of misdiagnosis of a benign lesion as malignant. The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of using a whole-body skin examination by a primary care clinician or a patient skin self-examination for the early detection of cutaneous melanoma, basal cell cancer, or squamous cell skin cancer in the adult general population.

### **Chemoprevention**

There is inadequate evidence to determine whether the use of chemopreventive agents reduces the incidence of SCC or BCC of the skin.

<b>Public Health Interventions for Skin Cancer (From The Surgeon General's Call to Action to Prevent Skin Cancer, 2014)</b>
<ul style="list-style-type: none"><li>• Wear protective clothing (e.g. long-sleeved shirts and long pants and skirts, clothes made from tightly woven fabric), a hat and sunglasses.</li><li>• Seek shade (use umbrellas, shelters).</li><li>• Avoid times of peak sunlight, which are during the midday hours of 10 a.m. to 4 p.m.</li><li>• Use sunscreen with an SPF of 15 or higher.</li><li>• Avoid indoor tanning and sunbathing.</li></ul>



**Table 57.**  
**Number of Melanoma Cases by Jurisdiction, Gender, and Race,**  
**Maryland, 2013**

Jurisdiction	Total*	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	1,454	857	597	1,424	10	<6
Allegany	29	17	12	29	0	0
Anne Arundel	166	104	62	166	0	0
Baltimore City	62	33	29	60	<6	0
Baltimore County	257	147	110	s	<6	0
Calvert	32	15	17	s	<6	0
Caroline	14	10	<6	14	0	0
Carroll	71	46	25	68	<6	0
Cecil	32	15	17	32	0	0
Charles	41	27	14	s	<6	0
Dorchester	<6	<6	<6	<6	0	0
Frederick	62	33	29	61	0	0
Garrett	7	<6	<6	7	0	0
Harford	87	47	40	86	0	0
Howard	83	51	32	s	<6	<6
Kent	6	<6	<6	6	0	0
Montgomery	253	155	98	241	<6	<6
Prince George's	53	30	23	s	<6	<6
Queen Anne's	29	17	12	29	0	0
St. Mary's	41	27	14	39	<6	0
Somerset	<6	<6	<6	<6	0	0
Talbot	17	9	8	17	0	0
Washington	39	22	17	39	0	0
Wicomico	31	21	10	31	0	0
Worcester	32	19	13	s	0	<6

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

<6 = Case counts of 1-5 are suppressed per DHMH/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

**Table 58.**  
**Melanoma Age-Adjusted Incidence Rates\* by Jurisdiction,**  
**Gender, and Race, Maryland, 2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	22.3	29.4	17.4	32.4	**	**
Allegany	31.7	37.3	31.8	34.1	0.0	0.0
Anne Arundel	27.1	38.0	18.9	32.7	0.0	0.0
Baltimore City	9.5	12.8	7.8	27.5	**	0.0
Baltimore County	26.4	33.4	22.1	35.8	**	0.0
Calvert	35.9	**	39.1	40.8	**	0.0
Caroline	**	**	**	**	0.0	0.0
Carroll	37.7	52.1	27.1	38.2	**	0.0
Cecil	27.3	**	27.9	29.6	0.0	0.0
Charles	28.6	43.4	**	47.3	**	0.0
Dorchester	**	**	**	**	0.0	0.0
Frederick	23.7	26.1	22.0	26.4	0.0	0.0
Garrett	**	**	**	**	0.0	0.0
Harford	30.5	35.3	27.3	34.5	0.0	0.0
Howard	24.5	33.9	18.3	34.3	**	**
Kent	**	**	**	**	0.0	0.0
Montgomery	22.2	30.7	16.0	30.5	**	**
Prince George's	6.7	9.6	5.0	21.4	**	**
Queen Anne's	47.1	53.4	**	51.7	0.0	0.0
St. Mary's	36.4	50.0	**	40.9	**	0.0
Somerset	**	**	**	**	0.0	0.0
Talbot	31.7	**	**	37.0	0.0	0.0
Washington	22.9	28.1	19.8	25.0	0.0	0.0
Wicomico	27.0	40.0	**	35.0	0.0	0.0
Worcester	46.5	56.9	**	53.0	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 DHMH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry

**Table 59.**  
**Number of Deaths for Melanoma by Jurisdiction, Gender, and**  
**Race, Maryland, 2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	161	110	51	151	<10	<10
Allegany	<10	<10	<10	<10	<10	<10
Anne Arundel	24	s	<10	22	<10	<10
Baltimore City	14	<10	<10	s	<10	<10
Baltimore County	29	s	<10	28	<10	<10
Calvert	<10	<10	<10	<10	<10	<10
Caroline	<10	<10	<10	<10	<10	<10
Carroll	<10	<10	<10	<10	<10	<10
Cecil	<10	<10	<10	<10	<10	<10
Charles	<10	<10	<10	<10	<10	<10
Dorchester	<10	<10	<10	<10	<10	<10
Frederick	<10	<10	<10	<10	<10	<10
Garrett	<10	<10	<10	<10	<10	<10
Harford	<10	<10	<10	<10	<10	<10
Howard	<10	<10	<10	<10	<10	<10
Kent	<10	<10	<10	<10	<10	<10
Montgomery	20	<10	s	19	<10	<10
Prince George's	19	s	<10	14	<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 DHMH/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, 2013

**Table 60.**  
**Melanoma Age-Adjusted Mortality Rates\* by Jurisdiction,**  
**Gender, and Race, Maryland, 2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	2.6	4.3	1.4	3.4	**	**
Allegany	**	**	**	**	**	**
Anne Arundel	4.2	**	**	4.6	**	**
Baltimore City	**	**	**	**	**	**
Baltimore County	3.1	5.6	**	3.9	**	**
Calvert	**	**	**	**	**	**
Caroline	**	**	**	**	**	**
Carroll	**	**	**	**	**	**
Cecil	**	**	**	**	**	**
Charles	**	**	**	**	**	**
Dorchester	**	**	**	**	**	**
Frederick	**	**	**	**	**	**
Garrett	**	**	**	**	**	**
Harford	**	**	**	**	**	**
Howard	**	**	**	**	**	**
Kent	**	**	**	**	**	**
Montgomery	1.6	**	**	**	**	**
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 DHMH/CCPC Mortality Data Suppression Policy

Source: CDC Wonder, 2013

**Table 61.**  
**Number of Melanoma Cases by Jurisdiction, Gender, and Race,**  
**Maryland, 2009-2013**

Jurisdiction	Total*	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	6,574	3,842	2,727	6,323	72	20
Allegany	93	61	32	93	0	0
Anne Arundel	890	530	360	864	<6	<6
Baltimore City	315	174	141	297	12	0
Baltimore County	1,223	709	514	1,186	11	0
Calvert	138	70	68	135	<6	0
Caroline	45	27	18	45	0	0
Carroll	314	185	129	305	<6	0
Cecil	144	78	66	141	0	0
Charles	132	91	41	123	6	0
Dorchester	43	25	18	s	0	<6
Frederick	271	162	109	267	0	0
Garrett	32	18	14	32	0	0
Harford	422	252	169	411	0	0
Howard	384	215	166	371	6	<6
Kent	22	13	9	22	0	0
Montgomery	999	597	402	940	11	<6
Prince George's	251	151	100	223	17	<6
Queen Anne's	93	51	42	91	0	0
St. Mary's	140	72	68	136	<6	0
Somerset	33	21	12	33	0	0
Talbot	74	44	30	73	0	0
Washington	176	99	77	172	<6	0
Wicomico	166	86	79	162	0	<6
Worcester	135	87	48	128	0	<6

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

<6 = Case counts of 1-5 are suppressed per DHMH/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

**Table 62.**  
**Melanoma Age-Adjusted Incidence Rates\* by Jurisdiction,**  
**Gender, and Race, Maryland, 2009-2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	21.0	27.8	16.3	29.8	0.9	1.0
Allegany	20.1	28.0	15.1	21.6	0.0	0.0
Anne Arundel	30.4	39.7	23.5	35.5	**	**
Baltimore City	9.7	13.1	7.6	26.5	**	0.0
Baltimore County	26.1	34.2	20.5	34.0	**	0.0
Calvert	30.4	34.4	28.6	35.2	**	0.0
Caroline	24.1	31.2	18.8	28.5	0.0	0.0
Carroll	34.0	44.2	26.7	34.7	**	0.0
Cecil	26.1	30.6	23.3	27.4	0.0	0.0
Charles	19.1	30.1	10.8	28.9	**	0.0
Dorchester	19.9	24.5	16.4	24.9	0.0	**
Frederick	22.0	27.9	17.1	24.3	0.0	0.0
Garrett	17.6	20.0	**	17.8	0.0	0.0
Harford	31.0	40.7	23.6	34.6	0.0	0.0
Howard	24.8	31.1	19.8	33.9	**	**
Kent	13.9	**	**	16.4	0.0	0.0
Montgomery	18.4	25.0	13.7	24.6	**	**
Prince George's	6.8	10.2	4.5	18.8	0.8	**
Queen Anne's	31.7	36.2	28.5	34.1	0.0	0.0
St. Mary's	26.1	27.3	25.3	30.5	**	0.0
Somerset	22.9	27.2	18.6	34.4	0.0	0.0
Talbot	27.1	36.4	18.9	30.6	0.0	0.0
Washington	21.1	25.7	18.0	22.3	**	0.0
Wicomico	31.6	37.6	28.1	40.3	0.0	**
Worcester	37.3	49.6	27.4	40.6	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 DHMH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry

**Table 63.**  
**Number of Deaths for Melanoma by Jurisdiction, Gender, and**  
**Race, Maryland, 2009-2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	808	531	277	767	s	<10
Allegany	16	s	<10	s	<10	<10
Anne Arundel	91	65	26	85	<10	<10
Baltimore City	53	31	22	46	<10	<10
Baltimore County	156	104	52	151	<10	<10
Calvert	<10	<10	<10	<10	<10	<10
Caroline	<10	<10	<10	<10	<10	<10
Carroll	31	19	12	30	<10	<10
Cecil	23	s	<10	s	<10	<10
Charles	17	s	<10	16	<10	<10
Dorchester	<10	<10	<10	<10	<10	<10
Frederick	34	15	19	s	<10	<10
Garrett	<10	<10	<10	<10	<10	<10
Harford	39	25	14	s	<10	<10
Howard	27	s	<10	25	<10	<10
Kent	<10	<10	<10	<10	<10	<10
Montgomery	122	78	44	116	<10	<10
Prince George's	68	43	25	56	s	<10
Queen Anne's	16	s	<10	s	<10	<10
St. Mary's	14	<10	<10	s	<10	<10
Somerset	<10	<10	<10	<10	<10	<10
Talbot	10	<10	<10	s	<10	<10
Washington	23	12	11	s	<10	<10
Wicomico	16	s	<10	15	<10	<10
Worcester	19	s	<10	s	<10	<10

<10 = Death counts of 0-9 are suppressed per DHMH/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, 2009-2013

**Table 64.**  
**Melanoma Age-Adjusted Mortality Rates\* by Jurisdiction,**  
**Gender, and Race, Maryland, 2009-2013**

Jurisdiction	Total	Gender		Race		
		Males	Females	Whites	Blacks	Other
Maryland	2.6	4.2	1.6	3.5	0.5	**
Allegany	**	**	**	**	**	**
Anne Arundel	3.3	5.6	1.6	3.6	**	**
Baltimore City	1.7	2.4	1.2	4.1	**	**
Baltimore County	3.3	5.1	1.9	4.1	**	**
Calvert	**	**	**	**	**	**
Caroline	**	**	**	**	**	**
Carroll	3.4	**	**	3.4	**	**
Cecil	4.5	**	**	4.8	**	**
Charles	**	**	**	**	**	**
Dorchester	**	**	**	**	**	**
Frederick	2.9	**	**	3.2	**	**
Garrett	**	**	**	**	**	**
Harford	2.9	4.5	**	3.2	**	**
Howard	2.1	3.7	**	2.7	**	**
Kent	**	**	**	**	**	**
Montgomery	2.3	3.6	1.4	2.9	**	**
Prince George's	1.9	2.9	1.1	4.9	**	**
Queen Anne's	**	**	**	**	**	**
St. Mary's	**	**	**	**	**	**
Somerset	**	**	**	**	**	**
Talbot	**	**	**	**	**	**
Washington	2.7	**	**	2.9	**	**
Wicomico	**	**	**	**	**	**
Worcester	**	**	**	**	**	**

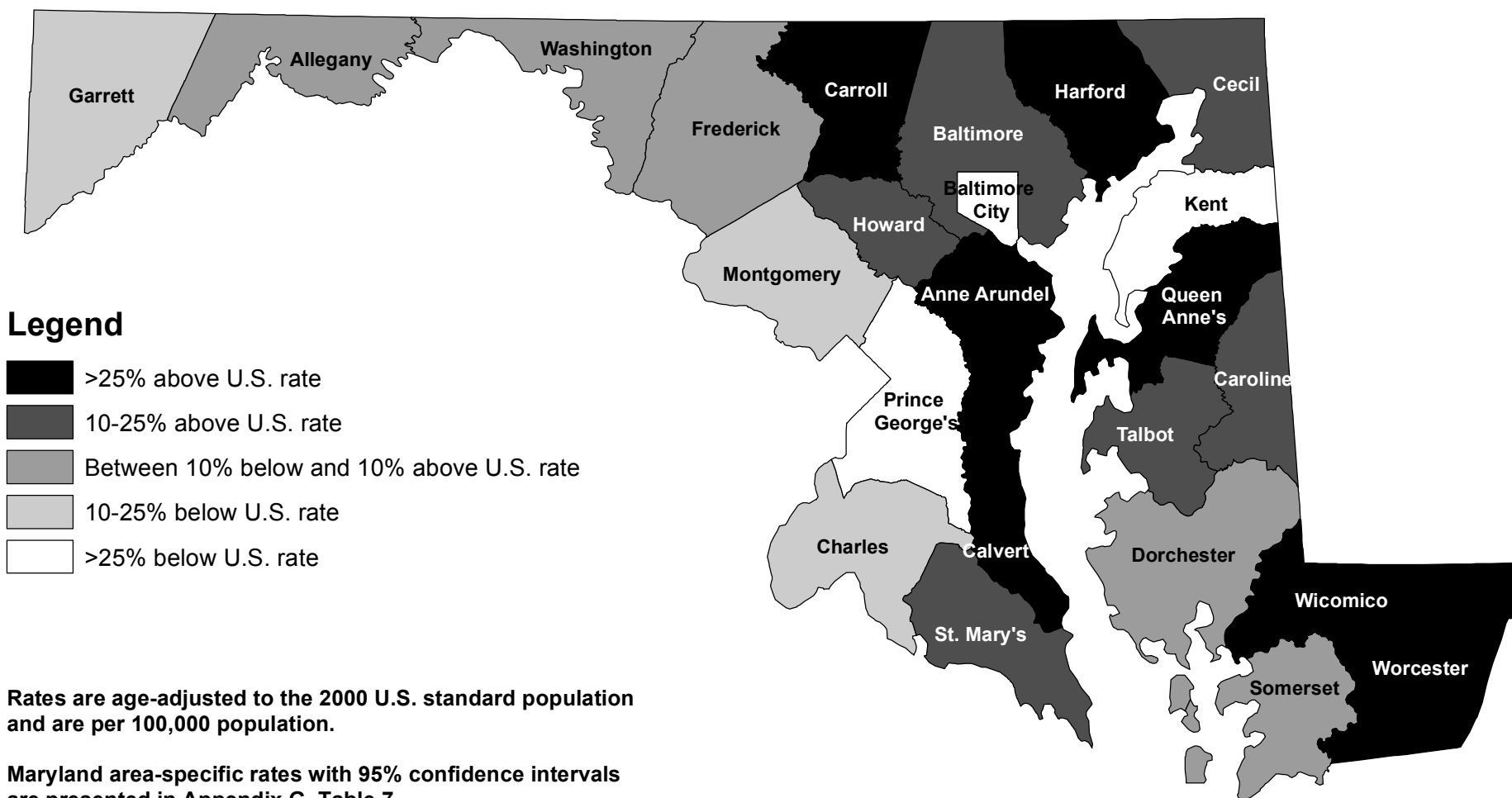
\* Rates are per 100,000 population and age-adjusted to 2000 U.S. standard population

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

Source: CDC Wonder, 2009-2013



# Maryland Melanoma Incidence Rates by Geographical Area: Comparison to U.S. Rate, 2009-2013

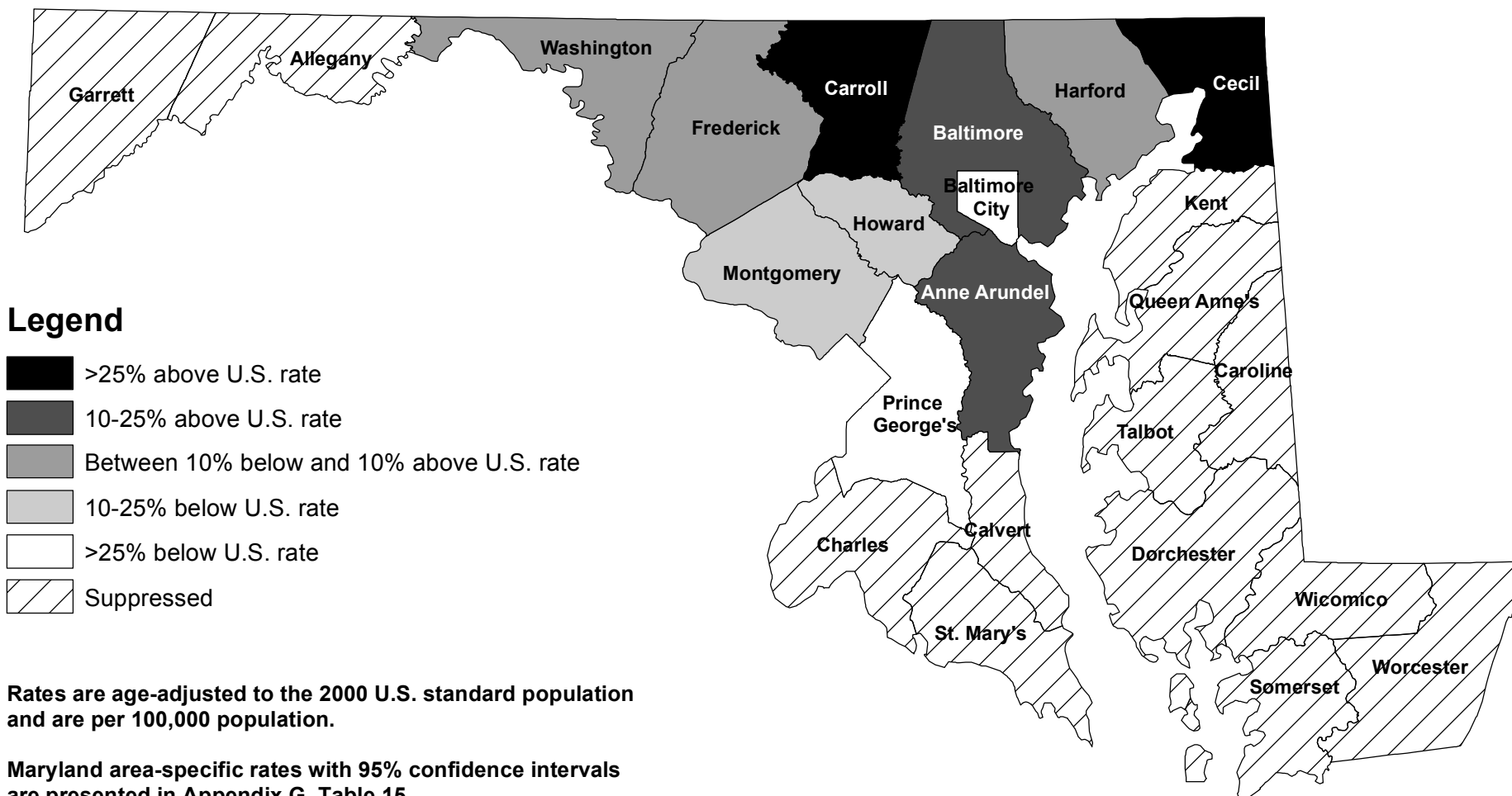


U.S. melanoma incidence rate, 2009-2013: 21.8 / 100,000

Maryland melanoma incidence rate, 2009-2013: 21.0 / 100,000

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

# Maryland Melanoma Mortality Rates by Geographical Area: Comparison to U.S. Rate, 2009-2013



U.S. melanoma mortality rate, 2009-2013: 2.7 / 100,000

Maryland melanoma mortality rate, 2009-2013: 2.6 / 100,000

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

Note: Rates based on death counts of 0-19 are suppressed per DHMH / CCPC Mortality Data Suppression Policy.

## G. Cervical Cancer

### **Incidence (New Cases)**

A total of 189 cases of cervical cancer among women in Maryland were reported in 2013. The age-adjusted incidence rate for cervical cancer in Maryland in 2013 was 5.9 per 100,000 women (5.1-6.8, 95% C.I.), which is statistically significantly lower than the 2013 U.S. SEER age-adjusted cervical cancer incidence rate of 7.0 per 100,000 women (6.8-7.3, 95% C.I.).

### **Mortality (Deaths)**

In 2013, a total of 70 women died of cervical cancer in Maryland. The age-adjusted cervical cancer mortality rate in Maryland in 2013 was 2.0 per 100,000 women (1.6-2.6, 95% C.I.). This rate is similar to the 2013 U.S. cervical cancer mortality rate of 2.3 per 100,000 women (2.3-2.4, 95% C.I.). Maryland had the 28<sup>th</sup> highest cervical cancer mortality rate among the states and the District of Columbia for the period 2009-2013.

**Table 65.**  
**Cervical Cancer Incidence and Mortality Rates**  
**by Race, Maryland and the United States, 2013**

<i>Incidence 2013</i>	<i>Total*</i>	<i>Whites</i>	<i>Blacks</i>	<i>Other</i>
New Cases (count)	189	102	70	11
MD Incidence Rate	5.9	5.3	7.1	**
U.S. SEER Rate	7.0	6.9	8.7	6.0
<i>Mortality 2013</i>	<i>Total</i>	<i>Whites</i>	<i>Blacks</i>	<i>Other</i>
Deaths (count)	70	41	s	<10
MD Mortality Rate	2.0	1.9	2.7	**
U.S. Mortality Rate	2.3	2.2	3.9	N/A

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

\* Total includes unknown race

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

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

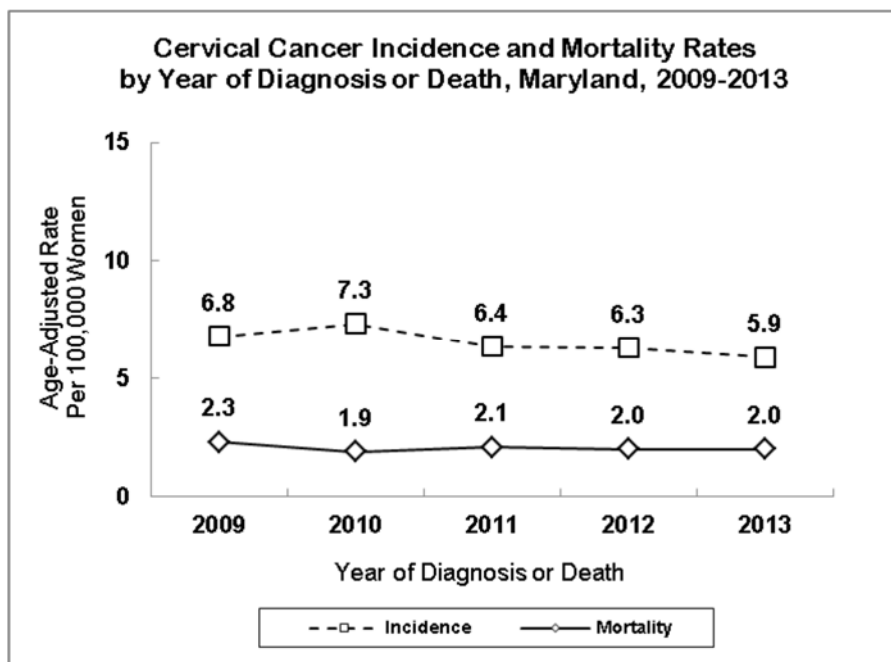
\*\* MD incidence rates based on case counts of 1-15 are suppressed per DHMH/MCR Data Use Policy and Procedures; MD mortality rates based on death counts of 0-19 are suppressed per DHMH/CCPC Mortality Data Suppression Policy

Source: Maryland Cancer Registry

U.S. SEER, SEER\*Stat

NCHS Compressed Mortality File in CDC WONDER, 2013

U.S. SEER, Cancer Statistics Review



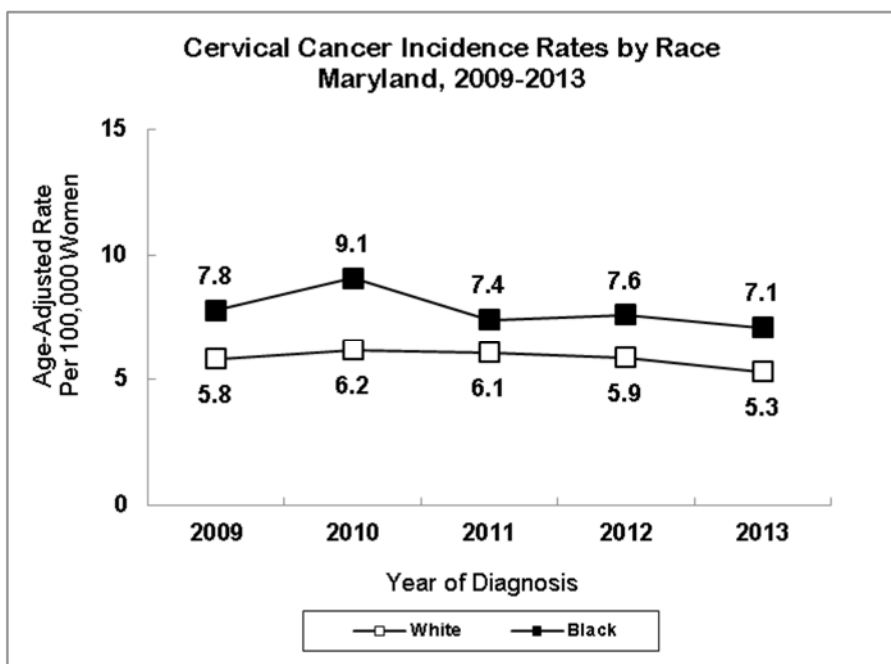
### **Incidence and Mortality Trends**

Cervical cancer incidence rates among Maryland women decreased at a rate of 4.3% per year from 2009 to 2013.

Cervical cancer mortality rates decreased at a rate of 2.3% per year from 2009 to 2013.

See Appendix H, Tables 1 and 2.

Source: Maryland Cancer Registry  
NCHS Compressed Mortality File in CDC WONDER, 2012-2013  
Maryland Vital Statistics Administration from MATCH, 2009-2010  
Maryland Vital Statistics Administration, 2011

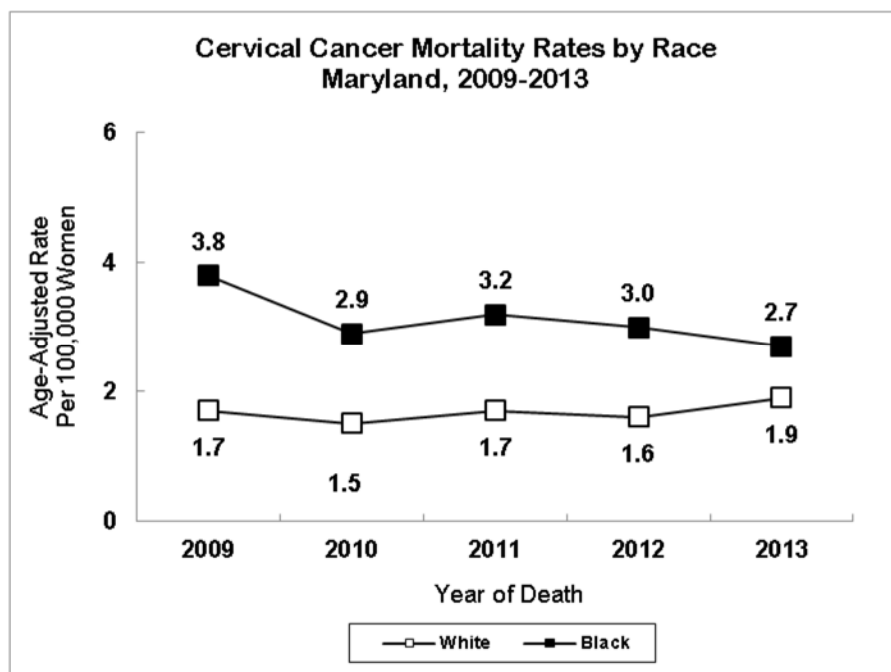


### **Incidence Trends by Race**

From 2009 to 2013, cervical cancer incidence rates among black females decreased at a rate of 3.6% per year, and decreased at a rate of 2.3% per year among white females.

See Appendix H, Table 3.

Source: Maryland Cancer Registry

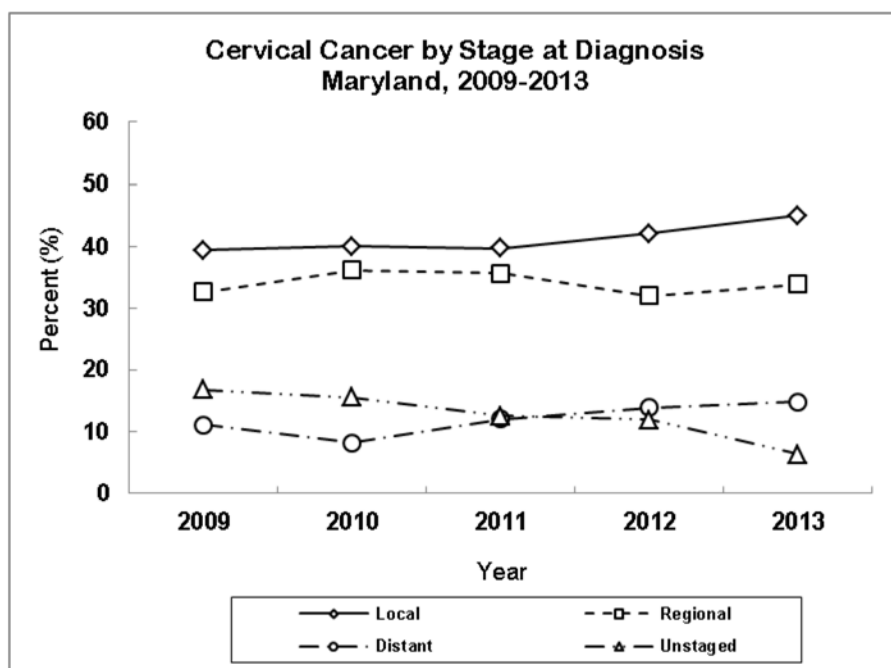


Source: NCHS Compressed Mortality File in CDC WONDER, 2012-2013  
 Maryland Vital Statistics Administration from MATCH, 2009-2010  
 Maryland Vital Statistics Administration, 2011

### **Mortality Trends by Race**

From 2009 to 2013, mortality rates for black females decreased at a rate of 6.3% per year, while mortality rates for white females increased at a rate of 2.9% per year.

See Appendix H, Table 5.

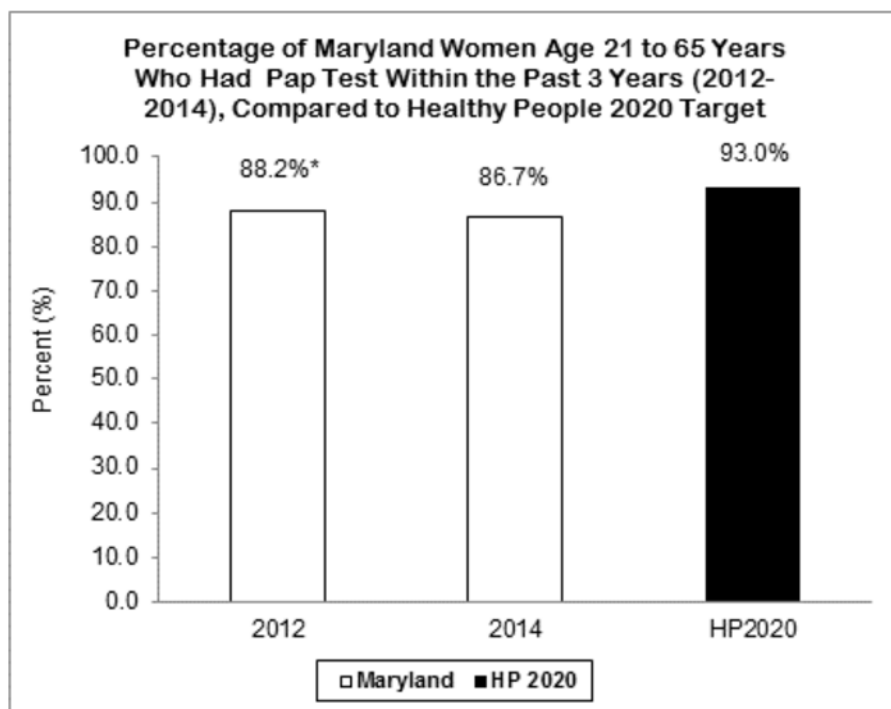


Source: Maryland Cancer Registry

### **Stage at Diagnosis**

In 2013, 45.0% of all cervical cancer cases in Maryland were diagnosed at the local stage, 33.9% were diagnosed at the regional stage, and 14.8% were found at the distant stage. The proportion of cervical cancer cases reported as unstaged decreased in 2013 to 6.3%.

See Appendix I, Table 8.



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

\* The 2012 BRFSS percent listed in the graph above (88.2%) in the current 2016 CRF Cancer Report differs slightly from the corresponding percent in the same graph in the previous 2014 CRF Cancer Report (87.9%, page 122) due to the exclusion of women who have had a hysterectomy (hadhyst2=1), did not know/not sure if they had a hysterectomy (hadhyst2=7), or refused to answer this question (hadhyst2=9), in order to improve the precision of the analysis in the current report.

### **Cervical Cancer Screening**

One Healthy People 2020 target for cervical cancer is to increase to 93.0% the percentage of women who have had a cervical cancer screening test based on the most recent guidelines. The USPSTF guidelines recommend screening for cervical cancer in women ages 21 to 65 years with a Pap test every 3 years or, for women ages 30 to 65 years who want to lengthen the screening interval, screening with a combination of cytology and human papilloma-virus (HPV) testing every 5 years.

In 2012 and 2014, 88.2% and 86.7% of Maryland women age 21 to 65 years, respectively, reported they had a Pap test within the past 3 years.

**Public Health Evidence (quoted from NCI PDQ®, 4/21/2016 and 3/4/2016;  
Advisory Committee on Immunization Practices [ACIP] 3/27/2015; and USPSTF,  
3/2012)**

**Prevention**

Based on solid evidence from observational studies, human papillomavirus (HPV) infection is associated with the development of cervical cancer. More than 40 HPV types can be easily spread through direct sexual contact. High-risk HPVs can cause cancer, and two of these, HPV types 16 and 18, are responsible for about 70 percent of all cervical cancers. Based on solid evidence, sexual activity at a younger age and an increasing number of sexual partners are both associated with an increased risk of HPV infection and subsequent development of cervical cancer. Based on solid evidence, the following are associated with increased risk of cervical cancer in HPV-infected women: high parity; long-term use of oral contraceptives; and cigarette smoking (both active and passive). Other factors that increase the risk of cervical cancer, based on solid evidence, include being immunosuppressed and exposure to diethylstilbestrol (DES) *in utero*. Based on solid evidence, these factors decrease the risk of cervical cancer: abstinence from sexual activity; and the use of barrier protection (e.g. condoms) during sexual intercourse. Based on solid evidence, vaccination against HPV-16/HPV-18 is effective in preventing HPV infection in HPV-naïve individuals and is associated with a reduced incidence of cervical intraepithelial neoplasia (CIN) 2 and 3. By extrapolation, these vaccines should also be associated with a reduced incidence of cervical cancer. ACIP recommends that routine HPV vaccination be initiated at age 11 or 12 years for both males and females. The vaccination series can be started beginning at age 9 years. ACIP also recommends vaccination for females aged 13 through 26 years and for males aged 13 through 21 years who have not been vaccinated previously or who have not completed the 3-dose series. Vaccination is also recommended through age 26 years for men who have sex with men and for immunocompromised persons if not vaccinated previously or did not complete the 3-dose series. Vaccination of females is recommended with the bivalent HPV vaccine (2vHPV), quadrivalent HPV vaccine (4vHPV), or 9-valent HPV vaccine (9vHPV). Vaccination for males is recommended with 4vHPV or 9vHPV.

**Screening**

Based on solid evidence, regular screening of appropriate women for cervical cancer with the Pap test reduces mortality from cervical cancer. However, it can also lead to additional diagnostic procedures and treatment for low-grade squamous intraepithelial lesions (LSIL), with long-term consequences for fertility and pregnancy. These harms are greatest for younger women, who have a higher prevalence of LSIL, lesions that often regress without treatment. Based on solid evidence, screening with HPV DNA or HPV RNA detects high-grade cervical dysplasia, a precursor lesion for cervical cancer. Based on solid evidence, HPV testing identifies numerous infections that will not lead to cervical dysplasia or cervical cancer, especially in women younger than 30 years, in whom rates of HPV infection may be higher. Based on solid evidence, screening every 5 years with the Pap test and the HPV DNA test (co-testing) in women 30 years and older is more sensitive in detecting cervical abnormalities, compared with the Pap test alone, and it reduces the incidence of cervical cancer. However, it is also associated with more false-positives than the Pap test alone. The USPSTF recommends screening for cervical cancer in women age 21 to 65 years with cytology (Pap test) every 3 years or, for women age 30 to 65 years who want to lengthen the screening interval, screening with a combination of cytology *and* HPV test every 5 years. The USPSTF recommends against screening for cervical cancer in women younger than age 21 years and in women over age 65 years who have had adequate prior screening and who are not otherwise at high risk for cervical cancer. The USPSTF also recommends against screening for cervical cancer with HPV testing, alone or in combination with cytology, in women younger than age 30 years. Based on solid evidence, screening is not helpful in women who do not have a cervix as a result of a hysterectomy for a benign condition. The USPSTF recommends against screening for

cervical cancer in women who have had a hysterectomy with removal of the cervix and who do not have a history of a high-grade precancerous lesion (CIN grade 2 or 3) or cervical cancer.

<b>Public Health Interventions for Cervical Cancer (USPSTF 3/2012 and ACIP, 3/2015)</b>
---

- |   |
|---|
| <ul style="list-style-type: none"><li>• Screen women age 21 to 65 years with cytology (Pap test) every 3 years or, for women age 30 to 65 years who want to lengthen the screening interval, screening with a combination of cytology and HPV testing every 5 years.</li><li>• Vaccinate females and males according to ACIP recommendations.</li></ul> |
|---|



**Table 66.**  
**Number of Cervical Cancer Cases by**  
**Jurisdiction and Race, Maryland, 2013**

Jurisdiction	Total*	Race		
		Whites	Blacks	Other
Maryland	189	102	70	11
Allegany	<6	<6	0	0
Anne Arundel	16	s	<6	0
Baltimore City	35	s	27	<6
Baltimore County	22	16	<6	<6
Calvert	<6	<6	0	0
Caroline	<6	<6	0	0
Carroll	6	6	0	0
Cecil	<6	<6	0	0
Charles	<6	<6	<6	<6
Dorchester	<6	<6	0	0
Frederick	<6	<6	0	<6
Garrett	0	0	0	0
Harford	10	8	<6	0
Howard	9	6	<6	0
Kent	<6	0	<6	0
Montgomery	25	11	9	<6
Prince George's	29	6	18	<6
Queen Anne's	<6	<6	0	0
St. Mary's	<6	<6	<6	<6
Somerset	<6	0	<6	0
Talbot	<6	<6	0	0
Washington	7	7	0	0
Wicomico	<6	<6	0	0
Worcester	<6	<6	<6	0

\* Total includes cases reported as unknown race

<6 = Case counts of 1-5 are suppressed per DHMH/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

**Table 67.**  
**Cervical Cancer Age-Adjusted Incidence Rates\***  
**by Jurisdiction and Race, Maryland, 2013**

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	5.9	5.3	7.1	**
Allegany	**	**	0.0	0.0
Anne Arundel	5.7	**	**	0.0
Baltimore City	10.7	**	12.1	**
Baltimore County	4.6	5.1	**	**
Calvert	**	**	0.0	0.0
Caroline	**	**	0.0	0.0
Carroll	**	**	0.0	0.0
Cecil	**	**	0.0	0.0
Charles	**	**	**	**
Dorchester	**	**	0.0	0.0
Frederick	**	**	0.0	**
Garrett	0.0	0.0	0.0	0.0
Harford	**	**	**	0.0
Howard	**	**	**	0.0
Kent	**	0.0	**	0.0
Montgomery	4.3	**	**	**
Prince George's	6.1	**	5.8	**
Queen Anne's	**	**	0.0	0.0
St. Mary's	**	**	**	**
Somerset	**	0.0	**	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 DHMH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry

**Table 68.**  
**Number of Deaths for Cervical Cancer by**  
**Jurisdiction and Race, Maryland, 2013**

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	70	41	s	<10
Allegany	<10	<10	<10	<10
Anne Arundel	12	11	<10	<10
Baltimore City	10	<10	<10	<10
Baltimore County	10	<10	<10	<10
Calvert	<10	<10	<10	<10
Caroline	<10	<10	<10	<10
Carroll	<10	<10	<10	<10
Cecil	<10	<10	<10	<10
Charles	<10	<10	<10	<10
Dorchester	<10	<10	<10	<10
Frederick	<10	<10	<10	<10
Garrett	<10	<10	<10	<10
Harford	<10	<10	<10	<10
Howard	<10	<10	<10	<10
Kent	<10	<10	<10	<10
Montgomery	<10	<10	<10	<10
Prince George's	<10	<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 DHMH/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, 2013

**Table 69.**  
**Cervical Cancer Age-Adjusted Mortality Rates\***  
**by Jurisdiction and Race, Maryland, 2013**

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	2.0	1.9	2.7	**
Allegany	**	**	**	**
Anne Arundel	**	**	**	**
Baltimore City	**	**	**	**
Baltimore County	**	**	**	**
Calvert	**	**	**	**
Caroline	**	**	**	**
Carroll	**	**	**	**
Cecil	**	**	**	**
Charles	**	**	**	**
Dorchester	**	**	**	**
Frederick	**	**	**	**
Garrett	**	**	**	**
Harford	**	**	**	**
Howard	**	**	**	**
Kent	**	**	**	**
Montgomery	**	**	**	**
Prince George's	**	**	**	**
Queen Anne's	**	**	**	**
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 DHMH/CCPC Mortality Data Suppression Policy

Source: CDC Wonder, 2013

**Table 70.**  
**Number of Cervical Cancer Cases by**  
**Jurisdiction and Race, Maryland, 2009-2013**

Jurisdiction	Total*	Race		
		Whites	Blacks	Other
Maryland	1,037	567	373	62
Allegany	12	s	<6	0
Anne Arundel	91	76	14	0
Baltimore City	169	41	116	7
Baltimore County	146	82	49	12
Calvert	11	s	<6	0
Caroline	<6	<6	0	0
Carroll	19	s	<6	0
Cecil	20	17	<6	<6
Charles	23	11	6	<6
Dorchester	<6	<6	<6	0
Frederick	34	31	<6	<6
Garrett	<6	<6	0	0
Harford	46	36	9	0
Howard	43	30	8	<6
Kent	<6	<6	<6	0
Montgomery	145	81	33	23
Prince George's	164	38	108	7
Queen Anne's	6	6	0	0
St. Mary's	18	11	<6	<6
Somerset	7	<6	<6	0
Talbot	<6	<6	0	0
Washington	30	28	<6	0
Wicomico	13	8	<6	0
Worcester	13	10	<6	<6

\* Total includes cases reported as unknown race

<6 = Case counts of 1-5 are suppressed per DHMH/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

**Table 71.**  
**Cervical Cancer Age-Adjusted Incidence Rates\***  
**by Jurisdiction and Race, Maryland, 2009-2013**

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	6.5	5.9	7.8	5.9
Allegany	**	**	**	0.0
Anne Arundel	6.4	6.8	**	0.0
Baltimore City	9.9	8.1	10.3	**
Baltimore County	6.5	5.5	8.8	**
Calvert	**	**	**	0.0
Caroline	**	**	0.0	0.0
Carroll	3.7	3.7	**	0.0
Cecil	7.7	7.1	**	**
Charles	5.3	**	**	**
Dorchester	**	**	**	0.0
Frederick	5.4	5.8	**	**
Garrett	**	**	0.0	0.0
Harford	7.1	6.8	**	0.0
Howard	5.2	5.7	**	**
Kent	**	**	**	0.0
Montgomery	5.2	4.6	6.5	5.0
Prince George's	7.1	7.1	6.8	**
Queen Anne's	**	**	0.0	0.0
St. Mary's	6.9	**	**	**
Somerset	**	**	**	0.0
Talbot	**	**	0.0	0.0
Washington	8.1	8.2	**	0.0
Wicomico	**	**	**	0.0
Worcester	**	**	**	**

\* 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 DHMH/MCR Data Use Policy and Procedures

Source: Maryland Cancer Registry

**Table 72.**  
**Number of Deaths for Cervical Cancer by**  
**Jurisdiction and Race, Maryland, 2009-2013**

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	353	186	149	18
Allegany	<10	<10	<10	<10
Anne Arundel	41	31	<10	<10
Baltimore City	80	s	60	<10
Baltimore County	48	27	s	<10
Calvert	<10	<10	<10	<10
Caroline	<10	<10	<10	<10
Carroll	<10	<10	<10	<10
Cecil	<10	<10	<10	<10
Charles	<10	<10	<10	<10
Dorchester	<10	<10	<10	<10
Frederick	11	s	<10	<10
Garrett	<10	<10	<10	<10
Harford	15	10	<10	<10
Howard	<10	<10	<10	<10
Kent	<10	<10	<10	<10
Montgomery	36	21	10	<10
Prince George's	55	s	34	<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 DHMH/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, 2013

**Table 73.**  
**Cervical Cancer Age-Adjusted Mortality Rates\***  
**by Jurisdiction and Race, Maryland, 2009-2013**

Jurisdiction	Total	Race		
		Whites	Blacks	Other
Maryland	2.1	1.7	3.1	**
Allegany	**	**	**	**
Anne Arundel	2.8	2.6	**	**
Baltimore City	4.7	**	5.2	**
Baltimore County	1.9	1.5	3.5	**
Calvert	**	**	**	**
Caroline	**	**	**	**
Carroll	**	**	**	**
Cecil	**	**	**	**
Charles	**	**	**	**
Dorchester	**	**	**	**
Frederick	**	**	**	**
Garrett	**	**	**	**
Harford	**	**	**	**
Howard	**	**	**	**
Kent	**	**	**	**
Montgomery	1.1	1.0	**	**
Prince George's	2.3	**	2.0	**
Queen Anne's	**	**	**	**
St. Mary's	**	**	**	**
Somerset	**	**	**	**
Talbot	**	**	**	**
Washington	**	**	**	**
Wicomico	**	**	**	**
Worcester	**	**	**	**

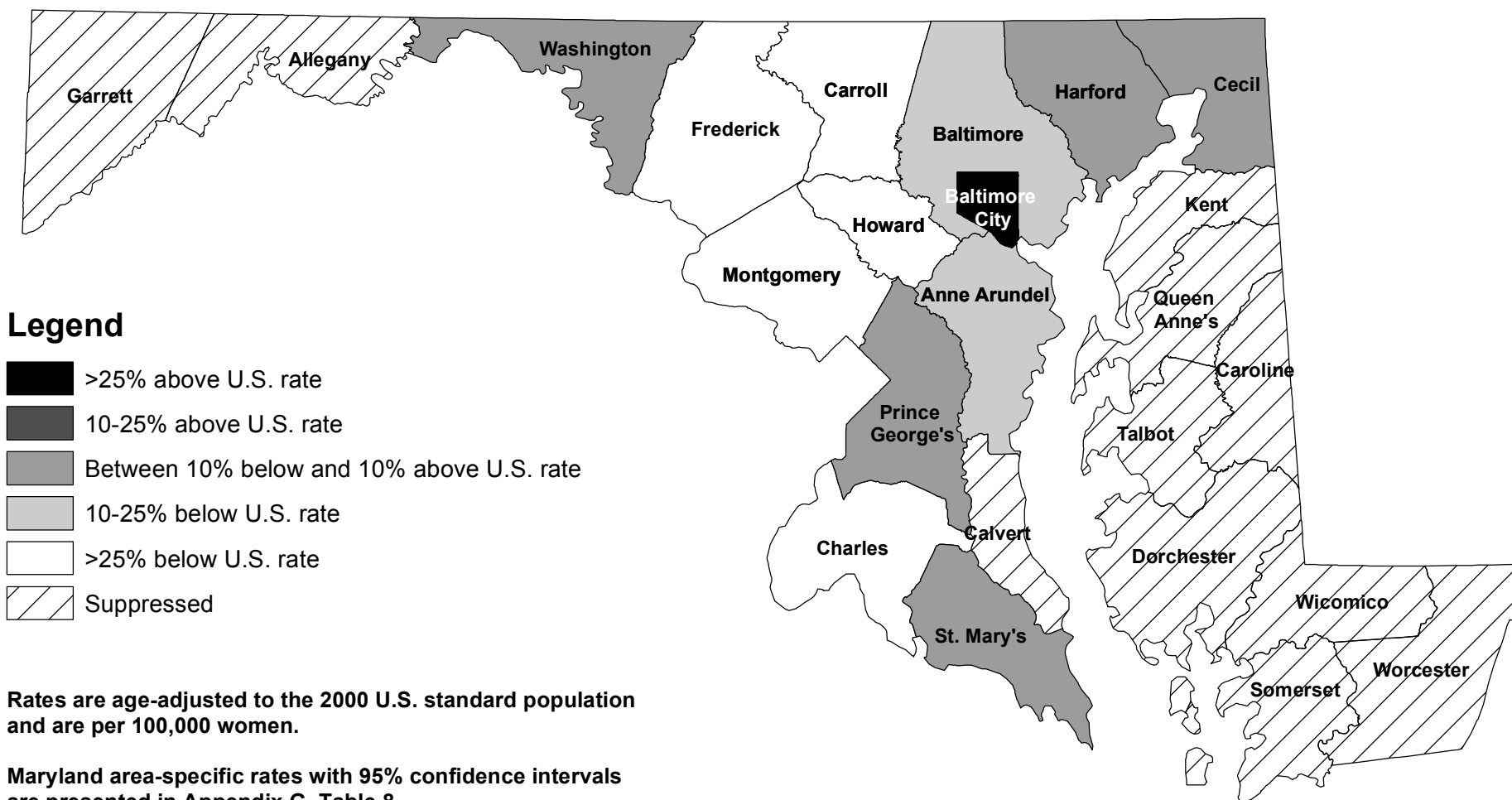
\* Rates are per 100,000 women and age-adjusted to 2000 U.S. standard population

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

Source: CDC Wonder, 2013



# Maryland Cervical Cancer Incidence Rates by Geographical Area: Comparison to U.S. Rate, 2009-2013



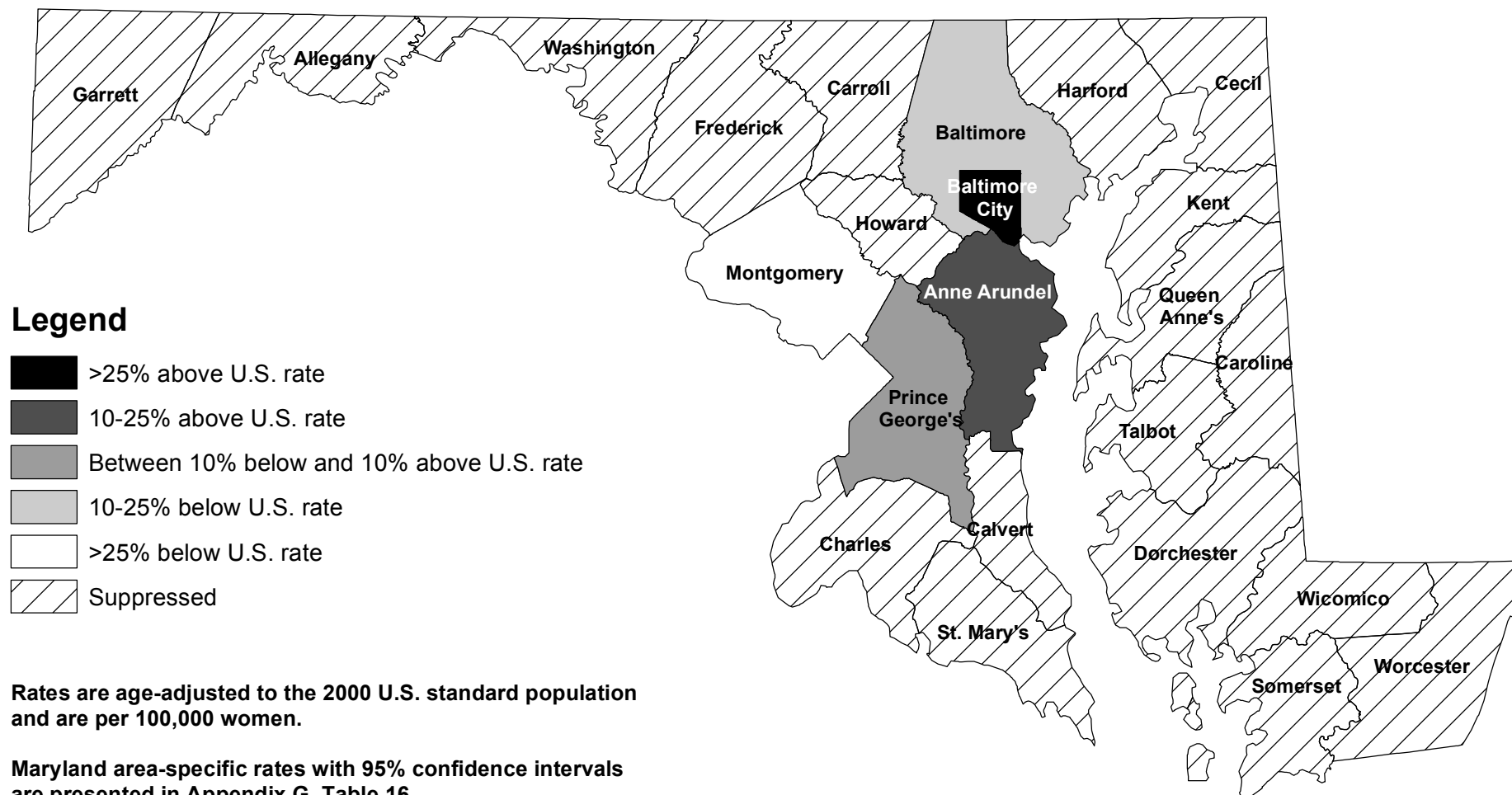
U.S. cervical cancer incidence rate, 2009-2013: 7.5 / 100,000

Maryland cervical cancer incidence rate, 2009-2013: 6.5 / 100,000

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

Note: Rates based on case counts of 1-15 are suppressed per DHMH/MCR Data Use Policy and Procedures.

# Maryland Cervical Cancer Mortality Rates by Geographical Area: Comparison to U.S. Rate, 2009-2013



U.S. cervical cancer mortality rate, 2009-2013: 2.3 / 100,000

Maryland cervical cancer mortality rate, 2009-2013: 2.1 / 100,000

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

Note: Rates based on death counts of 0-19 are suppressed per DHMH / CCPC Mortality Data Suppression Policy.

**Appendix A**

**Cigarette Restitution Fund  
Cancer Report Requirements**

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## Cigarette Restitution Fund Cancer Report Requirements

The Maryland General Assembly established the Cigarette Restitution Fund (CRF) to provide for the distribution of funds from the tobacco settlement (House Bill 1425, Chapter 17 of the Acts of 2000 and Senate Bill 896, Chapter 18 of the Acts of 2000). The law created the Tobacco Use Prevention and Cessation Program and the Cancer Prevention, Education, Screening and Treatment Program, and provides parameters on how the funds may be spent. Maryland Health General Article § 13-1104 requires the Maryland Department of Health and Mental Hygiene (DHMH) to conduct a baseline cancer study (2000) as well as cancer studies at least every other year thereafter.

The law requires that the study include:

- (1) The number and percentage of individuals who have each targeted cancer, both Statewide and in each county;
- (2) The number and percentage of individuals within each minority population who have each targeted cancer, both Statewide and in each county;
- (3) The mortality rate for each targeted cancer, both Statewide and in each county;
- (4) The mortality rate for the different minority populations for each targeted cancer, both Statewide and in each county;
- (5) The number of identifiable cancers with a high incidence in the State for which there are effective methods of prevention and early detection, and treatment after detection;
- (6) Any aspect of targeted and non-targeted cancers that DHMH seeks to measure; and
- (7) Any other factor that DHMH 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:

<b><i>Required Component of the Cancer Report</i></b>	<b><i>Location of Information in this Report</i></b>
1. Number and percentage of individuals having each targeted cancer, both Statewide and in each jurisdiction.	Tables 1, 2, 3, 4, 7, 8, 11, 12, 13, 16, 17, 20, 21, 22, 25, 26, 29, 30, 31, 34, 35, 38, 39, 40, 43, 44, 47, 48, 49, 52, 53, 56, 57, 58, 61, 62, 65, 66, 67, 70, 71
2. Number and percentage of individuals within each minority population having each targeted cancer, both Statewide and in each jurisdiction.	Same as above.
3. Mortality rate for each targeted cancer, both Statewide and in each jurisdiction.	Tables 1, 5, 6, 9, 10, 11, 14, 15, 18, 19, 20, 23, 24, 27, 28, 29, 32, 33, 36, 37, 38, 41, 42, 45, 46, 47, 50, 51, 54, 55, 56, 59, 60, 63, 64, 65, 68, 69, 72, 73
4. Mortality rate for the different minority populations for each targeted cancer, both Statewide and in each county.	Same as above.
5. Number of identifiable cancers with a high incidence in the State for which there are effective methods of prevention and early detection, and treatment after detection.	High incidence and effective prevention: Lung cancer: Tables 11, 12, 13, 16, 17 High incidence and effective detection: Colorectal and breast cancer: Tables 20, 21, 22, 25, 26, 29, 30, 31, 34, 35

<p>6. Other aspects of targeted and non-targeted cancers that DHMH seeks to measure.</p>	<p>For all cancer sites and for each targeted cancer, the report:</p> <ol style="list-style-type: none"> <li>1. Compares Maryland incidence and mortality rates to that of the U.S.</li> <li>2. Delineates incidence and mortality trends by race.</li> <li>3. Shows 5-year mortality trends and 5-year combined data.</li> <li>4. Presents 5-year incidence trends and 5-year combined data.</li> <li>5. Tracks stage of disease at diagnosis over a 5-year period.</li> <li>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).</li> <li>7. Describes the evidence for screening, primary prevention and chemoprevention for each targeted cancer, based on current scientific literature.</li> <li>8. Describes the recommended public health intervention for each targeted cancer based on the evidence referenced above.</li> </ol> <p>This information is located throughout the report.</p>
<p>7. Other factors that DHMH determines to be important for measuring rates of cancer in the State or for evaluating whether the program meets its objectives.</p>	<p>Same as above.</p>

**Appendix B**

**Cancer Report Format**

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# Cancer Report Format

## *1. Selection of Targeted Cancers*

Under the Cigarette Restitution Fund (CRF) Program, Cancer Prevention, Education, Screening and Treatment (CPEST) Program, the Maryland Department of Health and Mental Hygiene targeted seven cancer sites: lung and bronchus, colon and rectum, female breast, prostate, oral, melanoma of the skin, and cervix. These cancers have been targeted because they can be prevented 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 2016 CRF Cancer Report focuses on the most recent data (2013 and 5-year combined data for the period 2009-2013).

Section I of the 2016 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 (2014) 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 (2004-2013) in overall cancer incidence and mortality rates for Maryland and the U.S.; 5-year incidence and mortality trends (2009-2013) for all cancer sites (overall and by race); and trends in stage for all cancers diagnosed in Maryland (2009-2013).

Section III presents cancer incidence and mortality data for the seven cancers targeted under the Cigarette Restitution Fund Program. Each chapter includes a comparison of the Maryland 2013 incidence and mortality rates (with 95% confidence intervals [95% C.I.]) and U.S. rates in the overview text and table. Maryland mortality rankings among the 50 states and the District of Columbia, based on 5-year mortality rates, are also described. Graphics are included in each chapter to depict the following: Trends in cancer incidence and Maryland mortality rates for the 5-year period 2009-2013; 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 2011-2015 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, and jurisdiction for 2013 and for the 5-year period 2009-2013. 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 2009-2013, by geographical area (see Appendix G for map data).

Appendix A describes the legal basis for the Cancer Report and includes a table addressing each required component and its location in this report. Appendix C describes the sources of data used to prepare the 2016 Cancer Report and specific data considerations (e.g., data confidentiality and statistical methods). Maryland population estimates for 2013, 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% confidence intervals, by Maryland geographical area (state, region, and county). Appendix H tables display trends in cancer incidence and mortality rates, by cancer site and race (gender used for melanoma), over the 5-year period (2009-2013). Appendix I tables show the distribution of cancer stage at diagnosis for all cancer sites and the targeted cancers, by year, from 2009 to 2013. Appendix J tables depict trends in incidence and mortality rates for all cancer sites from 2004 to 2013 in Maryland and the U.S.

## **Appendix C**

### **Cancer Data Sources, References, and Data Considerations**

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# **2016 Cigarette Restitution Fund (CRF) Cancer Report Sources, References, and Data Considerations**

## **I. DATA SOURCES**

Data and information presented in the 2016 Cigarette Restitution Fund (CRF) Cancer Report were obtained from a variety of sources, including:

- Maryland Department of Health and Mental Hygiene (DHMH)
  - 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 2016 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, DHMH, 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 February 26, 2016, for the diagnosis year 2013.

The Maryland cancer reporting law and regulations mandate the collection of cancer information from Maryland-licensed hospitals, radiation therapy centers, diagnostic pathology laboratories, freestanding ambulatory care facilities, surgical centers, and physicians whose non-hospitalized cancer patients are not otherwise reported. MCR also participates in data exchange agreements with 13 other states / jurisdictions, including Alabama, Delaware, Florida, Georgia, New Jersey, New York, North Carolina, Pennsylvania, South Carolina, Texas, 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.

Note: The 2006 case counts for Montgomery and Prince George's counties are underreported by approximately 8% and 6%, respectively, for all cancer sites combined due to a delay in case reporting. Cancers reported to the MCR after the annual cutoff date are not included in the MCR's official Maryland case counts and rates. The case

undercounts resulted in slightly lower than actual age-adjusted incidence rates for Montgomery and Prince George's counties.

## *2. Surveillance, Epidemiology, and End Results Program (SEER)*

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 (2009-2013), as they provide the broadest population coverage currently available. All SEER incidence rates were obtained by the MCR from SEER\*Stat (version 8.3.2), 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 2013 presented in Appendix D were also obtained from SEER\*Stat.

## **B. Cancer Mortality Data**

Maryland mortality data for 2013 and the 5-year aggregate data (2009-2013) were acquired from CDC Wide-ranging Online Data for Epidemiologic Research (CDC WONDER), an interactive online public health database developed by the CDC, which features statistics for U.S. and Maryland resident health events. CDC WONDER is an easy-to-use, web-based system that makes information from CDC available to public health professionals and the public at large. Public-use data sets about mortality (deaths), cancer incidence, HIV and AIDS, tuberculosis, natality (births), census data, and many other topics are available for query, and the requested data are readily summarized and analyzed. CDC WONDER can be accessed at <http://wonder.cdc.gov/>.

Maryland mortality single year data for 2004 to 2007 and 2012 to 2013, and the 5-year aggregate data (2009-2013), presented in this report were obtained from the National Center for Health Statistics (NCHS) Compressed Mortality Files (CMF) accessed using

CDC WONDER. The NCHS CMF is a county-level national mortality and population database spanning the years 1979-2013. 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 2004 to 2007 and 2012 to 2013 for Maryland and 2004 to 2008 for the U.S. were obtained from the 1999-2013 CMF using ICD Tenth Revision (ICD-10) codes. The U.S. mortality rates for single year 2012 and 2013 and 5-year aggregate data (2009-2013) were obtained from SEER, Cancer Statistics Review (CSR), which are provided by NCHS.

Maryland mortality data for 2011 were obtained from the Maryland Vital Statistics Administration. Maryland mortality single year data for 2008 through 2010, with the exception of colorectal cancer (CRC), are from MATCH; whereas, CRC mortality data were obtained directly from the Maryland Vital Statistics Administration due to the different definition of CRC in MATCH, which includes anal cancer. No longer accessible or in use, MATCH was an interactive online database sponsored by the DHMH 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 <http://dhmh.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 (BRFSS)*

The Maryland Behavioral Risk Factor Surveillance System (BRFSS) is used as a source of data on the prevalence of cancer screening (e.g., mammograms) and cancer risk behaviors (e.g., tobacco use) in Maryland. The BRFSS is an annual telephone survey conducted on a random sample of Maryland adult residents and is managed by the Center for Chronic Disease Prevention, Prevention and Health Promotion Administration at DHMH. This survey provided risk behavior and cancer screening information for this report. Maryland data results can be accessed at <http://www.marylandbrfss.org>, and Maryland and state-aggregated national data on health risk behavior can also be obtained from the CDC BRFSS website at <http://www.cdc.gov/brfss>.

## *2. Maryland Youth Tobacco Survey*

Data from the Maryland Youth Tobacco Survey (MYTS) are used to monitor trends in tobacco use (as a risk factor for lung cancer) by Maryland youth. The MYTS, managed by the Center for Health Promotion, Education, and Tobacco Use Prevention and Control (CHP) at DHMH, is administered to gather information regarding attitudes, usage, and exposure to tobacco products among public middle and high school students statewide and within each of Maryland's 23 counties and Baltimore City. Survey results are also used in apportioning Local Tobacco Use Prevention and Cessation grants among Maryland's 24 major political subdivisions. To date, the MYTS has been conducted in 2000, 2002, 2006, 2008, and 2010. Additional information can be obtained by contacting CHP at 410-767-1362.

## *3. Maryland Youth Risk Behavior Survey (YRBS), 2013*

The Maryland YRBS is part of the CDC's Youth Risk Behavior Surveillance System (YRBSS) developed in 1990 to monitor behaviors affecting morbidity (disease) and mortality (death) among high school youth. The YRBSS tracks several priority health risk behaviors among youth, as well as behaviors that support health. The 2013 Maryland YRBS was administered in the spring of 2013 to students in a representative sample of Maryland public high school classrooms. A total of 53,785 students in 184 public high schools in Maryland completed the survey. The results are representative of all students in grades 9–12. To date, the Maryland YRBS has been conducted in 2007, 2009, 2011, and 2013. Maryland data results for 2013 can be accessed at <http://phpa.dhmdh.maryland.gov/ccdpc/Reports/Pages/yrbs.aspx>.

## *4. Healthy People (HP) 2020*

Healthy People (HP) 2020 is a collaboration of local and national governmental agencies and private organizations that have developed prevention-oriented national objectives to improve the health of Americans. The HP initiative is under the Office of Disease Prevention and Health Promotion at the U.S. Department of Health and Human Services (DHHS). The overarching HP 2020 goal for cancer prevention is to “reduce the number of new cases as well as the illness, disability, and death caused by cancer.” To achieve this goal, measurable objectives related to cancer screening and cancer risk behaviors were established, each with a specific quantitative target, and several of these targets are used as benchmarks by which Maryland's progress can be measured. The HP 2020 objectives were released in late 2010 and additional information can be found at <http://www.healthypeople.gov>.

## *5. Maryland Comprehensive Cancer Control Plan (MCCCCP), 2011-2015 and 2016-2020*

The MCCCCP contains goals and set targets to be met by the State by the end of a five year period, 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 MCCCCP, 2011-2015 was the coordinated effort of 14 committees consisting of nearly 250 individuals across the state of Maryland with the aim to develop a cancer resource for individuals, health care providers, and organizations. The MCCCCP, 2016-2020 was the coordinated effort of 83 state stakeholders and several DHMH offices and Centers.

The MCCCCP is directed by CCPC, DHMH, with broad input from a partnership of public and private stakeholders. Additional information can be found at <http://phpa.dhmh.maryland.gov/cancer/cancerplan/Pages/publications.aspx>.

## **II. REFERENCES USED FOR PUBLIC HEALTH EVIDENCE AND PUBLIC HEALTH INTERVENTION SECTIONS**

### **A. National Cancer Institute Physician Data Query (NCI PDQ®)**

Information provided in the individual cancer chapters under the section “Public Health Evidence” was taken primarily from the NCI PDQ® website. The PDQ® is NCI’s comprehensive source of cancer information. Prevention and screening sections from this source provide current data about prevention and screening interventions for particular cancers, and the levels of evidence, significance, and evidence of benefit for the statements. While the United States Preventive Services Task Force (USPSTF) reviews its recommendations every few years, the information presented in the PDQ® on cancer prevention and screening is updated more frequently and the date of the most recent revision can be found on each web page for that topic. The PDQ® Editorial Boards are responsible for producing and maintaining comprehensive, evidence-based cancer information summaries, and are comprised of experts in cancer-related specialties. There are six Editorial Boards, including one for screening and prevention. Each PDQ® Editorial Board is supported by a corresponding Editorial Advisory Board that reviews the PDQ® cancer information summaries on a regular basis and makes recommendations for changes to be considered by the corresponding core Editorial Board.

The PDQ® Editorial Board evaluates evidence in two steps. The first step is to describe the evidence within 5 domains (see below); the second is to judge the overall “level” of evidence as “solid”, “fair”, or “inadequate”. The Board conducts the same process separately for potential benefits and potential harms of each intervention.

#### **Step 1: Description of the Evidence**

Domains:

1. Study Design (evidence from the best studies available; ranked in descending order of strength)
  - a. Evidence obtained from randomized controlled trials
  - b. Evidence obtained from nonrandomized controlled trials
  - c. Evidence obtained from cohort or case-control studies
  - d. Evidence from ecologic and descriptive studies (e.g. international patterns studies, time series)
  - e. Opinions of respected authorities based on clinical experience, descriptive studies, or reports of expert committees
2. Internal validity (quality of execution within the study design)
3. Consistency (coherence)/volume of the evidence
4. Magnitude of effects on health outcomes (both absolute and relative risks; as quantitative as possible; may vary for different populations)
5. External validity

## **Step 2: Assessment of the Evidence**

Step 2 is a judgment of the level of certainty (solid, fair, inadequate) and is based on the Board's understanding of the direction and magnitude of the health effects (both benefits and harms) of widespread implementation.

More information about NCI PDQ® can be accessed at:

### **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>

The PDQ® reference is used throughout the report for consistency in interpreting the results of scientific literature and the contents of the PDQ® are often quoted verbatim and sometimes paraphrased. PDQ® definitions are included in the Glossary. For additional information, the website is <http://www.cancer.gov/cancertopics/pdq>.

## **B. Maryland Department of Health and Mental Hygiene, Medical Advisory Committees for Breast, Cervical, Colorectal, Oral, and Prostate Cancers**

The Center for Cancer Prevention and Control convened five Medical Advisory Committees to formulate guidelines for breast, cervical, colorectal, oral, and prostate cancer screening, diagnosis, and treatment. All guidelines are located at:

<http://phpa.dhmh.maryland.gov/cancer/Pages/resources.aspx>

## **C. Additional Medical Literature**

The United States Preventive Services Task Force (USPSTF) recommendations are used throughout the report and the contents of the USPSTF Recommendation Statements are often quoted verbatim and sometimes paraphrased. For additional information, the website is <http://www.uspreventiveservicestaskforce.org/Page/Name/home>.

### Lung Cancer

Centers for Disease Control and Prevention. *Best Practices for Comprehensive Tobacco Control Programs – 2014*. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2014.

[http://www.cdc.gov/tobacco/stateandcommunity/best\\_practices/index.htm](http://www.cdc.gov/tobacco/stateandcommunity/best_practices/index.htm). Last accessed May 19, 2016.

*Final Update Summary: Lung Cancer: Screening. Release Date: December 2013.*  
U.S. Preventive Services Task Force. July 2015.

<http://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/lung-cancer-screening>. Last accessed May 19, 2016.

### Colorectal Cancer

*Final Update Summary: Colorectal Cancer: Screening. Release Date: June 2016.* U.S. Preventive Services Task Force. June 2016.

[http://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/colorectal-cancer-screening2?ds=1&s=colorectal cancer](http://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/colorectal-cancer-screening2?ds=1&s=colorectal%20cancer). Last accessed July 5, 2016.

*Final Update Summary: Aspirin Use to Prevent Cardiovascular Disease and Colorectal Cancer: Preventive Medication. Release Date: April 2016.* U.S. Preventive Services Task Force. April 2016.

<http://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/aspirin-to-prevent-cardiovascular-disease-and-cancer>. Last accessed May 19, 2016.

### Female Breast Cancer

*Final Update Summary: Breast Cancer: Medications for Risk Reduction. Release Date: September 2013.* U.S. Preventive Services Task Force. July 2015.

<http://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/breast-cancer-medications-for-risk-reduction>. Last accessed May 19, 2016.

*Final Update Summary: Breast Cancer: Screening. Release Date: January 2016.* U.S. Preventive Services Task Force. February 2016.

[http://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/breast-cancer-screening1?ds=1&s=breast cancer](http://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/breast-cancer-screening1?ds=1&s=breast%20cancer). Last accessed May 19, 2016.

### Prostate Cancer

*Final Update Summary: Prostate Cancer: Screening. Release Date: May 2012.* U.S. Preventive Services Task Force. July 2015.

<http://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/prostate-cancer-screening>. Last accessed May 19, 2016.

### Oral Cancer

*Final Update Summary: Oral Cancer: Screening. Release Date: November 2013.* U.S. Preventive Services Task Force. July 2015.

<http://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/oral-cancer-screening1>. Last accessed May 19, 2016.

### Skin Cancer

*Final Update Summary: Skin Cancer: Screening. Release Date: February 2009.* U.S. Preventive Services Task Force. July 2015.

<http://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/skin-cancer-screening>. Last accessed May 19, 2016.

U.S. Department of Health and Human Services. *The Surgeon General's Call to Action to Prevent Skin Cancer*. Washington, DC: U.S. Department of Health and Human Services, Office of the Surgeon General; 2014.

<http://www.surgeongeneral.gov/library/calls/prevent-skin-cancer/call-to-action-prevent-skin-cancer.pdf>.

## Cervical Cancer

*Final Update Summary: Cervical Cancer: Screening. Release Date: March 2012.* U.S. Preventive Services Task Force. July 2015.

<http://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/cervical-cancer-screening>. Last accessed May 19, 2016.

U.S. Centers for Disease Control and Prevention. Use of 9-valent Human Papillomavirus (HPV) Vaccine: Updated HPV Vaccination Recommendations of the Advisory Committee on Immunization Practices. *MMWR* 2015; 64(11); 300-304; March 27, 2015.

## **III. DATA CONSIDERATIONS**

### **A. Data Confidentiality**

DHMH regards all individual data reported to, and received and processed by, the MCR as confidential. Data are secured from unauthorized access and disclosure. The MCR manages and releases cancer information in accordance with the laws and regulations established by the State of Maryland, as set forth in the Annotated Code of Maryland, Health-General Article, §§18-203 – 204 and §4-101 et seq., and Code of Maryland Regulations, COMAR 10.14.01 (Cancer Registry).

Because incidence data and mortality data come from different sources, separate suppression procedures were employed for release of non-confidential data. For the number of cancer cases collected by 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; [http://phpa.dhmd.maryland.gov/cancer/Pages/mcr\\_data.aspx](http://phpa.dhmd.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 were from CDC WONDER. ICD-10 codes listed in Appendix F of this report were used for identifying type of cancer for extraction. Data obtained from CDC WONDER are subject to CDC data use restrictions, which differ slightly from those of the *DHMH/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 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 1-4 are suppressed, and denoted by “<5.” 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 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 *DHMH/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. Rate Analysis**

Individual year incidence rates for 2013 were calculated using Maryland resident cancer cases diagnosed from January 1 through December 31 of that year, and reported to the MCR as of February 26, 2016. The individual year mortality data (2013) 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 2009-2013 data. Corresponding mortality rates were extracted from CDC WONDER, as 5-year combined data from 2009-2013.

Age-adjustment, also called age-standardization, is a tool used to control for different and changing age distributions of populations in the U.S., states, regions, and counties, and to enable meaningful comparisons of rates over time and across these populations. Age-adjusted rates do not include cancer cases for which age has not been reported. Incidence and mortality rates in this report were calculated and age-adjusted using the 2000 U.S. standard population. Additional information on age-adjustment can be found at <http://www.cdc.gov/nchs/data/statnt/statnt20.pdf>.

The annual percent change (APC) is calculated for incidence and mortality trends and for tracking incidence and mortality rates by race and gender over time. See the Glossary for the definition of APC.

## **D. Confidence Intervals and Statistical Significance**

Age-adjusted rates for specific geographic areas (e.g., U.S., states, regions, counties) can be compared to determine whether differences in incidence or mortality exist between these areas. It is important to note however, that incidence and mortality rates, particularly those based on small numbers of events (cases or deaths) or small population sizes, can be highly variable from year to year. In these instances, two unadjusted rates cannot be compared side-by-side to determine whether they are statistically significantly different.

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

Confidence intervals for incidence and mortality rates are included in this report to facilitate comparisons between rates, such as the comparison of Maryland rates to U.S. rates. Confidence intervals for Maryland and SEER 18 incidence rates, provided by the MCR, are calculated from the SEER\*Stat software. Confidence intervals for Maryland mortality rates were generated using CDC WONDER, and confidence intervals for U.S. mortality rates were queried using SEER's Cancer Query System. The following formula can be used to approximate the 95% confidence interval for age-adjusted rates:

$$\text{Lower limit} = R - [1.96 (R / \sqrt{n})]$$

$$\text{Upper limit} = R + [1.96 (R / \sqrt{n})]$$

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 2013 colorectal cancer incidence rate was 35.9 per 100,000, with a 95% confidence interval of 34.4-37.4. The 2013 U.S. SEER age-adjusted colorectal cancer incidence rate was 38.5 per 100,000 population, with a 95% confidence interval of 38.1-38.9. 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 the North American Association of Central Cancer Registries (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.”

## **E. 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 site are from SEER Cancer Statistics Review (CSR), which are based on NCHS mortality data. Maryland’s mortality ranking among the 50 states and the District of Columbia for all cancer sites combined and for specific targeted cancers is based on a 5-year average (2009-2013) 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 (2009-2013) U.S. rate was used as a basis for comparison with rates for Maryland jurisdictions (counties and regions). A ramp is used for grouping Maryland data into categories in reference to U.S. rates. The ramp groups data into five divisions: >25% above U.S. rate; 10-25% above U.S. rate; between 10% below and 10% above U.S. rate; 10-25% below U.S. rate; and >25% below U.S. rate. Note that 10-25% includes 10% and 25%, but less than 10% and more than 25% do not include the endpoints of the range.

## **F. 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 with how CDC WONDER reports race for mortality data (see below). The MCR uses the NCI’s SEER\*Stat software to compile incidence data.



Hispanic ethnicity is captured in a separate data field. Data presented in Table 4 are derived using the NAACCR Hispanic Identification Algorithm. This algorithm uses a combination of NAACCR variables to classify cases as Hispanic. In Table 4, “Hispanic” includes people reported to the MCR as Spanish / Hispanic origin plus those with “derived” Hispanic origin. The derivation is an algorithm based on the person having a Hispanic surname (last or maiden name) and their country of birth, race, and sex.

Mortality data (death counts and rates) in this report were obtained from the NCHS CMF in CDC WONDER, SEER CSR, and the Maryland Vital Statistics Administration. Race data in the CMF are based on information collected on death certificates. CDC WONDER reports race in four categories (White, Black, Asian or Pacific Islander, and Native American or Alaska Native). NCHS, in collaboration with the Census Bureau, developed a race-bridging methodology for assigning multiple-race groups to single-race categories. The category of “Other” races in this report includes the American Indian or Alaska Native race category and the Asian or Pacific Islander race category. The Maryland Vital Statistics Administration reports race in the same four categories as CDC WONDER, along with an additional category “All Other Races.” To keep rates comparable between incidence and mortality, death counts and mortality rates are only shown for white, black, and “Other” (i.e., Asian or Pacific Islander and Native American or Alaskan Native). “All Other Races” are not shown due to the small number of deaths in these categories, but they are included in the total death counts and mortality rates. U.S. mortality data from SEER CSR are reported with only two race categories (white and black). As a result, single year 2013 and 5-year aggregate data (2009-2013) obtained from SEER CSR only report U.S. mortality for whites and blacks.

## **G. Healthy People 2020 Targets**

In the CRF Cancer Report, quantitative HP 2020 targets are compared to Maryland data related to cancer risk behaviors and adherence to cancer screening recommendations (see Section I.C.4). Specifically, HP 2020 targets are compared to data from the Maryland BRFSS. The data from these Maryland surveys are weighted to the age, race, and gender of the Maryland population and, unlike the national data that serve as the basis for HP 2020 targets, Maryland BRFSS data are not age-adjusted to the 2000 U.S. standard population.

The target-setting method used for the HP 2020 objective for sun exposure protection was a 10% improvement from the national baseline in 2008 using data from the National Health Interview Survey (NHIS). The questions used to define sun exposure protective measures used by NHIS slightly differed from the questions used by the Maryland BRFSS, although the information gathered by both surveys are similar. Therefore, one could use the sun exposure protection data from the Maryland BRFSS as a form of comparison to the HP 2020, however, interpretations should remain cautious due to the different measures used for data gathering.

## **H. Appendices**

Please refer to additional appendices for:

- Cigarette Restitution Fund Cancer Report Requirements (Appendix A)
- Cancer Report Format (Appendix B)
- Maryland Population Estimates, 2013 (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, 2009-2013 (Appendix G)
- Trends in Cancer Incidence and Mortality Rates in Maryland by Cancer Site, Race or Gender, and Year, 2009-2013 (Appendix H)
- Trends in Cancer Stage of Disease at Diagnosis in Maryland by Cancer Site and Year, 2009-2013 (Appendix I)
- Trends in All Cancer Sites Incidence and Mortality Rates in Maryland and U.S. by Year, 2004-2013 (Appendix J)

**Appendix D**

**Maryland Population Estimates, 2013**

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### Maryland Population Estimates by Jurisdiction, 2013

Jurisdiction	Total All Genders	Total Males	Total Females	Total Whites	White Males	White Females	Total Blacks	Black Males	Black Females
<b>Maryland</b>	<b>5,928,814</b>	<b>2,874,762</b>	<b>3,054,052</b>	<b>3,651,845</b>	<b>1,805,140</b>	<b>1,846,705</b>	<b>1,844,337</b>	<b>862,042</b>	<b>982,295</b>
<b>Baltimore Metropolitan Area</b>	<b>2,722,221</b>	<b>1,312,926</b>	<b>1,409,295</b>	<b>1,725,207</b>	<b>848,454</b>	<b>876,753</b>	<b>828,783</b>	<b>382,898</b>	<b>445,885</b>
Anne Arundel County	555,743	275,182	280,561	433,611	216,141	217,470	95,325	46,440	48,885
Baltimore City	622,104	293,457	328,647	199,867	99,917	99,950	401,032	183,083	217,949
Baltimore County	823,015	389,769	433,246	536,629	258,015	278,614	232,457	105,311	127,146
Carroll County	167,564	82,739	84,825	157,519	77,580	79,939	6,343	3,491	2,852
Harford County	249,215	122,147	127,068	205,335	101,215	104,120	34,571	16,626	17,945
Howard County	304,580	149,632	154,948	192,246	95,586	96,660	59,055	27,947	31,108
<b>Eastern Shore Region</b>	<b>452,447</b>	<b>221,410</b>	<b>231,037</b>	<b>363,394</b>	<b>177,903</b>	<b>185,491</b>	<b>78,842</b>	<b>38,591</b>	<b>40,251</b>
Caroline County	32,693	15,862	16,831	26,976	13,185	13,791	4,991	2,288	2,703
Cecil County	101,913	50,581	51,332	92,672	45,933	46,739	7,297	3,734	3,563
Dorchester County	32,660	15,667	16,993	22,619	10,980	11,639	9,454	4,436	5,018
Kent County	19,944	9,494	10,450	16,495	7,878	8,617	3,152	1,468	1,684
Queen Anne's County	48,517	24,056	24,461	44,083	21,877	22,206	3,526	1,759	1,767
Somerset County	26,273	14,253	12,020	14,329	7,390	6,939	11,551	6,650	4,901
Talbot County	37,931	18,081	19,850	31,995	15,316	16,679	5,220	2,452	2,768
Wicomico County	100,896	48,340	52,556	71,041	34,215	36,826	26,148	12,294	13,854
Worcester County	51,620	25,076	26,544	43,184	21,129	22,055	7,503	3,510	3,993
<b>National Capital Area</b>	<b>1,906,758</b>	<b>918,653</b>	<b>988,105</b>	<b>892,656</b>	<b>446,003</b>	<b>446,653</b>	<b>790,971</b>	<b>365,978</b>	<b>424,993</b>
Montgomery County	1,016,677	490,470	526,207	651,539	319,126	332,413	196,736	91,512	105,224
Prince George's County	890,081	428,183	461,898	241,117	126,877	114,240	594,235	274,466	319,769
<b>Northwest Region</b>	<b>494,407</b>	<b>248,689</b>	<b>245,718</b>	<b>429,248</b>	<b>212,264</b>	<b>216,984</b>	<b>47,831</b>	<b>28,071</b>	<b>19,760</b>
Allegany County	73,521	38,305	35,216	66,222	32,950	33,272	6,433	4,934	1,499
Frederick County	241,409	119,119	122,290	204,696	101,021	103,675	23,630	11,803	11,827
Garrett County	29,889	14,841	15,048	29,323	14,533	14,790	392	247	145
Washington County	149,588	76,424	73,164	129,007	63,760	65,247	17,376	11,087	6,289
<b>Southern Region</b>	<b>352,981</b>	<b>173,084</b>	<b>179,897</b>	<b>241,340</b>	<b>120,516</b>	<b>120,824</b>	<b>97,910</b>	<b>46,504</b>	<b>51,406</b>
Calvert County	90,484	44,626	45,858	75,497	37,519	37,978	12,621	6,090	6,531
Charles County	152,864	73,785	79,079	77,127	38,341	38,786	68,421	32,194	36,227
St. Mary's County	109,633	54,673	54,960	88,716	44,656	44,060	16,868	8,220	8,648

Source: SEER\*Stat static data as of February 26, 2016.

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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, 3<sup>rd</sup> Edition (ICD-O-3) Codes  
Used for Cancer Incidence and  
International Classification of Diseases, 10<sup>th</sup> 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 <i>in situ</i> 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 (WONDER)
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, 2009-2013**

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## Appendix G

**Table 1: All Cancer Sites Incidence  
Age-Adjusted Incidence Rates  
by Geographical Area, Maryland, 2009-2013**

Geographical Area	Incidence Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	443.6	441.2	446.0
Northwest Region	458.9	450.9	467.0
Allegany	514.4	494.2	535.3
Frederick	438.9	426.9	451.2
Garrett	390.5	362.9	419.9
Washington	470.5	456.0	485.3
Baltimore Metropolitan Area ^	459.0	455.0	463.0
Anne Arundel	458.7	450.8	466.7
Baltimore City	482.9	475.2	490.7
Baltimore County	468.7	462.5	475.0
Carroll	451.3	437.7	465.2
Harford	485.9	474.1	498.0
Howard	408.9	398.2	419.7
National Capital Area	389.2	385.2	393.3
Montgomery	385.3	380.0	390.7
Prince George's	394.6	388.3	401.0
Southern Region	427.7	417.6	438.0
Calvert	446.1	426.5	466.4
Charles	425.1	409.4	441.3
St. Mary's	417.0	399.3	435.3
Eastern Shore Region	478.8	470.6	487.1
Caroline	459.7	429.1	492.0
Cecil	483.1	464.4	502.3
Dorchester	486.8	457.3	517.9
Kent	441.8	407.2	478.9
Queen Anne's	435.0	411.2	459.9
Somerset	496.7	461.1	534.4
Talbot	458.9	433.6	485.6
Wicomico	520.6	501.2	540.6
Worcester	488.5	466.0	512.0

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

^ Area rate does not include Baltimore City

Source: Maryland Cancer Registry

## Appendix G

**Table 2: Lung and Bronchus Cancer Incidence  
Age-Adjusted Incidence Rates  
by Geographical Area, Maryland, 2009-2013**

Geographical Area	Incidence Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	57.2	56.3	58.0
Northwest Region	61.5	58.6	64.6
Allegany	77.5	70.0	85.6
Frederick	50.7	46.6	55.0
Garrett	46.9	38.0	57.5
Washington	70.6	65.0	76.4
Baltimore Metropolitan Area ^	61.5	60.1	63.0
Anne Arundel	62.6	59.6	65.7
Baltimore City	77.8	74.8	81.0
Baltimore County	66.0	63.7	68.3
Carroll	57.1	52.4	62.3
Harford	67.4	63.0	72.0
Howard	43.3	39.7	47.1
National Capital Area	38.2	36.9	39.5
Montgomery	34.0	32.4	35.6
Prince George's	43.9	41.7	46.1
Southern Region	60.1	56.2	64.2
Calvert	60.4	53.1	68.4
Charles	54.5	48.8	60.7
St. Mary's	66.8	59.6	74.6
Eastern Shore Region	70.5	67.4	73.7
Caroline	74.0	62.1	87.6
Cecil	77.7	70.2	85.7
Dorchester	70.4	59.9	82.3
Kent	58.7	46.9	73.2
Queen Anne's	62.3	53.6	72.2
Somerset	95.1	80.0	112.3
Talbot	49.2	41.9	57.7
Wicomico	78.3	71.0	86.2
Worcester	68.5	60.9	77.1

\* 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

## Appendix G

**Table 3: Colorectal Cancer Incidence  
Age-Adjusted Incidence Rates  
by Geographical Area, Maryland, 2009-2013**

Geographical Area	Incidence Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	36.8	36.2	37.5
Northwest Region	43.1	40.6	45.6
Allegany	48.8	42.8	55.4
Frederick	43.8	40.0	47.9
Garrett	37.8	29.6	47.8
Washington	40.6	36.4	45.1
Baltimore Metropolitan Area ^	36.9	35.8	38.1
Anne Arundel	33.4	31.3	35.7
Baltimore City	45.7	43.3	48.1
Baltimore County	38.9	37.2	40.8
Carroll	37.5	33.7	41.7
Harford	43.0	39.5	46.8
Howard	32.0	29.0	35.2
National Capital Area	31.3	30.2	32.5
Montgomery	28.4	27.0	29.9
Prince George's	35.1	33.2	37.0
Southern Region	33.9	31.1	36.9
Calvert	33.3	28.1	39.3
Charles	35.7	31.2	40.7
St. Mary's	32.6	27.8	38.0
Eastern Shore Region	38.5	36.2	40.9
Caroline	43.7	34.6	54.6
Cecil	40.8	35.5	46.8
Dorchester	46.9	38.1	57.3
Kent	36.6	26.8	49.3
Queen Anne's	27.2	21.6	33.9
Somerset	50.0	39.3	63.0
Talbot	34.7	27.9	42.7
Wicomico	41.2	35.9	47.1
Worcester	34.0	28.5	40.6

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

^ Area rate does not include Baltimore City

Source: Maryland Cancer Registry

## Appendix G

**Table 4: Female Breast Cancer Incidence  
Age-Adjusted Incidence Rates  
by Geographical Area, Maryland, 2009-2013**

Geographical Area	Incidence Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	128.5	126.8	130.3
Northwest Region	124.0	118.2	129.9
Allegany	119.9	106.2	135.1
Frederick	121.3	113.0	130.1
Garrett	108.0	87.9	131.7
Washington	130.3	119.7	141.6
Baltimore Metropolitan Area ^	132.4	129.5	135.4
Anne Arundel	128.3	122.7	134.1
Baltimore City	124.2	119.0	129.5
Baltimore County	134.0	129.4	138.7
Carroll	131.8	122.0	142.2
Harford	137.5	129.1	146.4
Howard	129.3	121.5	137.5
National Capital Area	125.6	122.6	128.7
Montgomery	128.7	124.6	132.9
Prince George's	121.7	117.2	126.3
Southern Region	123.2	116.0	130.7
Calvert	143.3	128.8	159.2
Charles	122.6	111.7	134.2
St. Mary's	105.5	93.6	118.6
Eastern Shore Region	122.7	116.9	128.7
Caroline	118.1	97.4	142.1
Cecil	115.0	102.8	128.2
Dorchester	122.1	102.2	145.2
Kent	115.2	91.8	143.7
Queen Anne's	115.6	99.1	134.2
Somerset	96.2	74.2	123.2
Talbot	137.4	117.7	159.8
Wicomico	123.7	110.9	137.7
Worcester	142.5	125.0	162.1

\* 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

## Appendix G

**Table 5: Prostate Cancer Incidence  
Age-Adjusted Incidence Rates  
by Geographical Area, Maryland, 2009-2013**

Geographical Area	Incidence Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	130.9	129.0	132.8
Northwest Region	108.0	102.4	113.8
Allegany	120.7	107.1	135.7
Frederick	111.5	102.7	120.9
Garrett	72.6	56.9	91.8
Washington	105.5	95.7	116.0
Baltimore Metropolitan Area ^	124.1	121.2	127.2
Anne Arundel	136.9	130.7	143.3
Baltimore City	140.0	133.7	146.5
Baltimore County	120.5	115.9	125.2
Carroll	110.7	101.2	120.9
Harford	131.0	122.3	140.2
Howard	112.9	105.0	121.2
National Capital Area	136.9	133.4	140.5
Montgomery	123.1	118.7	127.6
Prince George's	156.6	150.7	162.7
Southern Region	115.6	108.2	123.4
Calvert	113.1	99.1	128.6
Charles	136.1	123.3	149.9
St. Mary's	93.2	81.8	105.6
Eastern Shore Region	140.5	134.3	146.9
Caroline	126.4	104.2	152.3
Cecil	120.1	107.0	134.4
Dorchester	151.9	129.5	177.4
Kent	143.4	117.5	174.4
Queen Anne's	128.6	111.0	148.5
Somerset	124.2	100.0	152.8
Talbot	144.6	126.2	165.6
Wicomico	167.9	152.0	185.0
Worcester	139.8	124.4	157.0

\* 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

## Appendix G

**Table 6: Oral Cancer Incidence  
Age-Adjusted Incidence Rates  
by Geographical Area, Maryland, 2009-2013**

Geographical Area	Incidence Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	10.4	10.1	10.8
Northwest Region	11.2	10.0	12.6
Allegany	13.9	10.7	17.9
Frederick	10.0	8.3	12.0
Garrett	12.1	7.7	18.5
Washington	11.9	9.7	14.4
Baltimore Metropolitan Area ^	11.0	10.4	11.6
Anne Arundel	12.4	11.2	13.8
Baltimore City	12.8	11.6	14.1
Baltimore County	10.6	9.7	11.6
Carroll	11.0	9.0	13.4
Harford	9.9	8.3	11.7
Howard	10.2	8.7	12.0
National Capital Area	7.7	7.2	8.3
Montgomery	8.1	7.3	8.9
Prince George's	7.2	6.4	8.0
Southern Region	11.4	9.9	13.2
Calvert	14.3	11.1	18.2
Charles	10.2	7.9	12.9
St. Mary's	10.6	8.1	13.7
Eastern Shore Region	12.7	11.4	14.1
Caroline	14.3	9.3	21.0
Cecil	13.5	10.7	16.9
Dorchester	15.2	10.2	21.9
Kent	10.9	6.4	18.3
Queen Anne's	11.8	8.3	16.4
Somerset	12.8	7.9	20.0
Talbot	11.2	7.8	16.0
Wicomico	11.7	8.9	15.1
Worcester	12.9	9.3	17.7

\* 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 7: Melanoma Incidence  
Age-Adjusted Incidence Rates  
by Geographical Area, Maryland, 2009-2013**

Geographical Area	Incidence Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	21.0	20.5	21.6
Northwest Region	21.1	19.4	22.9
Allegany	20.1	16.1	24.9
Frederick	22.0	19.3	24.8
Garrett	17.6	11.8	25.4
Washington	21.1	18.0	24.5
Baltimore Metropolitan Area ^	28.4	27.4	29.4
Anne Arundel	30.4	28.4	32.5
Baltimore City	9.7	8.6	10.9
Baltimore County	26.1	24.6	27.6
Carroll	34.0	30.2	38.1
Harford	31.0	28.0	34.2
Howard	24.8	22.3	27.6
National Capital Area	13.3	12.5	14.1
Montgomery	18.4	17.3	19.6
Prince George's	6.8	5.9	7.7
Southern Region	24.2	21.8	26.7
Calvert	30.4	25.3	36.1
Charles	19.1	15.9	22.8
St. Mary's	26.1	21.9	30.9
Eastern Shore Region	27.8	25.8	29.9
Caroline	24.1	17.5	32.5
Cecil	26.1	21.9	30.9
Dorchester	19.9	14.2	27.4
Kent	13.9	8.4	22.3
Queen Anne's	31.7	25.4	39.1
Somerset	22.9	15.6	32.6
Talbot	27.1	20.8	35.0
Wicomico	31.6	26.8	36.9
Worcester	37.3	30.7	45.0

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

^ Area rate does not include Baltimore City

Source: Maryland Cancer Registry

## Appendix G

**Table 8: Cervical Cancer Incidence  
Age-Adjusted Incidence Rates  
by Geographical Area, Maryland, 2009-2013**

Geographical Area	Incidence Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	6.5	6.1	7.0
Northwest Region	6.3	4.9	7.8
Allegany	**	**	**
Frederick	5.4	3.7	7.6
Garrett	**	**	**
Washington	8.1	5.4	11.6
Baltimore Metropolitan Area ^	6.1	5.5	6.8
Anne Arundel	6.4	5.2	7.9
Baltimore City	9.9	8.5	11.6
Baltimore County	6.5	5.5	7.7
Carroll	3.7	2.2	5.9
Harford	7.1	5.2	9.5
Howard	5.2	3.8	7.1
National Capital Area	6.0	5.4	6.7
Montgomery	5.2	4.4	6.1
Prince George's	7.1	6.0	8.3
Southern Region	5.6	4.1	7.4
Calvert	**	**	**
Charles	5.3	3.3	8.1
St. Mary's	6.9	4.1	11.0
Eastern Shore Region	7.0	5.4	8.8
Caroline	**	**	**
Cecil	7.7	4.7	12.0
Dorchester	**	**	**
Kent	**	**	**
Queen Anne's	**	**	**
Somerset	**	**	**
Talbot	**	**	**
Wicomico	**	**	**
Worcester	**	**	**

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

\*\* Rates based on case counts of 1-15 are suppressed per DHMH/MCR Data Use Policy

^ Area rate does not include Baltimore City

Source: Maryland Cancer Registry



## Appendix G

**Table 9: All Cancer Sites Mortality  
Age-Adjusted Mortality Rates  
by Geographical Area, Maryland, 2009-2013**

Geographical Area	Mortality Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	168.4	166.9	169.8
Northwest Region	167.3	162.5	172.2
Allegany	174.5	163.1	185.9
Frederick	155.8	148.6	163.1
Garrett	154.6	137.5	171.7
Washington	181.8	172.8	190.8
Baltimore Metropolitan Area ^	166.9	164.5	169.3
Anne Arundel	175.4	170.4	180.5
Baltimore City	226.4	221.1	231.7
Baltimore County	171.4	167.7	175.0
Carroll	171.0	162.5	179.4
Harford	169.6	162.5	176.7
Howard	132.2	125.8	138.7
National Capital Area	142.3	139.8	144.8
Montgomery	120.5	117.5	123.5
Prince George's	172.0	167.7	176.4
Southern Region	181.2	174.3	188.0
Calvert	174.3	161.5	187.0
Charles	186.3	175.3	197.3
St. Mary's	181.2	169.0	193.3
Eastern Shore Region	188.9	183.8	194.0
Caroline	186.0	166.2	205.8
Cecil	196.2	183.9	208.4
Dorchester	187.3	169.1	205.5
Kent	180.5	158.9	202.0
Queen Anne's	173.5	158.0	189.1
Somerset	217.3	193.3	241.3
Talbot	162.8	148.8	176.8
Wicomico	203.6	191.4	215.7
Worcester	187.9	174.6	201.2

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

^ Area rate does not include Baltimore City

Source: CDC Wonder, 2009-2013

## Appendix G

**Table 10: Lung and Bronchus Cancer Mortality  
Age-Adjusted Mortality Rates  
by Geographical Area, Maryland, 2009-2013**

Geographical Area	Mortality Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	44.5	43.7	45.2
Northwest Region	45.9	43.4	48.5
Allegany	46.2	40.3	52.1
Frederick	40.4	36.6	44.1
Garrett	46.3	37.3	56.7
Washington	53.6	48.7	58.4
Baltimore Metropolitan Area ^	46.1	44.8	47.3
Anne Arundel	50.0	47.3	52.7
Baltimore City	61.8	59.0	64.5
Baltimore County	47.8	45.9	49.8
Carroll	47.5	43.0	51.9
Harford	49.5	45.6	53.3
Howard	29.0	26.0	32.1
National Capital Area	31.1	30.0	32.3
Montgomery	25.0	23.6	26.3
Prince George's	39.8	37.7	41.9
Southern Region	49.6	46.0	53.2
Calvert	48.8	42.1	55.6
Charles	47.0	41.5	52.5
St. Mary's	53.5	46.8	60.1
Eastern Shore Region	57.4	54.6	60.2
Caroline	57.1	46.3	68.0
Cecil	64.4	57.4	71.3
Dorchester	62.8	52.4	73.2
Kent	53.4	42.6	66.1
Queen Anne's	47.2	39.1	55.3
Somerset	71.8	58.0	85.6
Talbot	40.3	33.5	47.1
Wicomico	59.3	52.8	65.9
Worcester	60.2	52.9	67.5

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

^ Area rate does not include Baltimore City

Source: CDC Wonder, 2009-2013

## Appendix G

**Table 11: Colorectal Cancer Mortality  
Age-Adjusted Mortality Rates  
by Geographical Area, Maryland, 2009-2013**

Geographical Area	Mortality Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	14.9	14.5	15.4
Northwest Region	16.6	15.1	18.1
Allegany	17.8	14.3	21.8
Frederick	16.0	13.7	18.3
Garrett	13.1	8.7	19.1
Washington	17.5	14.7	20.3
Baltimore Metropolitan Area ^	13.8	13.1	14.5
Anne Arundel	13.1	11.8	14.5
Baltimore City	22.4	20.8	24.1
Baltimore County	14.4	13.3	15.4
Carroll	16.0	13.4	18.6
Harford	14.5	12.4	16.6
Howard	10.7	8.8	12.5
National Capital Area	12.9	12.2	13.7
Montgomery	9.2	8.4	10.0
Prince George's	18.1	16.6	19.5
Southern Region	15.7	13.7	17.7
Calvert	15.7	12.1	20.1
Charles	16.9	13.6	20.2
St. Mary's	14.6	11.4	18.3
Eastern Shore Region	15.6	14.2	17.1
Caroline	17.3	11.8	24.6
Cecil	14.6	11.4	18.3
Dorchester	16.2	11.3	22.5
Kent	16.1	10.2	24.1
Queen Anne's	10.6	7.2	15.2
Somerset	23.1	16.0	32.3
Talbot	12.7	9.1	17.2
Wicomico	19.8	16.0	23.6
Worcester	13.5	10.2	17.6

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

^ Area rate does not include Baltimore City

Source: CDC Wonder, 2009-2013

## Appendix G

**Table 12: Female Breast Cancer Mortality  
Age-Adjusted Mortality Rates  
by Geographical Area, Maryland, 2009-2013**

Geographical Area	Mortality Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	23.1	22.3	23.8
Northwest Region	21.0	18.6	23.3
Allegany	18.7	13.8	24.7
Frederick	20.7	17.2	24.2
Garrett	21.4	13.7	31.8
Washington	21.7	17.5	26.0
Baltimore Metropolitan Area ^	22.9	21.7	24.1
Anne Arundel	23.3	20.9	25.8
Baltimore City	29.0	26.5	31.6
Baltimore County	23.9	22.0	25.7
Carroll	22.7	18.6	26.7
Harford	22.2	18.8	25.6
Howard	20.2	17.0	23.5
National Capital Area	21.8	20.6	23.1
Montgomery	18.2	16.7	19.8
Prince George's	26.3	24.1	28.4
Southern Region	24.0	20.8	27.3
Calvert	24.9	19.0	32.1
Charles	23.8	19.1	29.4
St. Mary's	23.6	18.1	30.2
Eastern Shore Region	22.6	20.1	25.0
Caroline	24.9	15.9	37.0
Cecil	22.6	17.4	28.8
Dorchester	22.9	15.1	33.4
Kent	25.0	15.7	37.9
Queen Anne's	20.3	13.8	28.8
Somerset	**	**	**
Talbot	22.1	15.1	31.2
Wicomico	20.9	16.0	26.8
Worcester	27.0	20.2	35.5

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

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

^ Area rate does not include Baltimore City

Source: CDC Wonder, 2009-2013

## Appendix G

**Table 13: Prostate Cancer Mortality  
Age-Adjusted Mortality Rates  
by Geographical Area, Maryland, 2009-2013**

Geographical Area	Mortality Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	21.3	20.4	22.1
Northwest Region	18.2	15.7	20.8
Allegany	12.5	8.3	18.0
Frederick	21.7	17.5	26.6
Garrett	**	**	**
Washington	17.0	12.9	22.0
Baltimore Metropolitan Area ^	18.4	17.1	19.7
Anne Arundel	20.1	17.3	22.9
Baltimore City	33.7	30.3	37.1
Baltimore County	18.3	16.4	20.1
Carroll	16.6	12.6	21.6
Harford	18.4	14.7	22.9
Howard	17.8	14.0	22.3
National Capital Area	20.9	19.3	22.5
Montgomery	15.8	14.0	17.5
Prince George's	29.8	26.6	33.1
Southern Region	24.3	20.1	28.5
Calvert	27.9	19.8	38.1
Charles	23.7	17.4	31.5
St. Mary's	21.3	15.3	28.9
Eastern Shore Region	23.0	20.2	25.8
Caroline	**	**	**
Cecil	22.2	15.8	30.4
Dorchester	20.7	12.5	32.4
Kent	**	**	**
Queen Anne's	23.6	15.3	34.8
Somerset	**	**	**
Talbot	26.5	18.8	36.4
Wicomico	26.0	19.5	34.0
Worcester	20.0	14.3	27.3

\* 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 DHMH/CCPC Mortality Data Suppression Policy

^ Area rate does not include Baltimore City

Source: CDC Wonder, 2009-2013

## Appendix G

**Table 14: Oral Cancer Mortality  
Age-Adjusted Mortality Rates  
by Geographical Area, Maryland, 2009-2013**

Geographical Area	Mortality Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	2.4	2.2	2.5
Northwest Region	2.2	1.7	2.8
Allegany	**	**	**
Frederick	**	**	**
Garrett	**	**	**
Washington	2.9	1.9	4.2
Baltimore Metropolitan Area ^	2.1	1.8	2.4
Anne Arundel	3.0	2.4	3.7
Baltimore City	4.3	3.6	5.1
Baltimore County	1.9	1.5	2.3
Carroll	**	**	**
Harford	2.1	1.4	3.0
Howard	1.3	0.8	2.1
National Capital Area	1.9	1.6	2.2
Montgomery	1.4	1.1	1.8
Prince George's	2.6	2.1	3.1
Southern Region	3.1	2.3	4.1
Calvert	**	**	**
Charles	3.4	2.1	5.3
St. Mary's	**	**	**
Eastern Shore Region	2.7	2.1	3.4
Caroline	**	**	**
Cecil	**	**	**
Dorchester	**	**	**
Kent	**	**	**
Queen Anne's	**	**	**
Somerset	**	**	**
Talbot	**	**	**
Wicomico	4.0	2.5	6.1
Worcester	**	**	**

\* 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 DHMH/CCPC Mortality Data Suppression Policy

^ Area rate does not include Baltimore City

Source: CDC Wonder, 2009-2013

## Appendix G

**Table 15: Melanoma Mortality  
Age-Adjusted Mortality Rates  
by Geographical Area, Maryland, 2009-2013**

Geographical Area	Mortality Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	2.6	2.5	2.8
Northwest Region	2.9	2.3	3.6
Allegany	**	**	**
Frederick	2.9	2.0	4.0
Garrett	**	**	**
Washington	2.7	1.7	4.1
Baltimore Metropolitan Area ^	3.0	2.7	3.4
Anne Arundel	3.3	2.6	4.1
Baltimore City	1.7	1.3	2.2
Baltimore County	3.3	2.7	3.8
Carroll	3.4	2.3	4.8
Harford	2.9	2.0	3.9
Howard	2.1	1.4	3.1
National Capital Area	2.1	1.8	2.4
Montgomery	2.3	1.9	2.7
Prince George's	1.9	1.4	2.4
Southern Region	2.4	1.7	3.4
Calvert	**	**	**
Charles	**	**	**
St. Mary's	**	**	**
Eastern Shore Region	3.8	3.0	4.5
Caroline	**	**	**
Cecil	4.5	2.8	6.8
Dorchester	**	**	**
Kent	**	**	**
Queen Anne's	**	**	**
Somerset	**	**	**
Talbot	**	**	**
Wicomico	**	**	**
Worcester	**	**	**

\* 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 DHMH/CCPC Mortality Data Suppression Policy

^ Area rate does not include Baltimore City

Source: CDC Wonder, 2009-2013

## Appendix G

**Table 16: Cervical Cancer Mortality  
Age-Adjusted Mortality Rates  
by Geographical Area, Maryland, 2009-2013**

Geographical Area	Mortality Rates*	95% Confidence Interval	
		Lower CI	Upper CI
Maryland	2.1	1.9	2.3
Northwest Region	1.7	1.1	2.6
Allegany	**	**	**
Frederick	**	**	**
Garrett	**	**	**
Washington	**	**	**
Baltimore Metropolitan Area ^	1.9	1.6	2.3
Anne Arundel	2.8	2.0	3.8
Baltimore City	4.7	3.7	5.8
Baltimore County	1.9	1.4	2.5
Carroll	**	**	**
Harford	**	**	**
Howard	**	**	**
National Capital Area	1.7	1.3	2.1
Montgomery	1.1	0.8	1.6
Prince George's	2.3	1.7	3.0
Southern Region	**	**	**
Calvert	**	**	**
Charles	**	**	**
St. Mary's	**	**	**
Eastern Shore Region	1.7	1.0	2.6
Caroline	**	**	**
Cecil	**	**	**
Dorchester	**	**	**
Kent	**	**	**
Queen Anne's	**	**	**
Somerset	**	**	**
Talbot	**	**	**
Wicomico	**	**	**
Worcester	**	**	**

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

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

^ Area rate does not include Baltimore City

Source: CDC Wonder, 2009-2013



## **Appendix H**

### **Trends in Cancer Incidence and Mortality Rates in Maryland by Cancer Site, Race or Gender, and Year, 2009-2013**

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## Appendix H. Trends in Cancer Incidence and Mortality Rates in Maryland by Cancer Site, Race or Gender, and Year, 2009-2013

**Table 1: Cancer Incidence Rates by Cancer Site and Year  
Maryland, 2009-2013**

Cancer Site	2009	2010	2011	2012	2013	APC 2009-2013	MD Trend
All Cancer Sites	443.7	449.8	440.7	432.1	452.2	0.0%	
Lung	58.6	57.6	56.8	56.4	56.6	-0.9%	↓
Colorectal	38.0	37.4	37.3	35.8	35.9	-1.6%	↓
Female Breast	127.4	129.0	126.6	125.0	134.6	0.8%	↑
Prostate	148.4	140.6	131.7	112.0	124.5	-5.6%	↓
Oral	10.0	10.6	10.2	10.5	10.8	1.5%	↑
Melanoma	20.0	21.4	20.6	20.7	22.3	1.9%	↑
Cervical	6.8	7.3	6.4	6.3	5.9	-4.2%	↓

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, 2009-2013**

Cancer Site	2009	2010	2011	2012	2013	APC 2009-2013	MD Trend
All Cancer Sites	177.7	170.9	165.7	165.7	162.9	-2.0%	↓
Lung	48.7	46.0	43.7	43.5	41.1	-3.9%	↓
Colorectal	16.6	14.9	14.3	14.9	14.0	-3.3%	↓
Female Breast	23.5	24.2	22.4	23.7	21.5	-2.0%	↓
Prostate	25.5	22.3	20.2	20.4	19.1	-6.5%	↓
Oral	2.5	2.3	2.4	2.1	2.5	-0.9%	↓
Melanoma	2.9	2.4	2.6	2.7	2.6	-1.0%	↓
Cervical	2.3	1.9	2.1	2.0	2.0	-2.3%	↓

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

APC = Annual Percent Change (%)

Source: NCHS Compressed Mortality File in CDC WONDER, 2012-2013

Maryland Vital Statistics Administration from MATCH, 2009-2010

Maryland Vital Statistics Administration, 2009-2010 (Colorectal); 2011

## Appendix H. Trends in Cancer Incidence and Mortality Rates in Maryland by Cancer Site, Race or Gender, and Year, 2009-2013

**Table 3: Cancer Incidence Rates by Race and Year  
Maryland, 2009-2013**

Cancer Site	Race	2009	2010	2011	2012	2013	APC 2009-2013
All Cancer Sites	White	446.5	449.0	444.1	440.4	461.8	0.5%
	Black	431.8	451.5	437.7	425.9	446.6	0.1%
Lung	White	60.7	58.5	59.7	58.6	58.9	-0.6%
	Black	55.6	59.2	53.4	55.9	55.3	-0.7%
Colorectal	White	36.0	35.9	36.6	34.5	34.1	-1.5%
	Black	42.4	43.0	39.9	40.1	41.3	-1.2%
Female Breast	White	127.8	127.6	128.3	126.9	134.8	1.0%
	Black	121.7	129.4	124.0	121.5	139.7	2.2%
Prostate	White	127.2	122.0	110.2	97.5	108.0	-5.4%
	Black	217.9	195.0	191.4	159.7	185.6	-5.1%
Oral	White	11.2	11.6	11.4	11.7	12.0	1.5%
	Black	7.5	7.5	7.3	8.3	7.7	1.5%
Cervix	White	5.8	6.2	6.1	5.9	5.3	-2.3%
	Black	7.8	9.1	7.4	7.6	7.1	-3.6%

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, 2009-2013**

Cancer Site	Gender	2009	2010	2011	2012	2013	APC 2009-2013
Melanoma	Male	26.5	26.9	27.8	27.9	29.4	2.5%
	Female	15.5	17.5	15.5	15.5	17.4	1.1%

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, 2009-2013

**Table 5: Mortality Rates by Race and Year  
Maryland, 2009-2013**

Cancer Site	Race	2009	2010	2011	2012	2013	APC 2009-2013
All Cancer Sites	White	176.6	166.1	161.3	164.4	161.6	-1.9%
	Black	193.0	197.0	190.0	183.0	182.0	-1.9%
Lung	White	50.6	46.5	44.2	44.7	42.4	-3.9%
	Black	46.2	48.5	47.2	44.2	41.8	-2.9%
Colorectal	White	15.2	12.9	13.0	13.5	12.8	-2.9%
	Black	21.8	21.9	19.0	20.1	18.2	-4.4%
Female Breast	White	22.6	21.1	19.9	23.1	19.8	-1.7%
	Black	27.1	34.1	29.5	26.5	28.1	-1.8%
Prostate	White	20.7	17.6	17.0	17.4	16.4	-4.7%
	Black	49.6	44.4	36.6	35.4	32.8	-10.0%
Oral	White	2.3	2.2	2.3	2.0	2.3	-0.9%
	Black	3.3	2.5	2.7	2.6	2.9	-2.2%
Cervix	White	1.7	1.5	1.7	1.6	1.9	2.9%
	Black	3.8	2.9	3.2	3.0	2.7	-6.3%

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

APC = Annual Percent Change (%)

Source: NCHS Compressed Mortality File in CDC WONDER, 2012-2013

Maryland Vital Statistics Administration from MATCH, 2009-2010

Maryland Vital Statistics Administration, 2009-2010 (Colorectal); 2011

**Table 6: Melanoma Mortality Rates by Gender and Year  
Maryland, 2009-2013**

Cancer Site	Gender	2009	2010	2011	2012	2013	APC 2009-2013
Melanoma	Male	4.7	4.0	3.9	4.2	4.3	-1.3%
	Female	1.8	1.3	1.8	1.6	1.4	-2.9%

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

APC = Annual Percent Change (%)

Source: NCHS Compressed Mortality File in CDC WONDER, 2012-2013

Maryland Vital Statistics Administration from MATCH, 2009-2010

Maryland Vital Statistics Administration, 2009-2010 (Colorectal); 2011

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## **Appendix I**

### **Trends in Cancer Stage of Disease at Diagnosis in Maryland by Cancer Site and Year, 2009-2013**

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## Appendix I

**Table 1: All Cancer Sites**  
**Distribution of Cancer Stage at Diagnosis by Year**  
**Maryland, 2009-2013**

Stage					
	2009	2010	2011	2012	2013
	%	%	%	%	%
Local	43.8	43.6	44.6	45.1	45.9
Regional	20.2	19.8	20.6	20.3	20.3
Distant	20.7	21.9	22.0	22.6	23.3
Unstaged	15.2	14.8	12.8	12.0	10.6

Source: Maryland Cancer Registry

**Table 2: Lung Cancer**  
**Distribution of Cancer Stage at Diagnosis by Year**  
**Maryland, 2009-2013**

Stage					
	2009	2010	2011	2012	2013
	%	%	%	%	%
Local	20.5	18.3	19.3	19.5	20.1
Regional	23.8	23.1	25.2	24.8	24.0
Distant	46.9	47.0	46.7	46.5	48.1
Unstaged	8.8	11.5	8.8	9.3	7.8

Source: Maryland Cancer Registry

**Table 3: Colorectal Cancer**  
**Distribution of Cancer Stage at Diagnosis by Year**  
**Maryland, 2009-2013**

Stage					
	2009	2010	2011	2012	2013
	%	%	%	%	%
Local	35.8	36.0	36.0	36.9	34.1
Regional	33.5	31.7	32.1	32.7	34.5
Distant	19.4	19.8	19.1	22.1	21.1
Unstaged	11.3	12.5	12.8	8.3	10.3

Source: Maryland Cancer Registry

**Table 4: Female Breast Cancer**  
**Distribution of Cancer Stage at Diagnosis by Year**  
**Maryland, 2009-2013**

Stage					
	2009	2010	2011	2012	2013
	%	%	%	%	%
Local	59.4	57.4	60.4	61.8	59.6
Regional	29.3	29.7	28.7	27.8	29.0
Distant	4.8	5.1	5.1	4.9	6.3
Unstaged	6.6	7.8	5.8	5.6	5.2

Source: Maryland Cancer Registry

## Appendix I

**Table 5: Prostate Cancer**  
**Distribution of Cancer Stage at Diagnosis by Year**  
**Maryland, 2009-2013**

Stage					
	2009	2010	2011	2012	2013
	%	%	%	%	%
Local	57.7	67.3	69.5	68.5	72.8
Regional	8.0	8.3	8.8	9.5	8.6
Distant	3.1	3.2	3.5	4.3	4.7
Unstaged	31.2	21.2	18.3	17.7	14.0

Source: Maryland Cancer Registry

**Table 6: Oral Cancer**  
**Distribution of Cancer Stage at Diagnosis by Year**  
**Maryland, 2009-2013**

Stage					
	2009	2010	2011	2012	2013
	%	%	%	%	%
Local	30.8	31.2	27.3	28.6	32.1
Regional	47.4	43.4	46.4	44.8	44.2
Distant	12.7	17.0	18.2	20.3	17.5
Unstaged	9.1	8.4	8.1	6.3	6.2

Source: Maryland Cancer Registry

**Table 7: Melanoma**  
**Distribution of Cancer Stage at Diagnosis by Year**  
**Maryland, 2009-2013**

Stage					
	2009	2010	2011	2012	2013
	%	%	%	%	%
Local	65.6	52.1	56.4	59.8	67.7
Regional	8.6	8.4	8.1	6.9	5.8
Distant	3.4	3.8	3.3	4.1	5.1
Unstaged	22.4	35.7	32.2	29.2	21.5

Source: Maryland Cancer Registry

**Table 8: Cervical Cancer**  
**Distribution of Cancer Stage at Diagnosis by Year**  
**Maryland, 2009-2013**

Stage					
	2009	2010	2011	2012	2013
	%	%	%	%	%
Local	39.4	40.1	39.7	42.1	45.0
Regional	32.7	36.2	35.7	32.1	33.9
Distant	11.1	8.2	12.1	13.9	14.8
Unstaged	16.8	15.5	12.6	12.0	6.3

Source: Maryland Cancer Registry

## **Appendix J**

### **Trends in All Cancer Sites Incidence and Mortality Rates in Maryland and U.S. by Year, 2004-2013**

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## Appendix J. Trends in All Cancer Sites Incidence and Mortality Rates in Maryland and U.S. by Year, 2004-2013

**Table 1: All Cancer Sites Incidence Rates by Year  
Maryland and U.S., 2004-2013**

	2004	2005	2006†	2007	2008	2009	2010	2011	2012	2013	APC 2004-2013	Trend
<b>Maryland</b>	462.6	457.4	426.3	455.3	470.8	443.7	449.8	440.7	432.1	452.2	-0.3%	↓
<b>U.S.</b>	470.0	465.9	468.2	474.6	468.5	464.8	451.9	443.7	436.7	431.0	-1.0%	↓

† 2006 Maryland incidence rates are lower than actual due to case underreporting for Montgomery and Prince George's counties (See Appendix C, Section I.A.1.)

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

APC = Annual Percent Change (%)

Sources: Maryland Cancer Registry

U.S. SEER, SEER\*Stat Database

**Table 2: All Cancer Sites Mortality Rates by Year  
Maryland and U.S., 2004-2013**

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	APC 2004-2013	Trend
<b>Maryland</b>	189.9	190.2	186.7	180.4	180.6	177.7	170.9	165.7	165.7	162.9	-1.9%	↓
<b>U.S.</b>	185.8	183.8	180.7	178.4	175.3	173.1	171.8	168.7	166.4	163.0	-1.4%	↓

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

APC = Annual Percent Change (%)

Sources: NCHS Compressed Mortality File in CDC WONDER, 2004-2007, 2012-2013 (MD)

Maryland Vital Statistics Administration from MATCH, 2008-2010 (MD)

Maryland Vital Statistics Administration, 2011 (MD)

NCHS Compressed Mortality File in CDC WONDER, 2004-2008 (U.S.)

U.S. SEER, Cancer Statistics Review, 2009-2013 (U.S.)

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For comments or questions about this data contact:

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