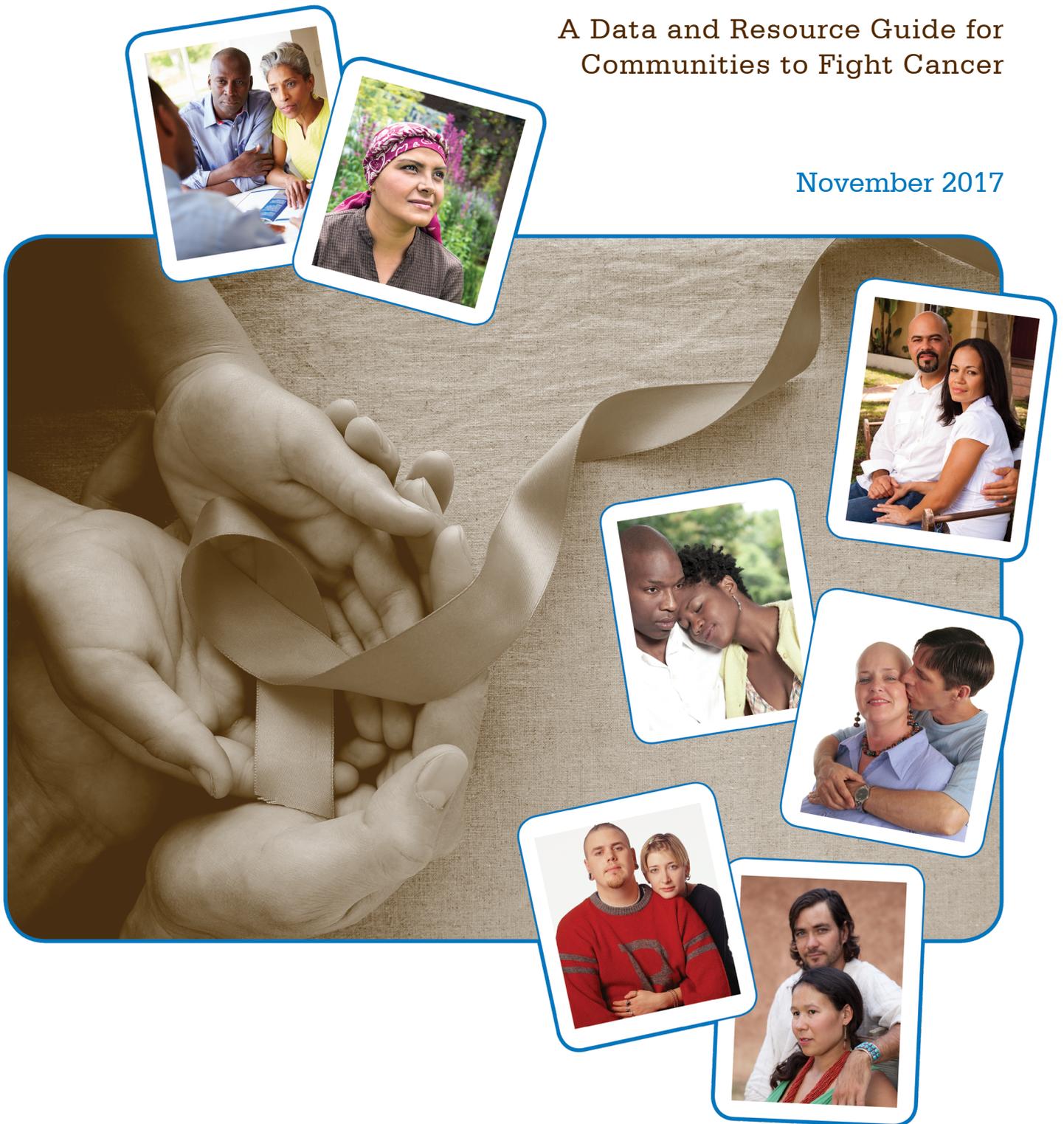


# Reducing the Burden of Cancer in North Carolina:

A Data and Resource Guide for  
Communities to Fight Cancer

November 2017





# Contributors/Reviewers

This report was created by the North Carolina Cancer Prevention and Control Branch: N.C. Comprehensive Cancer Control Program in collaboration with the N.C. Breast and Cervical Cancer Control Program, N.C. WISEWOMAN Project and the North Carolina State Center for Health Statistics, Central Cancer Registry. Data produced can be used to assist providers and cancer partners in targeting communities within their service areas at higher risk for developing cancer. For more information on any of the material produced in this report visit the North Carolina Cancer Prevention and Control Branch website:

[www.publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm](http://www.publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm)

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# Preface

State and local partners collaborated in 2014 to release *A Call to Action: North Carolina Comprehensive Cancer Control Plan 2014-2020* (N.C. Cancer Plan) to facilitate strategic efforts to reduce the burden of cancer across North Carolina. The N.C. Cancer Plan is a statewide blueprint for cancer prevention and control that is organized around six priority cancers; lung, colorectal, cervical, female breast, prostate and melanoma skin cancers. For each of these six cancers, the N.C. Cancer Plan focuses on addressing the stages along the cancer continuum including prevention of cancer, early detection of cancer, cancer care and treatment and survivorship quality of life. The N.C. Cancer Plan can be downloaded or viewed at [www.tinyurl.com/nccancerplan](http://www.tinyurl.com/nccancerplan).

The N.C. Comprehensive Cancer Control Program, Cancer Prevention and Control Branch, Division of Public Health; N.C. Advisory Committee on Cancer Coordination and Control; N.C. Colorectal Cancer Roundtable and cancer partners are implementing the N.C. Cancer Plan. Accurate surveillance data is critical to fulfilling the primary aim of the N.C. Cancer Plan, which is to reduce cancer morbidity and mortality across the state and is the basis for developing informed and targeted evidence-based interventions. Since families and individuals experience varying degrees of the cancer burden depending on where they live, this report also contains data about where risk factors are concentrated the highest. *Reducing the Burden of Cancer in North Carolina* is designed to complement the N.C. Cancer Plan and is a data document on the status of six priority cancers targeted in the N.C. Cancer Plan.



NC DEPARTMENT OF  
**HEALTH AND  
HUMAN SERVICES**



North Carolina  
Public Health



Special thanks to our collaborative partner: N.C. Department of Health and Human Services' Office of Communications for their content review and graphic design support.

Dear Fellow North Carolinians:

We are pleased to share this document, *Reducing the Burden of Cancer in North Carolina: A Data and Resource Guide for Communities to Fight Cancer*, prepared by the North Carolina Cancer Prevention and Control Branch/N.C. Comprehensive Cancer Control Program in collaboration with the N.C. Breast and Cervical Cancer Control Program, N.C. WISEWOMAN Project and the North Carolina State Center for Health Statistics, Central Cancer Registry. It is designed to be a companion resource for *A Call to Action, North Carolina Comprehensive Cancer Control Plan 2014-2020* (N.C. Cancer Plan) which is a framework for cancer prevention and control in our state. *Reducing the Burden of Cancer in North Carolina* provides updated data, evidence-based strategies and resources for the priority cancers targeted in the N.C. Cancer Plan and resources on where to obtain more information.

The N.C. Cancer Plan is organized using the cancer continuum: prevention, early detection, care and treatment and survivorship quality of life. It focuses on six priority cancers: lung, colorectal, breast, prostate, melanoma skin and cervical and includes behaviors, policies and environmental changes that can reduce cancer risk with emphasis on ways to address cancer disparities and reach underserved populations.

The North Carolina Advisory Committee on Cancer Coordination and Control is a legislatively mandated committee of 34 members. Our mission is to facilitate the reduction of cancer incidence and mortality in partnership with the North Carolina Cancer Prevention and Control Branch, the Central Cancer Registry, cancer partners and survivors. One of our responsibilities is to support the implementation of the N.C. Cancer Plan which addresses barriers to cancer prevention and care while outlining a plan of action for cancer programs and services, local health departments, hospitals, cancer centers, community health centers, community-based organizations, faith-based organizations, policy makers, academic institutions, government agencies and concerned North Carolinians.

*Reducing the Burden of Cancer in North Carolina* supports the implementation of the N.C. Cancer Plan by providing up-to-date cancer burden data and intervention strategies. Specific health equity activities are highlighted in the intervention strategies.

Join us in implementing *Reducing the Burden of Cancer in North Carolina* and the N.C. Cancer Plan. We encourage you to integrate the work of both documents into your services, resources, partnerships, policies and systems.

Sincerely,



Karyn Stitzenberg, MD, MPH,  
Chair, North Carolina Advisory Committee on  
Cancer Coordination and Control  
5505 Six Forks Road  
Raleigh, NC 27609



DEPARTMENT OF HEALTH AND HUMAN SERVICES  
DIVISION OF PUBLIC HEALTH

ROY COOPER  
GOVERNOR

MANDY COHEN, MD, MPH  
SECRETARY

DANIEL STALEY  
DIRECTOR

Dear North Carolinians:

The North Carolina Division of Public Health's Chronic Disease and Injury Section is pleased to share this document, *Reducing the Burden of Cancer in North Carolina: A Data and Resource Guide for Communities to Fight Cancer*. This document was prepared by the Section's Cancer Prevention and Control Branch/N.C. Comprehensive Cancer Control Program in collaboration with the N.C. Breast and Cervical Cancer Control Program, N.C. WISEWOMAN Project and the North Carolina State Center for Health Statistics, Central Cancer Registry. It is designed to serve as a companion resource for *A Call to Action: North Carolina Comprehensive Cancer Control Plan 2014-2020* (N.C. Cancer Plan) which is a blueprint for cancer prevention and control in our state.

This document is a mid-plan update on six priority cancers; lung, colorectal, female breast, prostate, melanoma skin, and cervical cancers. North Carolina's incidence and mortality rates for Lung, Female Breast, Prostate, and Melanoma cancers still exceed national averages. However, our state has made significant strides regarding colorectal and cervical cancers – the rates for both cancers fell below the national average in incidence and mortality from 2010-2014.

This document provides data visualization through GIS mapping and heat maps to highlight where cancer burden is concentrated the highest. It also provides county level data by demographics, late-stage diagnoses, and those uninsured at diagnoses. Finally, it provides evidence based interventions, strategies and partner resources to help maximize efforts to fight cancer with prevention, early detection, and treatment and care of cancer.

The N.C. Division of Public Health's Chronic Disease and Injury Section (CDI Section), with local health departments and other partners, works to reduce death and disabilities related to chronic disease and injury. Our goal is to help North Carolinians develop healthy and safe communities and health systems to prevent and control chronic diseases and injury, and to eliminate health inequities.

Join us in integrating *Reducing the Burden of Cancer in North Carolina* and the N.C. Cancer Plan into your programs, services, resources, partnerships, policies and systems to address chronic disease and cancer control.

Sincerely,

A handwritten signature in black ink, appearing to read "Susan Kansagra".

Susan Kansagra, MD, MBA  
Section Chief  
N.C. Division of Public Health, Chronic Disease and Injury Section  
North Carolina Department of Health and Human Services

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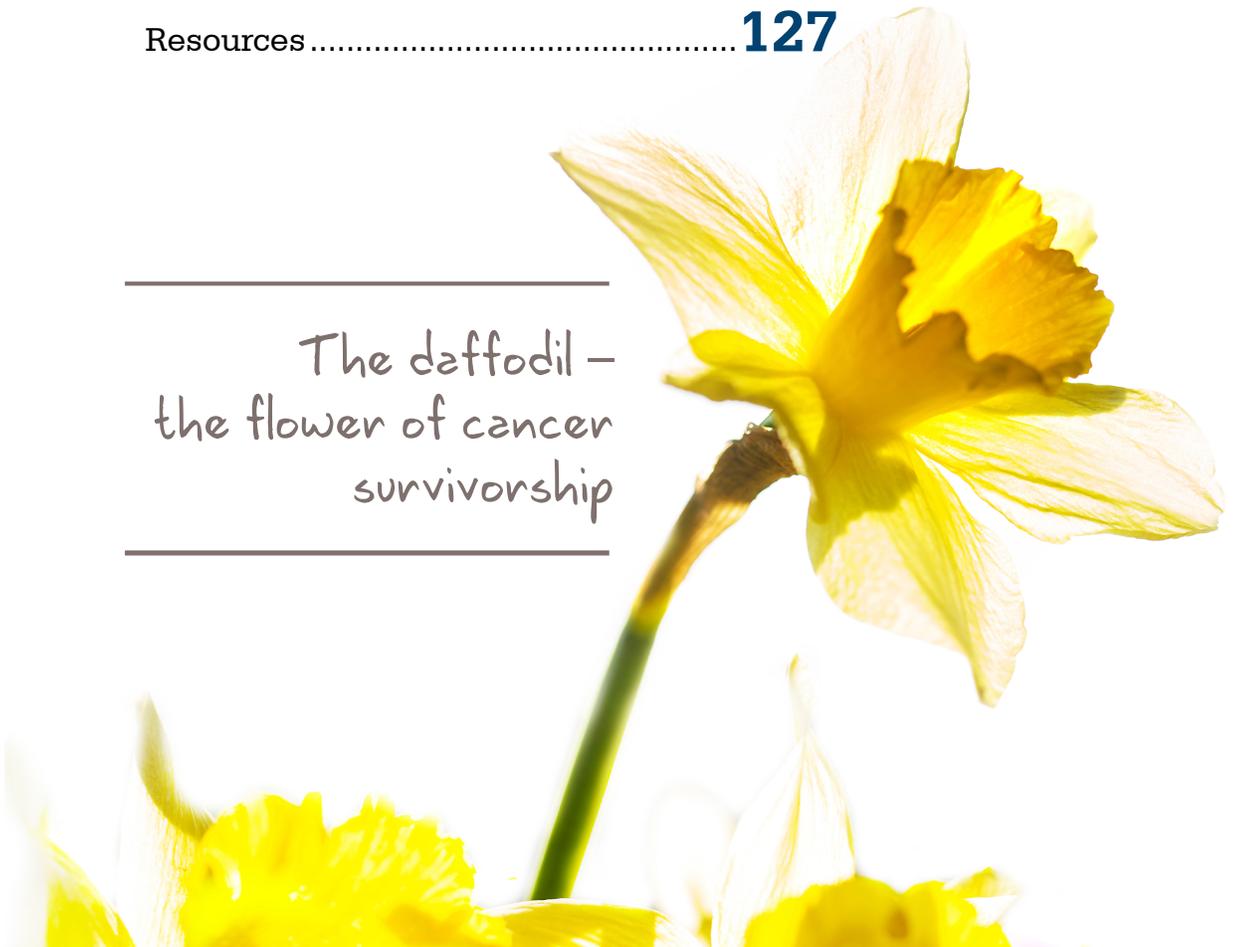
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The daffodil –  
the flower of cancer  
survivorship

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# Glossary

**Age Adjusted Rates** – Age adjustment is a statistical process applied to rates of disease or other health outcomes which allows communities with different age structures to be compared. For this report, county and regional incidence and mortality rates for each respective cancer are age-adjusted. Since most cancers occur more often among older individuals, it is instructive to assess cancer risk between counties and/or regions apart from where rates may be higher or lower because of existing age distribution. Source: <https://www.health.ny.gov/diseases/chronic/ageadj.htm>

## AHEC Region Counties

**Mountain** – Buncombe, Cherokee, Clay, Graham, Haywood, Henderson, Jackson, Macon, Madison, McDowell, Mitchell, Polk, Rutherford, Swain, Transylvania, Yancey

**Northwest** – Alexander, Alleghany, Ashe, Avery, Burke, Caldwell, Catawba, Davidson, Davie, Forsyth, Iredell, Rowan, Stokes, Surry, Watauga, Wilkes, Yadkin

**Charlotte** – Anson, Cabarrus, Cleveland, Gaston, Lincoln, Mecklenburg, Stanly, Union

**Eastern** – Beaufort, Bertie, Camden, Carteret, Chowan, Craven, Currituck, Dare, Gates, Greene, Hertford, Hyde, Jones, Lenoir, Martin, Onslow, Pamlico, Pasquotank, Perquimans, Pitt, Tyrrell, Washington, Wayne

**Greensboro** – Alamance, Caswell, Chatham, Guilford, Montgomery, Orange, Randolph, Rockingham

**Southeast** – Brunswick, Columbus, Duplin, New Hanover, Pender

**Southern** – Bladen, Cumberland, Harnett, Hoke, Moore, Richmond, Robeson, Sampson, Scotland

**Wake** – Durham, Franklin, Granville, Johnston, Lee, Person, Vance, Wake, Warren

**Area L** – Edgecombe, Halifax, Nash, Northampton, Wilson

**Cancer Burden** – An estimate of the financial, emotional and/or social impact that cancer creates within the population. Different racial, ethnic, geographic and age groups in the United States do not share the burden of disease equally.

**Cumulative observed survival rates** – The actual percentage of patients still alive five years after being diagnosed with cancer.

**Incidence Rate** – The number of new cancers of a specific site/type that occur in a defined population during a year divided by the number of individuals who were at risk for the given cancer in the population, generally expressed as the number of cancers per 100,000 persons.

**Mortality Rate** – The number of deaths from a disease for a specified period, divided by the total number of population at-risk, generally expressed as the number of deaths per 100,000 persons.

**Observed Survival Rate** – The actual percentage of patients still alive at some specified time after diagnosis of cancer, typically measured in five-year periods. This measurement of survival rate includes all causes of death, cancer or otherwise.

**Relative Survival Rate** – The estimated percentage of patients who would be expected to survive the effects of their cancer for some specified time, typically measured in five-year periods.

**Quintile** – A statistical value of a data set that represents 20% of a given population. For this report's purposes, at the end of each cancer's section, the counties represented in the highest-risk quintile for each applicable data variable are presented. Source <http://www.investopedia.com/terms/q/quintile.asp>

## Stage of Diagnosis

Stage of diagnosis refers to the extent of cancer in the body at the time of diagnosis. The three most commonly cited stages of diagnosis are localized, regional and distant. This report measures the percentage of patients diagnosed, within each of the six targeted cancers, at a distant stage. The distant stage refers to when cancer has spread from the original tumor to distant organs or distant lymph nodes.

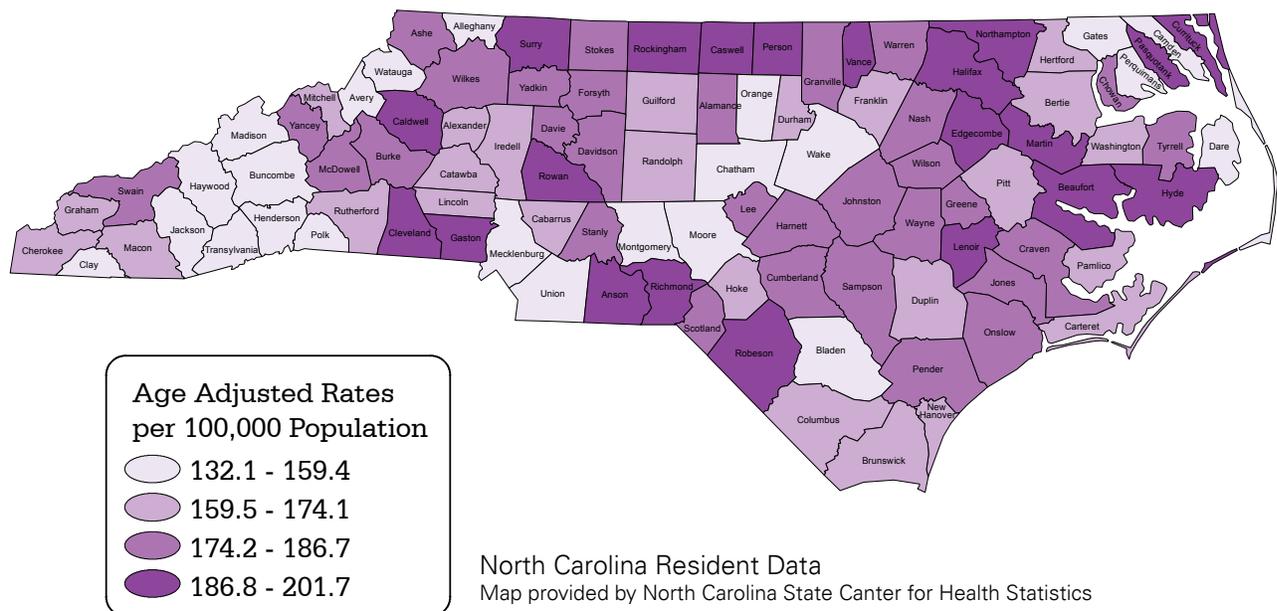
(Definitions unless noted are adapted from definitions found at the National Cancer Institute's Glossary for Registrars (<https://seer.cancer.gov/seertools/glossary/>), and/or definitions provided in conjunction with special data requests completed by the N.C. State Center for Health Statistics.)

# Introduction

*Reducing the Burden of Cancer in North Carolina: A Data and Resource Guide for Communities to Fight Cancer* contains cancer surveillance data for the six priority cancers; lung, colorectal, cervical, female breast, prostate and melanoma skin that are the focus of the *A Call to Action: North Carolina Comprehensive Cancer Control Plan 2014-2020* (N.C. Cancer Plan). Cancer is the leading cause of death in North Carolina, contributing to 19,309 overall deaths in 2015, representing 21.7% of the overall death total in that year.<sup>1</sup> The burden of cancer imposes physical, financial and emotional tolls on patients, family and friends, as well as health care systems across the state and nation. In total, cancer care cost the country an estimated \$125 billion in 2010, a figure projected to reach \$173 billion by 2020.<sup>2</sup>

Cancer imposes its burden across North Carolina inequitably. While White and African-American North Carolinians experience similar incidence rates when combining all cancers, African Americans are much more likely to die from cancer than Whites. Men are far more likely than women to get and die from cancer. And people living in poor, more rural counties are more vulnerable to cancer due to a host of factors, including lack of health care access.

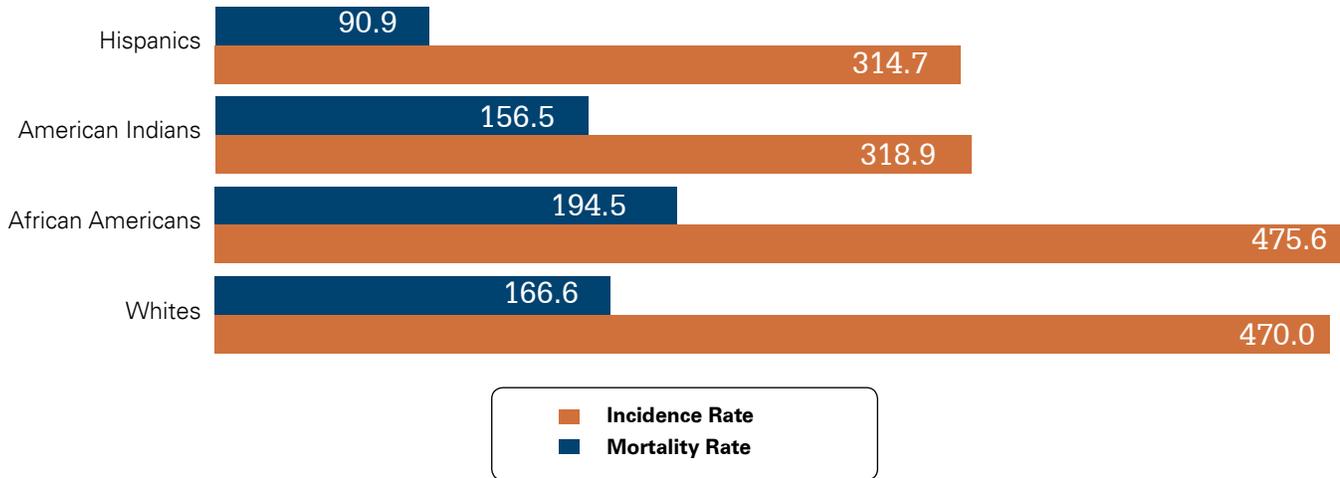
## North Carolina All Cancer Mortality Rates 2011-2015



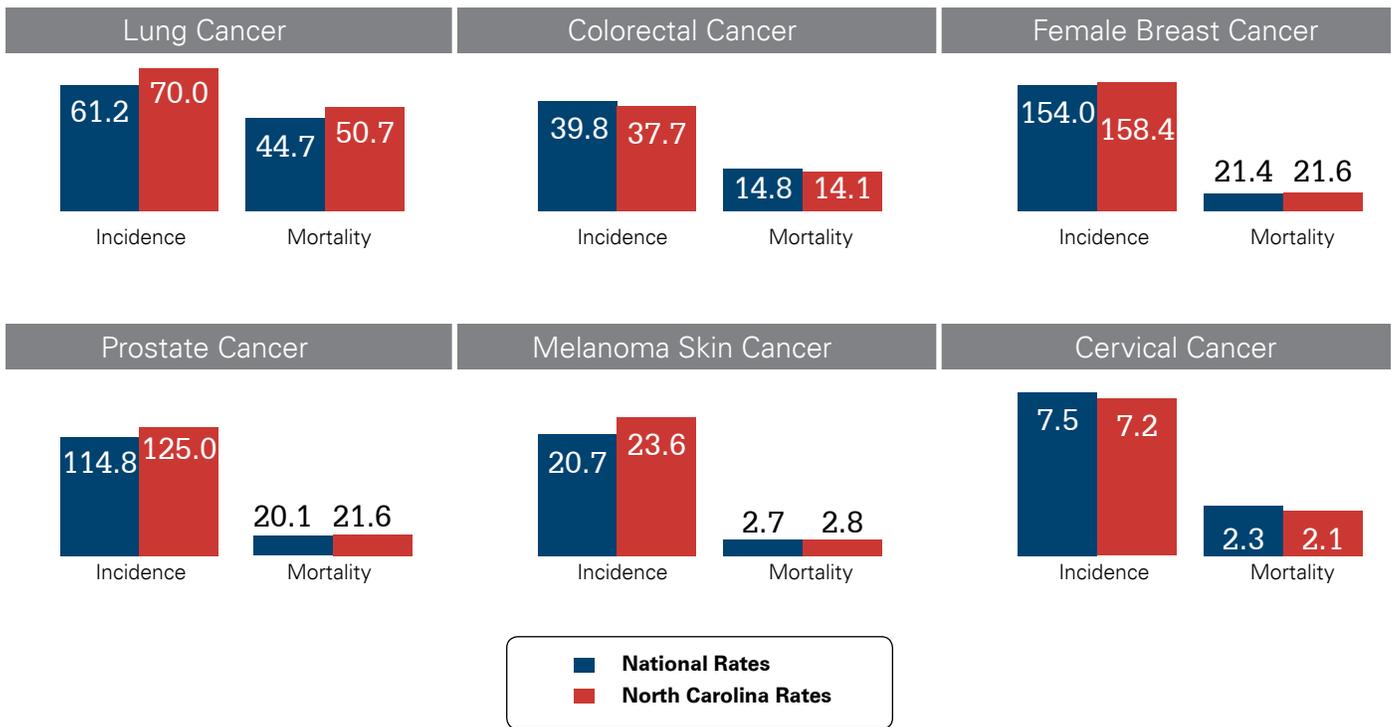
<sup>1</sup> N.C. State Center for Health Statistics, <http://www.schs.state.nc.us/>

<sup>2</sup> Projections of the Cost of Cancer Care in the United States: 2010–2020. Angela B. Mariotto, K. Robin Yabroff, Yongwu Shao, Eric J. Feuer, Martin L. Brown. *J Natl Cancer Inst.* 2011 Jan 19; 103(2): 117–128. doi: 10.1093/jnci/djq495

### 2010-2014 North Carolina Incidence Rate and 2011-2015 Mortality Rate by Race - All Cancers



### 2010-2014 North Carolina and National Incidence and Mortality Rates Age-adjusted rates per 100,000 population

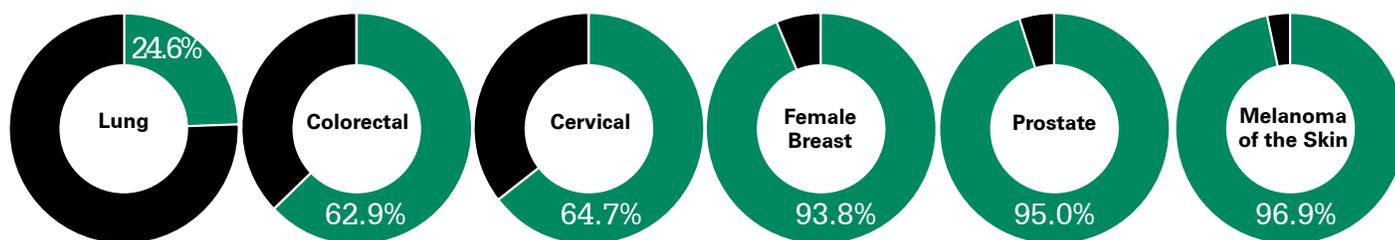


The latest national cancer data available is for the 2010-2014 five-year measurement period. The burden of cancer in North Carolina is, on average, higher than that of the United States. North Carolina's incidence and mortality rates exceed that of national rates for lung, female breast, prostate and melanoma skin cancer. North Carolina performs slightly better than the national average in terms of colorectal and cervical cancer incidence and mortality.<sup>3</sup>

Even though the burden cancer imposes is significant, the fight against cancer in North Carolina is making progress. The overall cancer mortality rate in North Carolina for all cancers has gone down 19.5% since 1999. From 2009 to 2014, the all cancer incidence rate decreased by 9.4%. Cumulative observed survival rates have increased for each of the six cancers from 1999 to 2014. That means that more patients are still alive five years after being diagnosed with cancer. Overall declines in cancer incidence and mortality and increases in survivorship should continue. Health care providers and patients alike are becoming more informed about cancer risk factors and strategies for prevention.

### North Carolina Cumulative Relative 5-Year Survival Rate By Cancer from 2010-2014

Survival Rate is in Green

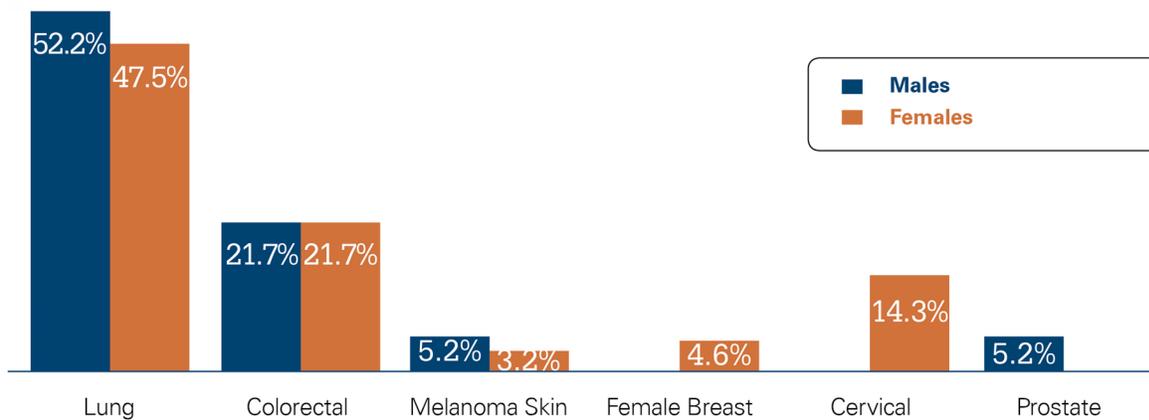


Cumulative relative survival rate refers to the percentage of patients who would be expected to survive the effects of their cancer.

<sup>3</sup> <https://statecancerprofiles.cancer.gov/quick-profiles/index.php?statername=northcarolina#t=4>

Cancer is a chronic disease which many people can and do survive. It must be managed along the phases of the cancer continuum starting with preventing cancer through the education of risk factors and encouragement of healthy behaviors. Early detection through age-appropriate screenings can detect cancer early where treatment may be more successful. After diagnosis, emphasis is placed on providing support services for cancer survivors until the end of life. The following chart shows the distant stage diagnosis (cancer has spread to distant parts of the body) by cancer and gender. It shows the need for early detection, especially in colorectal and lung cancers.

**Distant Stage Diagnosis by Cancer Site and Gender in North Carolina 2010-2014**



## Data Sources and Frequency

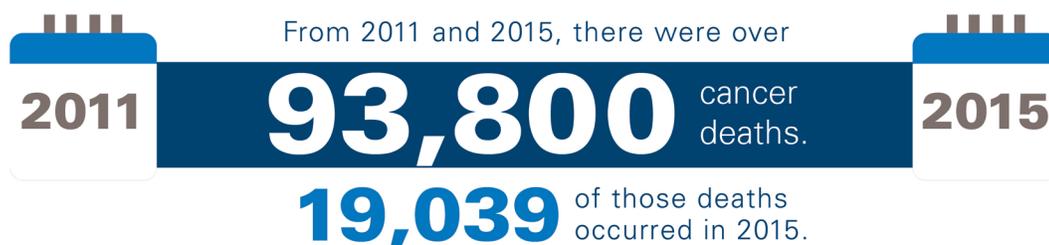
*Reducing the Burden of Cancer in North Carolina* is a collaborative endeavor of the N.C. Cancer Prevention and Control Branch (N.C. CPCB) and the N.C. Central Cancer Registry (N.C. CCR). This report provides up-to-date surveillance data for each of the six priority cancers and is organized in sections by priority cancer. It can serve as a series of standalone documents for providers, partners and advocates whose efforts focus on one or more priority cancers, while serving as a complete document for those whose work focuses on all priority cancers. This report will also highlight N.C. Cancer Plan intervention strategies coupled with specific recommendations for targeting interventions based on what the data shows for each cancer.

Data for each priority cancer include current and historical incidence and mortality rates by county, race and ethnicity, gender and age; percentage of distant stage diagnoses by county and race and the percentage of patients uninsured at diagnoses. Other state-level data pertinent to the specific cancer will be presented as well. All data will be considered in the recommended evidence-based interventions and strategies with each cancer section and in Appendix 3.

Most of the North Carolina-specific cancer data is provided by N.C. CCR and will not be specifically cited unless it is web available. Cancer incidence and mortality rates, whether grouped by county, age, race/ethnicity or gender, are typically cited in five-year incidence/mortality measurement periods. This accounts for volatility in rates that may occur in a single year, particularly in smaller North Carolina counties. There are some counties, however, that have such a small population that their rates for cancers may be unstable, even over a five-year incidence/mortality measurement period. If the number of cases falls below 16, the number is considered unstable. The counties with unstable numbers will be noted in the charts and tables. These rates should be interpreted with caution.

Cancer incidence rates are typically delayed by two years, whereas cancer mortality rates are delayed by one year. For example, in 2016, North Carolina incidence rates became publicly available for 2014, and North Carolina mortality rates became publicly available for 2015. Insurance status at the time of diagnoses and data on stage of diagnosis are tied to incidence rates. Updated incidence and mortality rates and associated measures are released on an annual basis.

Data on colorectal screening, cervical cancer screening, tobacco use and tobacco cessation intervention screening at Federally Qualified Health Centers (FQHC) are made publicly available by the Health Resources Services Administration (HRSA) on a two-year delay.



## How to Use This Document

*Reducing the Burden of Cancer in North Carolina* highlights specific data points for the six targeted cancers and includes evidence-based strategies and resources. For statewide partners, the data presented in this document should draw attention to areas that need targeted interventions for each cancer. For local partners, this document highlights which cancers present the greatest challenges in their service area and provides evidence-based interventions and strategies for the targeted cancers. Partners should follow a few key steps prior to any full-scale intervention planning when targeting a specific cancer. Following these steps can maximize targeted efforts based on data presented in this document:

1. Identify, connect with and engage local partners, particularly local health departments, hospitals and/or cancer centers who may have resources or expertise to support targeted efforts.
2. Partner with community and faith-based organizations, governmental agencies, health care and academic institutions and others interested in health in the community.
3. Consult the community's most recent community health assessment, located either in the local health department or hospital, to determine current cancer priorities established in the service area.
4. Refer to the demographic age and racial/ethnic composition data in the appendices to see if any statewide trends mentioned in this document could help explain the higher burden for a specific cancer in the community.
5. Consult the U.S. Census FactFinder.<sup>4</sup> Search by zip code or even the census tract level in the coverage area to gather data on demographic characteristics such as race, age and socioeconomic status to determine where targeting efforts may be most effective in the community.
6. Refer to the heat maps which are located at the end of each cancer section. These graphs show all data for the specific cancer. This shows the county's overall cancer burden for that cancer relative to other counties and the state.
7. Each specific cancer section has identified CDC evidence-based intervention strategies. Specific health equity activities are marked with an asterisk.
8. Consult the N.C. Cancer Plan for additional strategies. Appendix 3 is a combined strategy chart.
9. Refer to *The Community Guide* from CDC for additional recommendations for evidence-based cancer interventions.<sup>5</sup>
10. Consult the N.C. Comprehensive Cancer Control Program (N.C. CCCP) for technical assistance and resource suggestions.

### **N.C. Comprehensive Cancer Control Program**

is here to serve as a resource to help local communities and organizations establish any initiatives being considered because of data and strategies discussed in this document. Through educational opportunities, resources connections and overall capacity building, N.C. CCCP can help bolster the efforts to fight the burden of cancer in North Carolina communities.

**Everyone has a part in the fight against cancer.**  
We hope this tool makes your part in the fight easier.

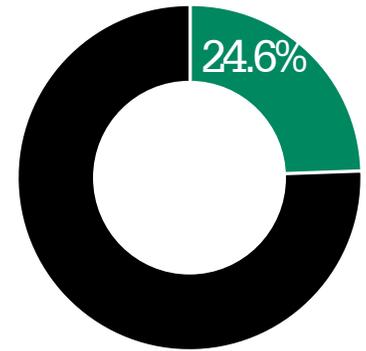
<sup>4</sup> U.S. Census FactFinder, <https://factfinder.census.gov/>

<sup>5</sup> The Community Guide, <https://www.thecommunityguide.org/topic/cancer>

# Lung Cancer

Lung cancer refers to any cancer that forms in the bronchus or lung. Lung cancers are usually grouped into two main types, small cell and non-small cell. These differ in growth rate as well as how they are treated. Lung cancer was the leading cause of cancer deaths in North Carolina in 2015 (28.3%). It is estimated that 8,888 people will be diagnosed with lung cancer and 6,168 people will die from lung cancer in 2017.<sup>6</sup>

Risk factors for lung cancer include smoking and exposure to secondhand smoke, radon and environmental hazards such as asbestos, coal dust and other substances. According to the Centers for Disease Control and Prevention, between 80 to 90% of lung cancer cases are attributable to smoking.<sup>7</sup> Among people who have never smoked, radon is the leading cause of lung cancer. People who smoke and are exposed to radon have an increased risk of lung cancer. A person's risk of lung cancer may be higher if his or her parents, siblings or children have had lung cancer. This could be true because family members also smoke or live or work in the same place where they are exposed to radon and other substances that can cause lung cancer.



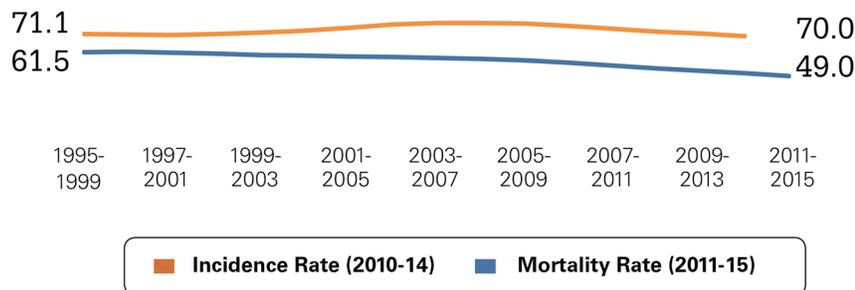
**N.C. Cumulative Relative 5-Year Lung Cancer Survival Rate 2010-2014**  
Survival Rate is in Green

**N.C. DATA:** Lung cancer incidence in North Carolina peaked during the 2004-2008 five-year incidence measurement period at a rate of 77.0 cases per 100,000 population. It has been on a slow, steady decline since, reaching 70.0 cases per 100,000 in the 2010-2014 five-year incidence rate. The latest available one-year incidence data for 2014 indicates a further decline in incidence rate, reaching a rate of 67.3 per 100,000.<sup>8</sup> In 2014, the national lung cancer incidence rate stood at 58.3 per 100,000.<sup>9</sup>

The lung cancer mortality rate for North Carolina has continued to decline after peaking during the 1996-2000 period at a rate of 61.9 cases per 100,000, to a low of 49.0 per 100,000 in 2011-2015. The latest available one-year mortality data for 2014 indicates a continued decline in the lung cancer mortality rate, reaching a rate of 45.6 per 100,000 in 2015. North Carolina still lags the national rate however, which stood at 42.2 per 100,000 in 2014.

## N.C. Lung Cancer Incidence and Mortality Rate 1995 to 2015

Age-adjusted rates per 100,000 population

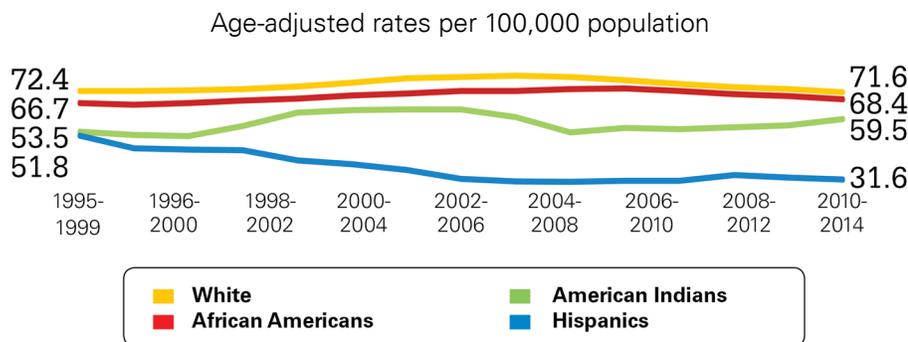


<sup>6</sup> N.C. State Center for Health Statistics, <http://www.schs.state.nc.us/schs/CCR/proj17site.pdf>  
<sup>7</sup> N.C. State Center for Health Statistics, [https://www.cdc.gov/cancer/lung/basic\\_info/risk\\_factors.htm](https://www.cdc.gov/cancer/lung/basic_info/risk_factors.htm)  
<sup>8</sup> N.C. State Center for Health Statistics, [http://www.schs.state.nc.us/data/cancer/incidence\\_rates.htm](http://www.schs.state.nc.us/data/cancer/incidence_rates.htm)  
<sup>9</sup> CDC 2014 National vs. State Comparisons, <https://nccd.cdc.gov/uscs/statevsnational.aspx>

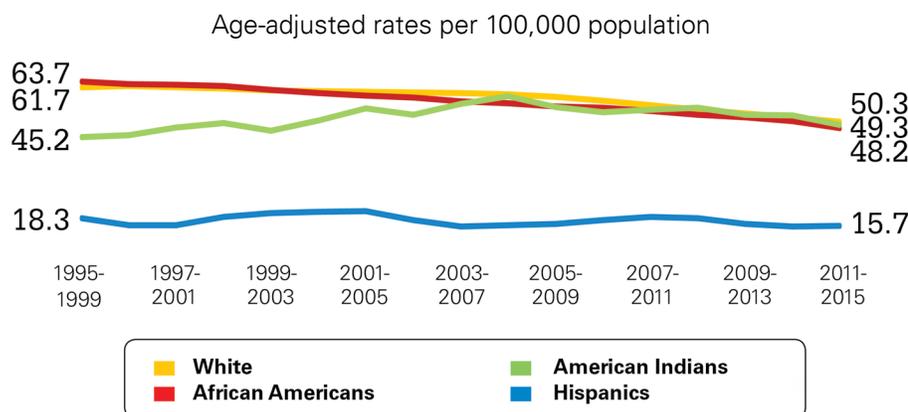
## North Carolina Lung Cancer Rates by Race and Ethnicity

Lung cancer is one of the few cancers in which African Americans fare slightly better than Whites in incidence and mortality rates on a statewide level. However, African Americans are still more likely to be diagnosed at the distant stage (cancer has spread to distant parts of the body) of lung cancer (53% of cases) than American Indians (50%), Whites (49%) or Hispanics (48%). Hispanics across the state fare far better than any other measurable racial/ethnic group in lung cancer incidence and mortality. The lung cancer incidence rate for American Indians has risen since 1996 more than any other measurable racial/ethnic group in the state. According to the 2016 Behavioral Risk Factor Surveillance System (BRFSS) survey, 73.5% of Hispanic respondents have never smoked, as opposed to 52.2% of White respondents and 61.5% of African-American respondents. Only 6.3% of Hispanic respondents smoke every day, as opposed to 13.3% of White respondents, 13.2% of African-American respondents and 21.3% of American-Indian respondents.<sup>10</sup>

**N.C. Lung Cancer Incidence Rate by Race/Ethnicity  
1995 to 2014**



**N.C. Lung Cancer Mortality Rate by Race/Ethnicity  
1995 to 2015**



<sup>10</sup> N.C. State Center for Health Statistics, [http://www.schs.state.nc.us/data/brfss/2016/nc/all/\\_smoker3.html](http://www.schs.state.nc.us/data/brfss/2016/nc/all/_smoker3.html)

Cancers can be diagnosed at different stages in their development. The distant stage refers to when cancer has spread from the original tumor to distant organs or distant lymph nodes.

### N.C. Lung Cancer Distant Stage Diagnosis by Race/Ethnicity 2010-2014



## North Carolina Lung Cancer Rates by Gender

North Carolina men have a 57% higher lung cancer incidence rate and a 75% higher mortality rate than women according to the latest available data. There may be multiple reasons for this gender disparity in lung cancer incidence and mortality. According to the 2016 BRFSS, only 50.7% of men indicated they had never smoked tobacco, as opposed to 62.4% of women. Additionally, 20.7% of N.C. men indicated they smoke every day or at least some days, whereas only 15.3% of N.C. women indicated the same.<sup>11</sup> Among N.C. men, 52.2% of lung cancer cases among N.C. men are discovered at the distant stage (cancer has spread to distant parts of the body), as opposed to 47.5% of N.C. women.

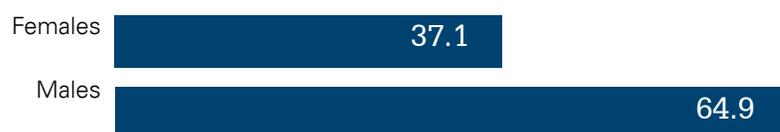
### N.C. 2010-2014 Lung Cancer Incidence by Gender

Age-adjusted rates per 100,000 population



### N.C. 2011-2015 Lung Cancer Mortality by Gender

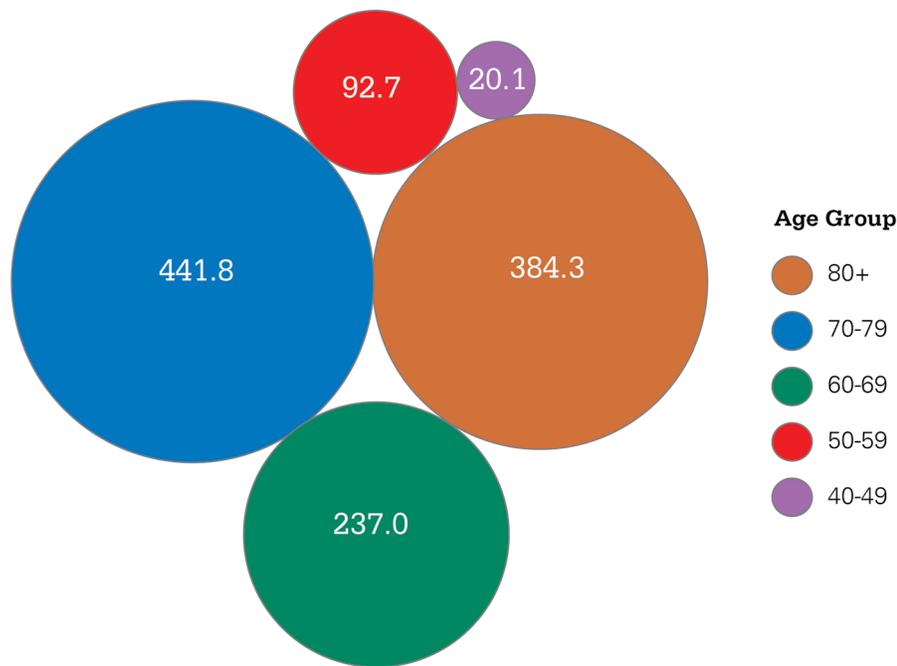
Age-adjusted rates per 100,000 population



<sup>11</sup> N.C. State Center for Health Statistics, [http://www.schs.state.nc.us/data/brfss/2016/nc/all/\\_smoker3.html](http://www.schs.state.nc.us/data/brfss/2016/nc/all/_smoker3.html)

### N.C. 2010-2014 Lung Cancer Incidence Rate by Age Group

Age-adjusted rates per 100,000 population

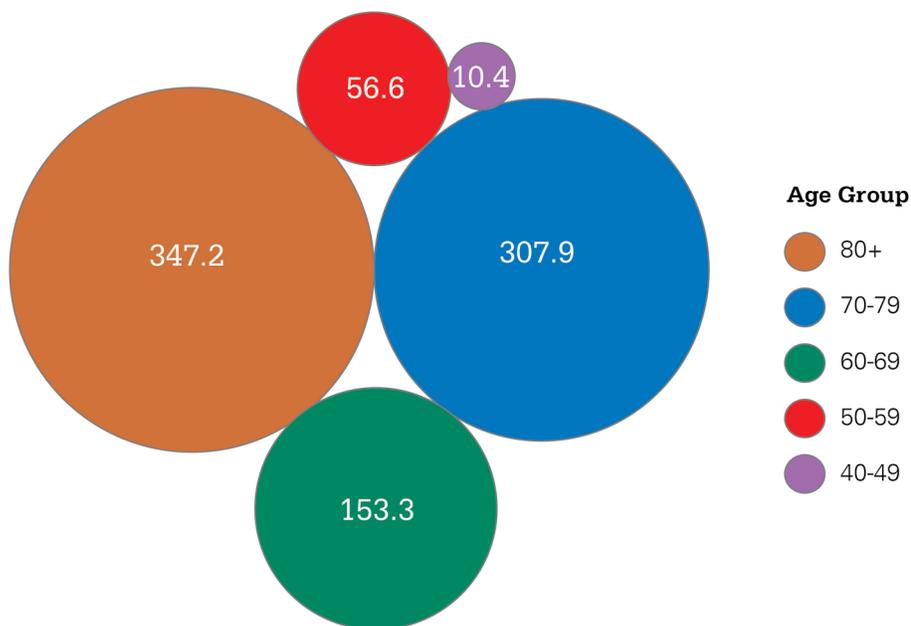


### North Carolina Lung Cancer Rates by Age Group

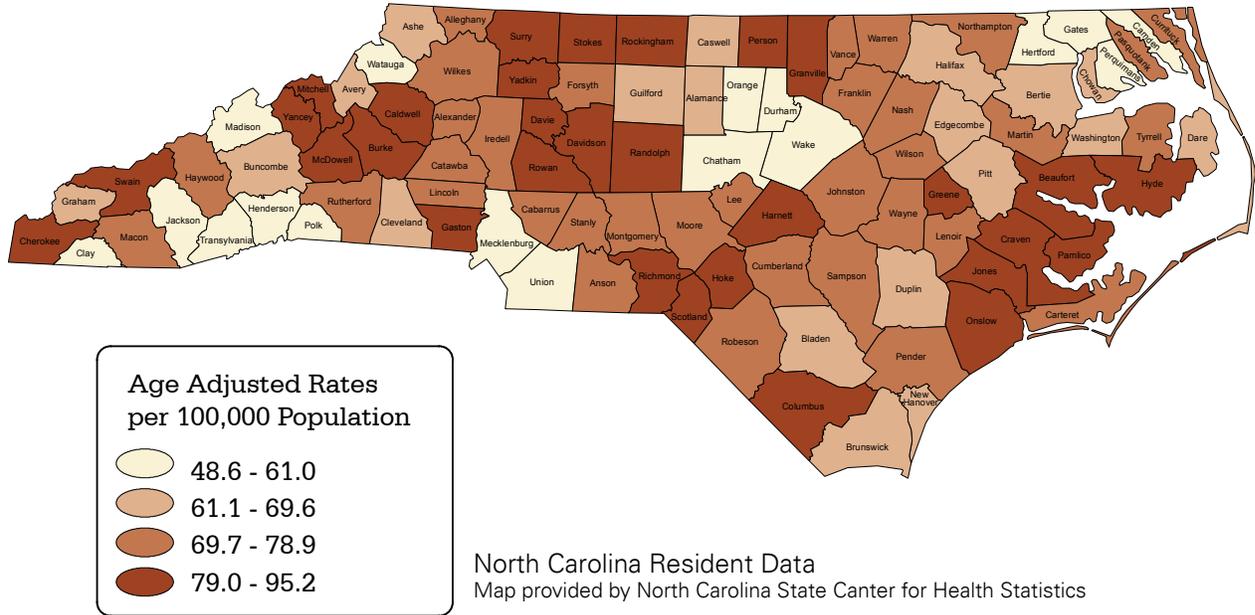
The risk for being diagnosed and dying from lung cancer increases greatly as one ages. In terms of lung cancer incidence, individuals between the ages of 70 and 79 in North Carolina have the highest rates for lung cancer. Individuals 60 years old and above have a combined incidence rate that is over nine times higher than that of individuals younger than 60 years old. Individuals 80 years old and above have the highest lung cancer mortality rate.

### N.C. 2011-2015 Lung Cancer Mortality Rate by Age Group

Age-adjusted rates per 100,000 population



## N.C. Lung Cancer Incidence Rates 2010-2014

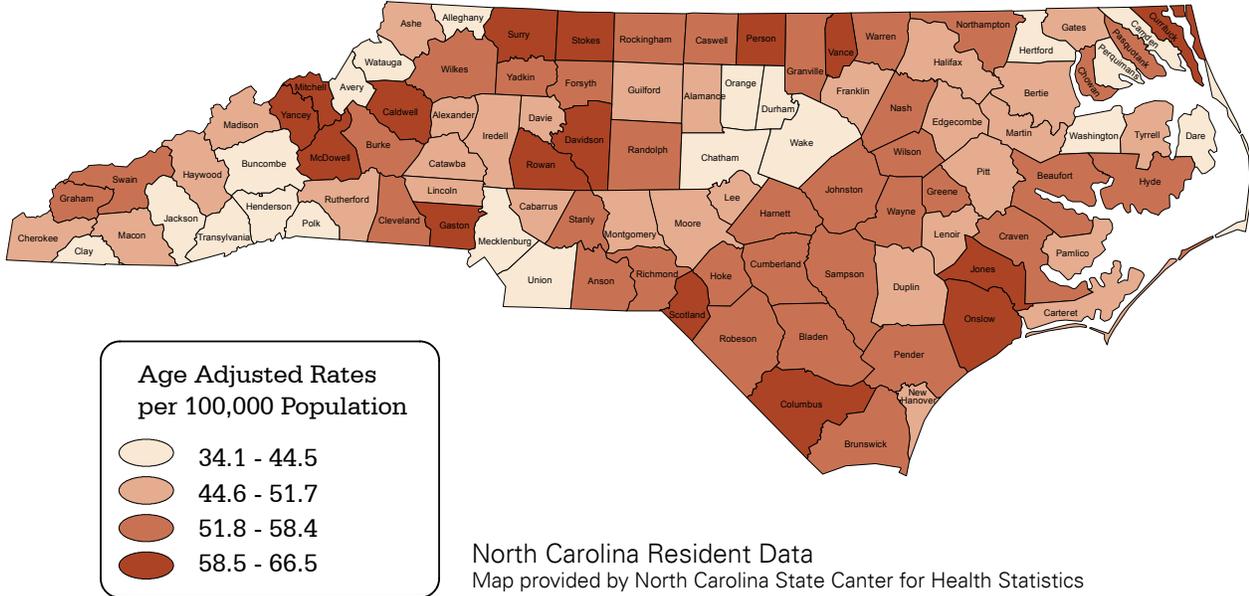


### N.C. Counties with Lung Cancer Incidence Rates Exceeding 79.0 per 100,000.<sup>12</sup>

County	Number of Cases	2010-2014 Incidence Rate	County	Number of Cases	2010-2014 Incidence Rate
<b>North Carolina</b>	<b>38,539</b>	<b>70.0</b>	Randolph	731	83.6
Hoke	173	95.2	Harnett	462	83.3
Pamlico	107	93.4	Person	211	83.0
Yancey	130	90.1	Columbus	311	82.5
Scotland	193	89.8	Craven	535	82.5
Onslow	539	88.3	Greene	101	82.3
Davie	258	88.2	Mitchell	104	81.9
Gaston	1,075	87.5	Davidson	850	81.7
Stokes	289	87.2	Burke	497	81.3
Rowan	743	87.1	Yadkin	213	81.3
McDowell	270	86.9	Granville	282	81.1
Swain	87	86.1	Beaufort	287	81.0
Richmond	250	85.6	Cherokee	202	80.8
Rockingham	553	85.6	Jones	64	80.0
Caldwell	464	84.9	Surry	409	79.9
Hyde	32	83.8			

<sup>12</sup> N.C. State Center for Health Statistics, [http://www.schs.state.nc.us/data/cancer/incidence\\_rates.htm](http://www.schs.state.nc.us/data/cancer/incidence_rates.htm)

## N.C. Lung Cancer Mortality Rates 2011-2015

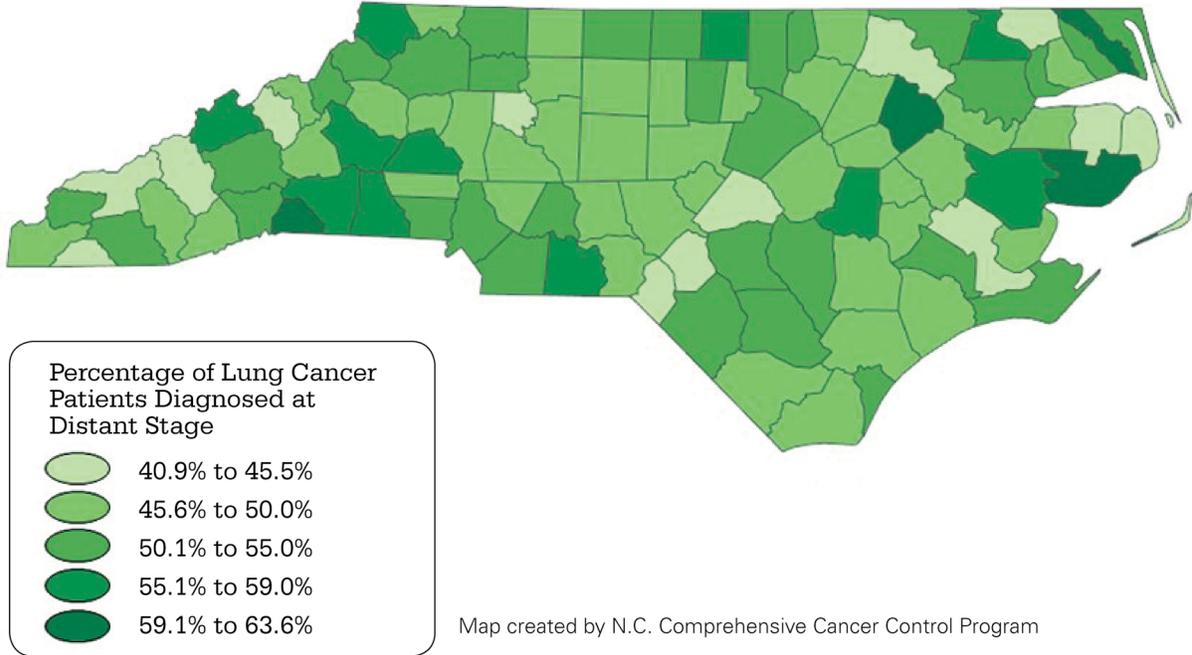


### N.C. Counties with Lung Cancer Mortality Rates Exceeding 58.5 per 100,000<sup>13</sup>

County	Number of Deaths	2011-2015 Mortality Rate	County	Number of Deaths	2011-2015 Mortality Rate
<b>North Carolina</b>	<b>27,536</b>	<b>49.0</b>	Surry	325	61.6
Caldwell	368	67.0	Person	160	61.4
Scotland	142	64.8	Mitchell	80	60.6
Currituck	91	64.8	Onslow	374	60.5
Gaston	793	63.8	Rowan	523	60.0
Davidson	661	63.2	Vance	168	59.8
Yancey	91	62.3	Columbus	225	59.1
Jones	52	62.0	Stokes	196	58.5
McDowell	190	61.8			

<sup>13</sup> N.C. State Center for Health Statistics, [http://www.schs.state.nc.us/data/cancer/mortality\\_rates.htm](http://www.schs.state.nc.us/data/cancer/mortality_rates.htm)

## N.C. Lung Cancer Distant Stage Diagnosis by County 2010-2014

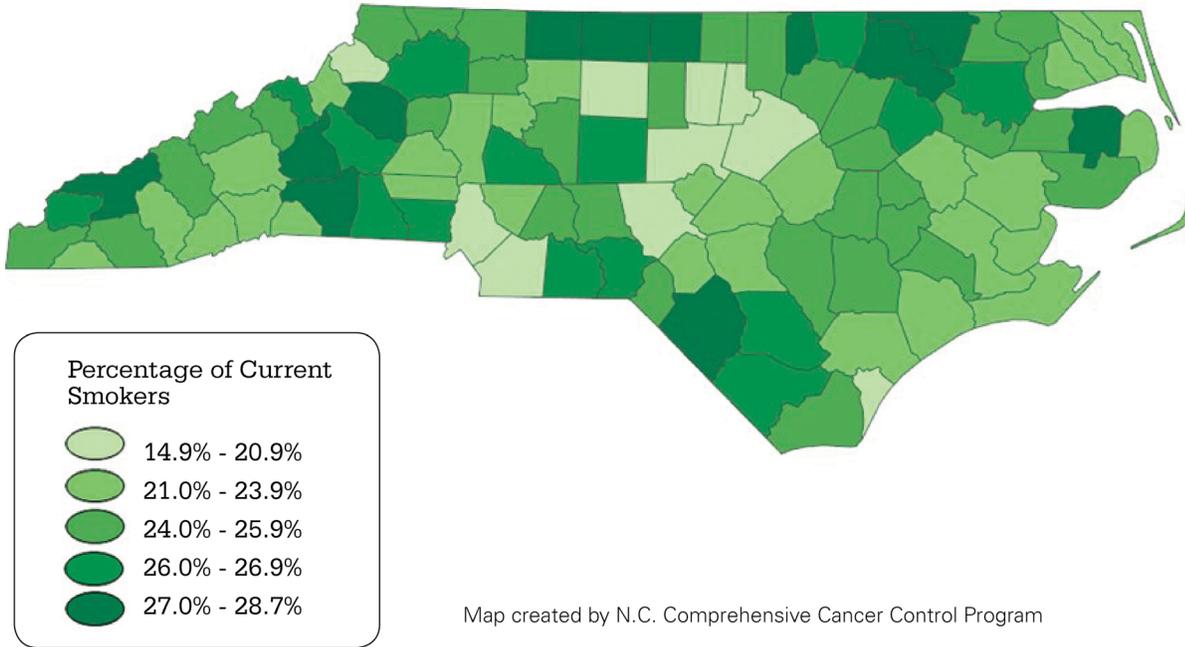


### N.C. Counties with Distant Stage Lung Cancer Diagnosis Percentages Exceeding 55.1%

County	Distant Stage Diagnosis Percentage	County	Distant Stage Diagnosis Percentage
<b>North Carolina</b>	<b>50.1%</b>	Ashe	57.4%
Camden	63.6%	Rutherford	57.4%
Polk	60.2%	Person	56.9%
Edgecombe	59.6%	Anson	55.5%
Hyde	59.4%	Beaufort	55.4%
Burke	58.6%	Cleveland	55.3%
Madison	58.2%	Catawba	55.2%
Wayne	57.7%		

Note: Cancers can be diagnosed at different stages in their development. The distant stage refers to when cancer has spread from the original tumor to distant organs or distant lymph nodes.

## N.C. Percentage of Current Smokers in 2012



### N.C. Counties where the Percentage of Current Smokers Exceeding 26%<sup>14</sup>

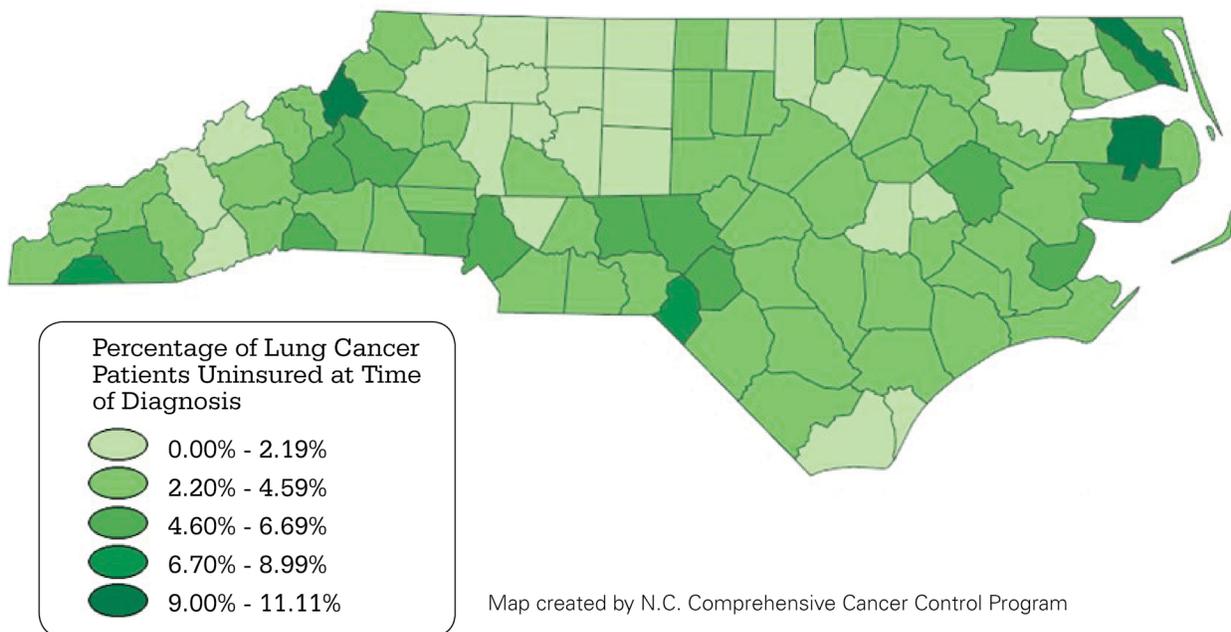
County	Percentage of Current Smokers	County	Percentage of Current Smokers
<b>North Carolina</b>	<b>21%</b>	Edgecombe	27%
Vance	29%	Graham	27%
Robeson	29%	Randolph	27%
McDowell	28%	Columbus	27%
Caswell	28%	Wilkes	27%
Rockingham	28%	Mitchell	26%
Northampton	28%	Anson	26%
Caldwell	28%	Bladen	26%
Tyrrell	27%	Gaston	26%
Stokes	27%	Rowan	26%
Rutherford	27%	Cleveland	26%
Halifax	27%	Richmond	26%
Swain	27%	Burke	26%
Warren	27%	Bertie	26%

<sup>14</sup> The percent of BRFSS survey respondents who report that they currently smoke "every day" or "most days" and have smoked at least 100 cigarettes in their lifetime. The last available data for this measure on a by-county basis was conducted in 2012.

## North Carolina Lung Cancer Uninsured at Diagnosis by County

The percentage of lung cancer cases and deaths are overwhelmingly represented by individuals over 60 years old. 72.6% of patients diagnosed with lung cancer between 2010 and 2014 received their primary health insurance through some governmental program. In total, 3.1% of North Carolinians diagnosed with lung cancer between 2010 and 2014 were uninsured at the time of their diagnosis. There are, however, a few pockets in the state with higher levels of uninsured lung cancer patients than the state average, including five counties where at least 6.7% of patients are uninsured at their time of their lung cancer diagnosis.

**N.C. Lung Cancer Uninsured at Diagnosis by County  
2010-2014**



### N.C. Counties with Percentages of Uninsured Patients at Diagnosis Exceeding 6.7%

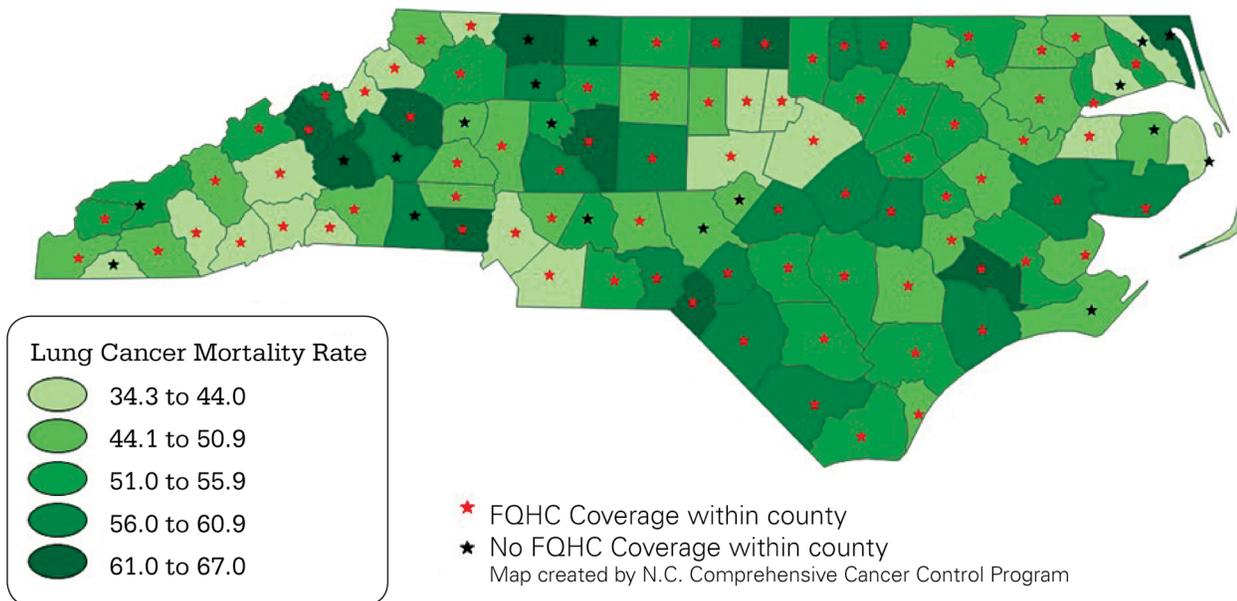
County	Percent Uninsured at Diagnosis	County	Percent Uninsured at Diagnosis
<b>North Carolina</b>	<b>3.1%</b>	Tyrrell	9.1%
Avery	11.1%	Scotland	6.7%
Camden	9.1%	Clay	6.7%

## North Carolina Federally Qualified Health Centers

Federally Qualified Health Centers (FOHCs) are non-profit entities providing health services to patients regardless of their ability to pay. They offer a sliding pay scale to help underserved populations get needed services, including cancer screenings. Currently, there are 40 FOHCs in North Carolina with more than 220 clinic locations in 81 of the 100 counties. There are 11 counties with lung cancer mortality rates above the North Carolina average (49.6 per 100,000) without an FOHC within their county borders. These are Burke, Cleveland, Currituck, Davie, Lee, McDowell, Stanly, Stokes, Surry, Swain, and Yadkin counties.

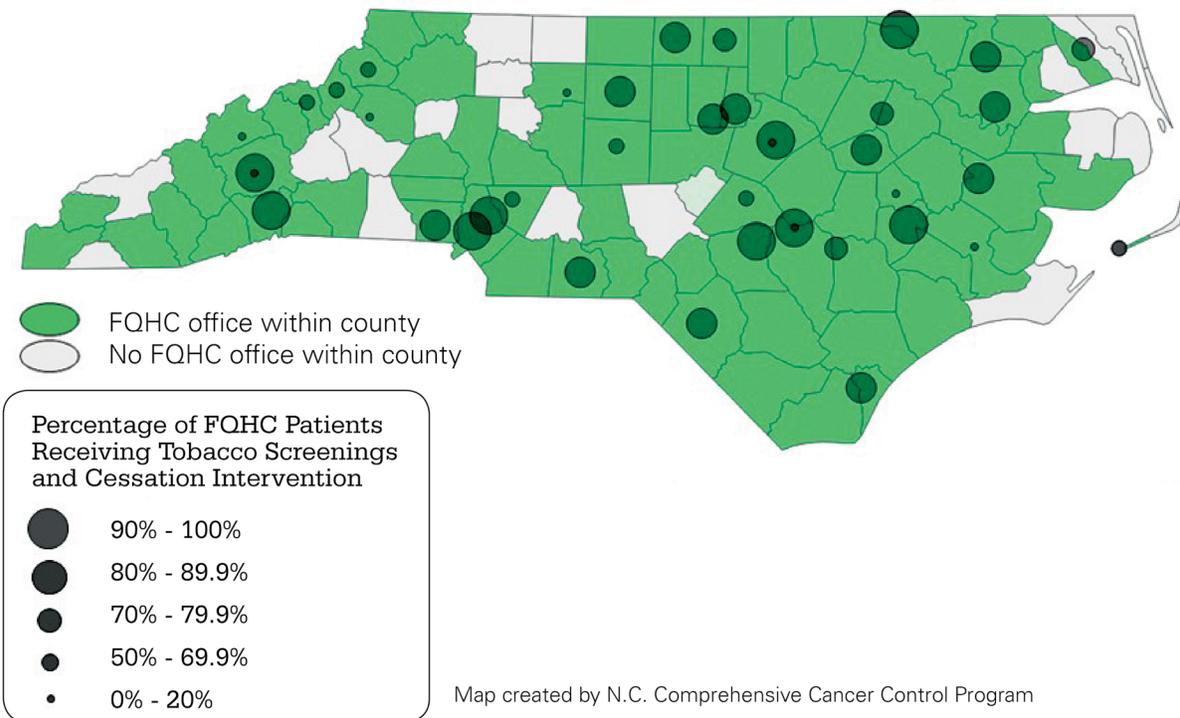
### N.C. Federally Qualified Health Center (FOHC) County Coverage and Lung Cancer Mortality Rate by County, 2011-2015

Age-adjusted rates per 100,000 population



Counties represented in green in the map below have at least one FOHC office located in their county. Each dot represents one FOHC. They are sized according to the percentage of their patients that were screened for tobacco use and offered cessation intervention, per the Health Resources and Services Administration (HRSA).

### N.C. Federally Qualified Health Center (FOHC) County Coverage and FOHC Tobacco Screening and Cessation Intervention in 2015



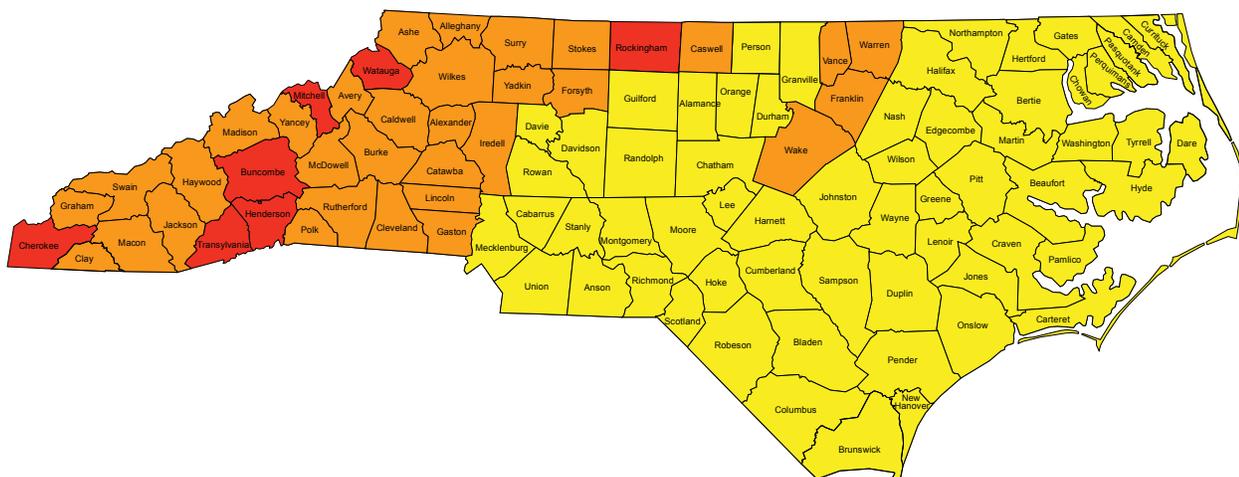
For more information on individual FOHC tobacco use and cessation intervention screening performance, visit the Health Resources and Services Administrations (HRSA) 2015 Health Center Program Grantee Profiles.<sup>15</sup>

<sup>15</sup> FOHC Location and Screening data obtained from Health Resources and Services Administrations (HRSA) 2015 Health Center Program Grantee Profiles. <http://bphc.hrsa.gov/uds/datacenter.aspx?q=d&state=NC&year=2015#glist>

## North Carolina Radon Potential Zones

Radon is the leading cause of lung cancer deaths among non-smokers, killing approximately 21,000 people in the United States annually.<sup>16</sup> The amount of radon in the air is measured in picocuries/liter. High radon levels are concentrated primarily in the Western part of North Carolina, with eight counties—Cherokee, Transylvania, Henderson, Buncombe, Mitchell, Watauga, Alleghany and Rockingham—having average radon levels exceeding 4 picocuries/liter (Radon Zone 1). Homes with high levels of radon have been found in all radon zones, so all homes should be tested.<sup>17</sup> According to the 2015 BRFSS survey, only 56.8% of North Carolinians know what radon gas is. Only 25.0% of North Carolinians have had their homes tested for radon.<sup>18</sup> Ground and well water should also be tested for radon.

**“Zone Map” EPA Research in early 1990s**



- Zone 1, Counties with predicted average indoor radon screening levels greater than 4 pCi/L
- Zone 2, Counties with predicted average indoor radon screening levels from 2 to 4 pCi/L
- Zone 3, Counties with predicted average indoor radon screening levels less than 2 pCi/L

U.S. Surgeon General and EPA recommend fixing homes with radon levels at or above 4 pCi/L. EPA also recommends that people think about fixing their homes for radon levels between 2 pCi/L and 4 pCi/L. All homes should be tested, regardless of zone designation because level can be high in all counties.

<sup>16</sup> <http://www2.epa.gov/radon/find-information-about-local-radon-zones-and-radon-programs>

<sup>17</sup> The North Carolina Radon Program, <http://www.ncradon.org/ncradon/#>

<sup>18</sup> N.C. State Center for Health Statistics, <http://www.schs.state.nc.us/data/brfss/2015/nc/all/radontst.html>

**N.C. County Rankings (Lung Cancer Incidence, Mortality, Distant-Stage Diagnosis, Smoker and Insurance Status)** The 20 counties with the highest rates or percentages by data category are listed below in descending order with the highest rate or percentage listed first.

Incidence Rate 2010-2014	Mortality Rate 2011-2015	Distant Stage Diagnosis 2010-2014	Current Smoker 2012	Uninsured at Diagnosis 2010-2014
Hoke	Caldwell	Camden	Vance	Avery
Pamlico	Scotland	Polk	Robeson	Camden
Yancey	Currituck	Edgecombe	McDowell	Tyrrell
Scotland	Gaston	Hyde	Caswell	Scotland
Onslow	Davidson	Burke	Rockingham	Clay
Davie	Yancey	Madison	Northampton	Polk
Gaston	Jones	Wayne	Caldwell	Hyde
Stokes	McDowell	Ashe	Tyrrell	Gaston
Rowan	Surry	Rutherford	Stokes	Pasquotank
McDowell	Person	Person	Rutherford	Macon
Swain	Mitchell	Anson	Halifax	Montgomery
Richmond	Onslow	Beaufort	Swain	Pamlico
Rockingham	Rowan	Cleveland	Warren	Burke
Caldwell	Vance	Catawba	Edgecombe	McDowell
Hyde	Columbus	Hertford	Graham	Moore
Randolph	Stokes	Northampton	Randolph	Hertford
Harnett	Harnett	Avery	Columbus	Pitt
Person	Caswell	Vance	Wilkes	Hoke
Columbus	Warren	Granville	Mitchell	Mecklenburg
Craven	Cleveland	Jones	Anson	Stanly

**N.C. Counties with Multiple Places Within the Bottom Quintile of the Above Categories**

Four Categories in Top Quintile	Three Categories in Top Quintile		Two Categories in Top Quintile		
McDowell	Caldwell	Person	Anson	Avery	Burke
	Columbus	Scotland	Camden	Caswell	Cleveland
	Gaston	Stokes	Edgecombe	Hertford	Hoke
	Harnett	Vance	Jones	Mitchell	Northampton
	Hyde		Onslow	Pamlico	Polk
			Randolph	Rockingham	Rowan
			Rutherford	Swain	Tyrrell
			Warren	Yancey	



## North Carolina Lung Cancer Evidence-Based Intervention Strategies

There are many evidence-based intervention strategies to address lung cancer. Below are a few examples of CDC recommended evidence-based intervention strategies with suggested activities. Specific health equity activities are marked with an asterisk (\*).

**Intervention: Group education and small media to increase community demand for cancer screening services.**

- \*Reach out to communities with large senior populations to offer programs on the benefits of screening for previous or current smokers. Consider partnering with cancer centers, senior centers, senior living communities, faith-based organizations and non-traditional partners.
- Conduct messaging campaigns, (e.g., posters or placards on buses) to increase awareness of the importance of eliminating or reducing tobacco use and exposure to secondhand smoke.
- \*Address high risk populations for lung cancer, with messages about eliminating or reducing tobacco use and exposure to secondhand smoke.
- \*Provide and/or sponsor educational opportunities and outreach efforts to reach targeted populations and communities.
- \*Use linguistically and culturally appropriate health education materials and interpreter services, as needed.
- Educate the public that cancer is a chronic disease and people can and do survive.

**Intervention: Reduce barriers to increase community access to cancer screening.**

- \*Explore opportunities for addressing the transportation barriers for low-income people, (e.g., local transportation system providing no or low fares).
- Encourage government and businesses to provide health insurance coverage to all workers and to allow paid time off to get appropriate screenings.
- \*Identify and evaluate culturally-appropriate outreach and education efforts, especially for the most vulnerable populations.
- \*Encourage providers to use lay health advisors, native language speakers or health educators to provide education about risk factors and preventive health behaviors and addressing barriers to care.



- \*Provide and/or sponsor educational opportunities and outreach efforts to reach targeted populations and communities with emphasis on young adults.
- \*Reach out to African-American and American-Indian populations with messages about eliminating or reducing tobacco use and exposure to secondhand smoke.
- Focus efforts on counties with higher smoking, lung cancer incidence and mortality rates with initiatives about eliminating or reducing tobacco use and exposure to secondhand smoke.

**Intervention:**  
Multicomponent interventions to influence health behaviors.

- Encourage businesses, governments, schools, community colleges and universities to adopt policies and practices that support healthy behavior, (e.g., tobacco-free policies, paid leave for annual physicals and routine screenings, healthy eating and physical activities opportunities).
- Encourage businesses to maintain a tobacco-free work place inside and outside of the buildings and to promote *QuitlineNC* to tobacco users.

**Intervention:** Adopt organizational policies and practices to improve healthy behaviors.

- Team up with local health departments, hospitals, cancer centers and Federally Qualified Health Centers to offer cancer survivorship educational forums and classes for patients and caregivers. (Cancer survivorship begins at diagnosis and continues through a person's life.)
- Equip patient navigators and community health workers with educational resources to support their work to empower survivors to make informed decisions throughout their cancer care.

**Intervention:** Develop and disseminate public education programs that empower survivors to make informed decisions.



**Intervention: Provider assessment and feedback to increase service delivery by healthcare providers.**

- Educate providers about how to discuss the guidelines for screening for lung cancer using low-dose computed tomography (low-dose CT scan) with their patients.
- \*Develop cultural-sensitivity training for health care providers.

**Intervention: Mass media educational campaigns to reduce tobacco use initiation.**

- Support or develop media educational campaign(s) to reduce tobacco use initiation and increase awareness and knowledge of non-smokers about the risk of cancer.
- Support messaging campaigns about cancer risk factors that include tobacco use and exposure to secondhand smoke.

**Intervention: Increase community access to radon testing.**

- Encourage messaging about testing homes, businesses and schools for radon and when needed, mitigation.
- Partner with local building/supply stores to advertise the availability of radon test kits and the importance of radon mitigation and radon-resistant construction. Some county health departments provide radon test kits.
- Promote purchasing radon test kits from the N.C. Radon Program or home improvement stores.
- Support or develop media campaigns to encourage testing for radon and when needed, mitigation of homes.



- Support messaging campaigns about radon as a lung cancer risk factor.
- Provide and/or sponsor educational opportunities and outreach efforts to promote testing homes for radon and the importance of mitigating homes with high radon levels.

**Intervention: Proven techniques to test for, prevent or reduce exposure to high radon levels.**

- Work with local builders and real estate companies to make them aware of the dangers of radon and to encourage them to build and offer radon-free buildings and homes.

**Intervention: Reduce exposure to radon in new or existing construction.**

## Resources

- Consult with the N.C. Comprehensive Cancer Control Program (N.C. CCCP) for technical assistance and resource suggestions. <http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm>
- Use *A Call to Action: North Carolina Comprehensive Cancer Control Plan 2014-2020* for information and additional strategies. <http://www.ncpublichealth.com/chronicdiseaseandinjury/cancerpreventionandcontrol/docs/ComprehensiveCancerControlPlan-2014-2020.pdf>
- Partner with the N.C. Advisory Committee on Cancer Coordination and Control, its Subcommittees and Cancer Partners to develop and implement cancer prevention and control programs. <http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/acccc.htm>
- Partner with N.C. Community and Clinical Connections for Prevention and Health to increase physical activity and healthy eating opportunities. <http://www.communityclinicalconnections.com>
- Partner with N.C. CCCP and N.C. Tobacco Prevention and Control Branch (NC TPCB) for technical assistance with producing messaging campaigns on smoking, lung cancer, and the benefits of quitting.
  - N.C. CCCP – <http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm>
  - N.C. TPCB – <http://www.tobaccopreventionandcontrol.ncdhhs.gov/>
  - *QuitlineNC* – <http://www.quitlinenc.com/>
- Explore *The Community Guide* from CDC for evidence-based recommendations about community preventive services, programs and policies to improve health. <https://www.thecommunityguide.org/>
- Partner with the N.C. Radon Program to develop initiatives to reduce exposure to radon. <http://www.ncradon.org>
- Contact the N.C. Occupational and Environmental Epidemiology Branch for additional information on radon in ground and well water. <http://epi.publichealth.nc.gov/oeep/programs/wellwater.html>

- Partner with American Cancer Society Cancer Action Network, Inc. (ACS CAN) a nonprofit, nonpartisan advocacy affiliate of the American Cancer Society to support evidence-based policy and legislative solutions designed to eliminate cancer as a major health problem. <http://www.acscan.org/>
- Work with American Cancer Society a community-based, voluntary health organization, for research, education, advocacy, and service to eliminate cancer as a major health problem by preventing cancer, saving lives, and diminishing suffering from cancer. <http://www.cancer.org/>
- Join with the Lung Cancer Initiative of North Carolina, non-profit organization, to provide support for those affected by lung cancer through research, awareness, education and access programs. <http://www.lungcancerinitiativenc.org/>
- Identify resource and partner connections with the North Carolina Alliance for Health to educate the public by producing research, data, and evidence-based solutions to reduce obesity and tobacco. <http://ncallianceforhealth.org/>
- Explore resources from the Patient Advocate Foundation for patient resources, case management and access to care services. <http://patientadvocate.org/>
- Link to resources from North Carolina Health Info, to find reliable, easy-to-use information on health insurance, choosing a provider or health care service and more. <http://www.nchealthinfo.org/>
- Partner with the American Lung Association of North Carolina for resources and efforts to improve lung health, prevent lung disease through research, education and advocacy. <http://www.lung.org/>

# Heat Map - Lung Cancer Statistics by N.C. County

Green indicates low-risk      Yellow indicates average risk      Red indicates high-risk

County	Number of Cases 2010-2014	Incidence Rate 2010-2014	Number of Deaths 2011-2015	Mortality Rate 2011-2015	Distant Stage Diagnosis 2010-2014	Uninsured at Diagnosis 2010-2014	Current Smoker 2012
<b>North Carolina</b>	<b>38,539</b>	<b>70.0</b>	<b>27,536</b>	<b>49.0</b>	<b>50.1%</b>	<b>3.1%</b>	<b>20.9%</b>
Alamance	640	68.2	478	49.6	49.7%	3.0%	24.7%
Alexander	175	71.2	119	46.5	46.9%	2.9%	25.6%
Alleghany	70	73.8	42	43.5	48.6%	1.4%	25.6%
Anson	128	77.7	92	55.3	55.5%	3.9%	26.3%
Ashe	141	63.9	110	49.2	57.4%	3.5%	25.1%
Avery	81	62.4	50	36.8	54.3%	11.1%	23.7%
Beaufort	287	81.0	207	57.0	55.4%	3.8%	23.5%
Bertie	97	64.9	70	46.4	50.5%	2.1%	26.0%
Bladen	166	69.2	133	52.9	53.0%	3.0%	26.3%
Brunswick	661	67.7	519	52.1	48.6%	1.7%	24.5%
Buncombe	1073	66.1	740	43.7	50.4%	2.2%	21.8%
Burke	497	81.3	352	56.6	58.6%	5.2%	26.0%
Cabarrus	673	74.4	443	47.9	45.6%	2.1%	21.5%
Caldwell	464	84.9	368	67.0	48.9%	3.9%	27.5%
Camden	33	53.9	21	34.3	63.6%	9.1%	22.0%
Carteret	369	72.0	261	49.2	52.3%	3.0%	23.5%
Caswell	111	66.5	99	58.3	51.4%	3.6%	27.9%
Catawba	663	70.5	481	50.1	55.2%	3.2%	23.3%
Chatham	278	53.6	199	35.2	50.0%	2.9%	18.3%
Cherokee	202	80.8	124	47.4	47.0%	3.0%	25.3%
Chowan	74	65.6	63	51.8	51.4%	2.7%	24.9%
Clay	60	58.3	44	41.5	43.3%	6.7%	23.7%
Cleveland	434	68.7	372	58.0	55.3%	3.2%	26.1%
Columbus	311	82.5	225	59.1	48.9%	2.6%	26.6%
Craven	535	82.5	354	53.0	43.6%	2.4%	22.4%
Cumberland	1027	72.6	759	53.2	51.6%	3.1%	23.2%
Currituck	113	77.2	91	64.8	51.3%	3.5%	23.8%
Dare	166	68.7	105	43.7	41.0%	3.0%	21.4%
Davidson	850	81.7	661	63.2	50.0%	1.6%	25.9%
Davie	258	88.2	153	51.2	43.4%	0.8%	22.8%
Duplin	244	66.9	183	49.1	49.2%	3.7%	25.4%
Durham	728	58.3	532	41.2	47.5%	4.1%	17.0%
Edgecombe	235	64.5	187	51.4	59.6%	3.8%	26.9%
Forsyth	1428	71.4	1,074	52.5	49.9%	1.3%	21.9%
Franklin	270	74.8	193	52.1	47.0%	1.5%	24.3%
Gaston	1075	87.5	793	63.8	51.0%	6.0%	26.1%
Gates	41	51.0	36	46.6	43.9%	0.0%	24.9%
Graham	47	67.8	38	53.3	51.1%	4.3%	26.7%
Granville	282	81.1	187	53.4	53.5%	2.1%	25.0%
Greene	101	82.3	66	54.1	49.5%	1.0%	24.8%
Guilford	1801	67.4	1,253	45.8	48.8%	1.1%	20.1%
Halifax	265	69.6	190	49.3	42.3%	3.8%	27.2%
Harnett	462	83.3	327	58.3	45.0%	3.9%	23.7%
Haywood	347	71.0	236	46.4	41.2%	1.7%	24.6%
Henderson	558	60.1	416	43.6	52.0%	3.8%	21.7%
Hertford	97	58.5	76	44.7	54.6%	5.2%	25.0%
Hoke	173	95.2	103	57.6	44.5%	4.6%	23.2%
Hyde	32	83.8	21	57.0	59.4%	6.3%	25.2%
Iredell	648	70.6	471	50.0	48.1%	2.0%	21.4%
Jackson	160	60.8	109	41.4	50.0%	4.4%	23.4%
Johnston	655	76.3	500	56.3	49.6%	2.4%	23.2%

Green indicates low-risk

Yellow indicates average risk

Red indicates high-risk

County	Number of Cases 2010-2014	Incidence Rate 2010-2014	Number of Deaths 2011-2015	Mortality Rate 2011-2015	Distant Stage Diagnosis 2010-2014	Uninsured at Diagnosis 2010-2014	Current Smoker 2012
<b>North Carolina</b>	<b>38,539</b>	<b>70.0</b>	<b>27,536</b>	<b>49.0</b>	<b>50.1%</b>	<b>3.1%</b>	<b>20.9%</b>
Jones	64	80.0	52	62.0	53.1%	3.1%	25.8%
Lee	251	73.4	178	50.8	46.6%	4.0%	23.2%
Lenoir	286	72.5	183	45.7	49.3%	2.8%	25.9%
Lincoln	345	73.2	242	50.5	49.3%	3.5%	22.9%
Macon	227	72.6	160	49.2	51.1%	5.7%	24.4%
Madison	91	58.2	81	51.7	58.2%	1.1%	25.3%
Martin	131	72.7	85	46.4	47.3%	3.8%	24.9%
McDowell	270	86.9	190	61.8	48.9%	5.2%	28.0%
Mecklenburg	2304	58.0	1,535	37.5	50.9%	4.6%	15.8%
Mitchell	104	81.9	80	60.6	48.1%	2.9%	26.3%
Montgomery	140	74.5	91	48.3	45.7%	5.7%	24.8%
Moore	541	72.3	347	44.6	47.7%	5.2%	20.1%
Nash	437	74.7	316	52.4	46.0%	3.0%	24.5%
New Hanover	788	64.1	623	49.1	51.0%	2.2%	20.8%
Northampton	121	71.9	92	54.6	54.5%	4.1%	27.7%
Onslow	539	88.3	374	60.5	46.4%	3.3%	23.0%
Orange	344	56.5	252	41.9	50.9%	4.1%	15.3%
Pamlico	107	93.4	54	47.6	48.6%	5.6%	23.1%
Pasquotank	171	73.3	124	52.4	51.5%	5.8%	23.7%
Pender	256	71.8	194	52.5	46.9%	2.3%	23.8%
Perquimans	70	60.1	48	42.5	45.7%	1.4%	23.1%
Person	211	83.0	160	61.4	56.9%	1.9%	25.2%
Pitt	496	64.1	363	46.2	49.6%	4.6%	22.4%
Polk	93	48.6	77	40.1	60.2%	6.5%	23.1%
Randolph	731	83.6	510	57.2	48.7%	2.2%	26.6%
Richmond	250	85.6	166	56.1	45.6%	4.4%	26.0%
Robeson	509	73.3	404	57.0	52.5%	3.7%	28.5%
Rockingham	553	85.6	358	55.2	52.4%	1.6%	27.8%
Rowan	743	87.1	523	60.0	49.9%	2.6%	26.1%
Rutherford	378	78.1	236	47.7	57.4%	3.2%	27.3%
Sampson	298	76.2	216	53.8	52.0%	3.7%	25.2%
Scotland	193	89.8	142	64.8	44.0%	6.7%	25.5%
Stanly	316	78.9	224	55.8	52.5%	4.4%	24.9%
Stokes	289	87.2	196	58.5	47.4%	0.3%	27.3%
Surry	409	79.9	325	61.6	52.1%	1.7%	25.5%
Swain	87	86.1	52	51.7	43.7%	2.3%	27.1%
Sylvania	177	56.9	127	39.2	46.9%	1.7%	21.6%
Tyrrell*	22	74.7	13	45.4	45.5%	9.1%	27.3%
Union	579	61.0	414	43.2	50.3%	3.5%	18.2%
Vance	217	77.3	168	59.8	53.9%	3.2%	28.7%
Wake	2139	56.1	1,406	36.4	50.8%	3.3%	14.9%
Warren	116	72.5	97	58.2	50.0%	2.6%	26.9%
Washington	65	68.3	42	42.9	47.7%	3.1%	24.8%
Watauga	143	53.3	94	34.3	51.7%	3.5%	17.6%
Wayne	553	78.0	404	56.2	57.7%	1.6%	24.4%
Wilkes	384	77.5	277	54.8	52.9%	2.1%	26.5%
Wilson	360	71.7	273	52.6	48.1%	2.5%	24.8%
Yadkin	213	81.3	151	56.3	51.6%	0.5%	25.5%
Yancey	130	90.1	91	62.3	43.1%	2.3%	25.4%

\*Counties with mortality rates based on counts less than 16. Use these rates with caution.  
Heat Map created by N.C. Comprehensive Cancer Control Program

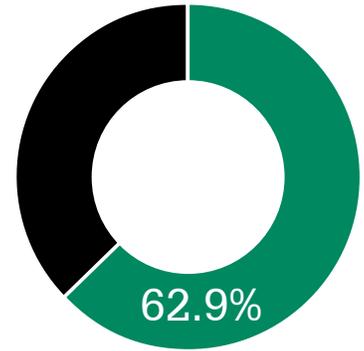


# Colorectal Cancer

Colorectal cancer develops in the colon and/or the rectum. Colorectal cancer was the second leading cause of cancer deaths in North Carolina in 2015 (8.6%). It is estimated that 4,602 people will be diagnosed with colorectal cancer and 1,693 will die from colorectal cancer in 2017.<sup>19</sup>

Risk factors for colorectal cancer include increasing age, colorectal polyps, being overweight or obese, smoking, a family history of colorectal cancer, chronic inflammatory conditions of the colon and certain genetic conditions. Diabetes also increases the risk of developing colon cancer. Colorectal cancer is mostly preventable with appropriate screening. A colonoscopy, one type of colorectal cancer screening, can find polyps which can be removed before they become cancer. Other screening tests include two fecal blood tests—Fecal Occult Blood Test (FOBT) and Fecal Immunochemical Test (FIT). Results from the 2016 Behavioral Risk Factor Surveillance System (BRFSS) survey show that 74.3% of North Carolina adults over age 50 report “ever having had a sigmoidoscopy or colonoscopy screening for colorectal cancer.”<sup>20</sup>

*continued on next page*

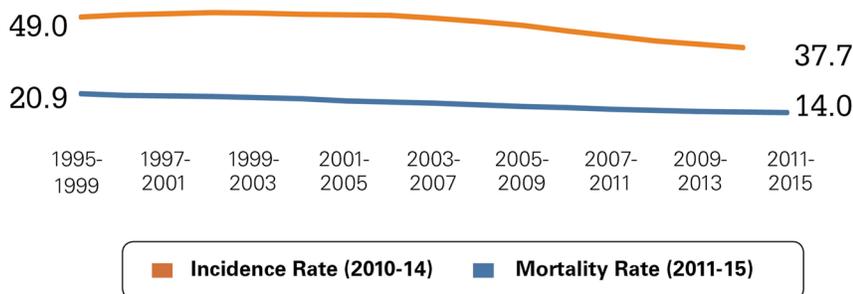


**N.C. Cumulative Relative 5-Year Colorectal Cancer Survival Rate 2010-2014** Survival Rate is in Green

**N.C. DATA:** Colorectal cancer incidence in North Carolina peaked in 1998-2002 at a rate of 50.5 cases per 100,000 population. Colorectal cancer incidence remained relatively steady from 1996-2000 to 2002-2006. Since 2003-2007, the colorectal cancer incidence has been on a more rapid decline, dropping 22.4% from the 2003-2007 rate of 48.6 cases per 100,000 population to 37.7 cases per 100,000 in 2010-2014. Additionally, the latest available one-year incidence data for 2014 indicates a further decline in incidence rate, reaching a rate of 36.0 per 100,000.<sup>21</sup> In 2014, the national colorectal cancer incidence rate stood at 38.4 per 100,000.<sup>22</sup>

## N.C. Colorectal Cancer Incidence and Mortality Rate 1995 to 2015

Age-adjusted rates per 100,000 population



The colorectal cancer mortality rate declined by 33% from the 1995-1999 rate of 20.9 cases per 100,000, to a low of 14.0 per 100,000 in 2011-2015. The latest available one-year mortality data (2015) indicates a relatively steady rate of 14.2 per 100,000 which is about even with the national rate of 14.1 per 100,000 in 2014.

<sup>19</sup> N.C. State Center for Health Statistics, <http://www.schs.state.nc.us/schs/CCR/proj17site.pdf>  
<sup>20</sup> N.C. State Center for Health Statistics, <http://www.schs.state.nc.us/data/brfss/2016/nc/all/hadsigm3.html>  
<sup>21</sup> N.C. State Center for Health Statistics, [http://www.schs.state.nc.us/data/cancer/incidence\\_rates.htm](http://www.schs.state.nc.us/data/cancer/incidence_rates.htm)  
<sup>22</sup> CDC 2014 National vs. State Comparisons, <https://nccd.cdc.gov/uscs/statevsnational.aspx>

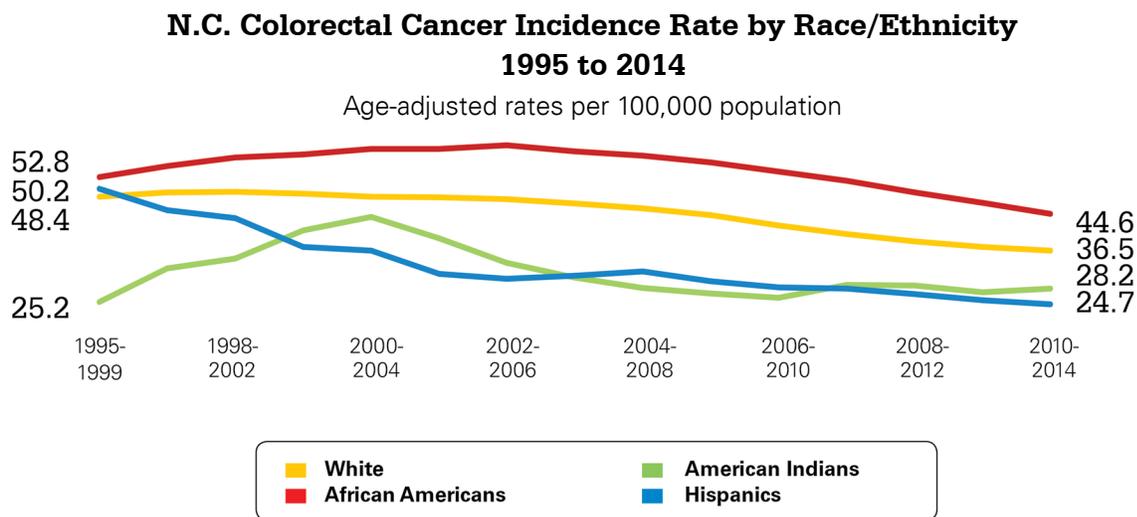
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While colorectal cancer risk increases with age, lifestyle choices can significantly reduce the overall risk of colorectal cancer. According to the American Institute for Cancer Research, 47% of national colorectal cancer cases are preventable by diet, activity and weight management.<sup>23</sup> Treatment for colorectal cancer is most successful when the cancer is detected early. Treatment options include surgery, chemotherapy and radiation therapy.

## North Carolina Colorectal Cancer Rates by Race and Ethnicity

African Americans experience the greatest burden among all racial/ethnic groups in colorectal cancer incidence and mortality. The highest five-year incidence rate for colorectal cancer for all North Carolinians stood at 50.5 per 100,000 population from 1998-2002, whereas the African-American colorectal cancer incidence rate reached as high as 59.7 per 100,000 from 2002-2006. Currently the African-American incidence rate for colorectal cancer is 22.2% higher, and the colorectal cancer mortality rate is 48.8% higher than it is for Whites. According to the 2016 BRFSS survey, 76.3% of Whites reported having ever had a sigmoidoscopy or colonoscopy, compared with 72.9% of African Americans.<sup>24</sup> African Americans are the most likely racial/ethnic group to have colorectal cancer diagnosed at a distant stage (cancer has spread to distant parts of the body).

The North Carolina American-Indian colorectal incidence rate climbed from 28.6 per 100,000 to 44.0 per 100,000 from 1995-1999 to 2000-2004. As of 2010-2014 the rate has since declined to 28.2 per 100,000. Hispanics have both the lowest colorectal cancer incidence and mortality rates among all measurable racial/ethnic groups in North Carolina. However, they are the second-most likely group to have their colorectal cancer diagnosed at a distant stage.

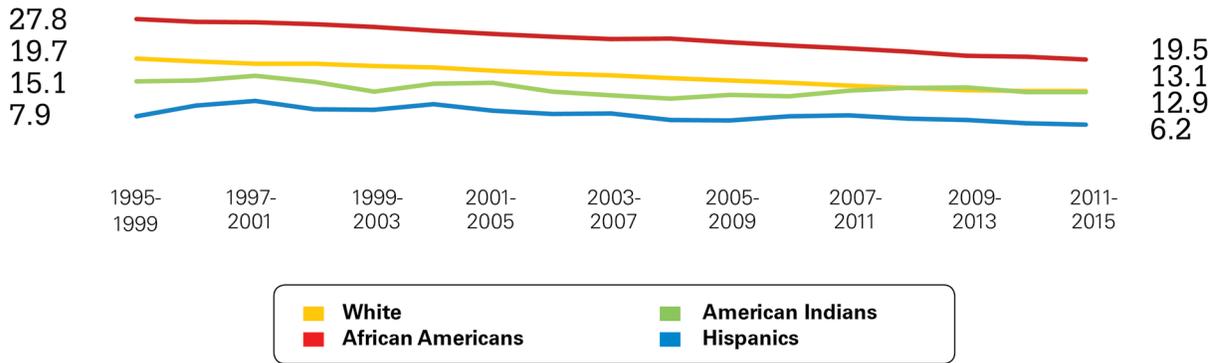


<sup>23</sup> American Institute for Cancer Research, <http://www.aicr.org/can-prevent/need-to-know/preventable-cancers.html>

<sup>24</sup> N.C. State Center for Health Statistics, <http://www.schs.state.nc.us/data/brfss/2016/nc/all/hadsigm3.html>

### N.C. Colorectal Cancer Mortality Rate by Race/Ethnicity 1995 to 2015

Age-adjusted rates per 100,000 population



### N.C. Colorectal Cancer Distant Stage Diagnosis by Race/Ethnicity 2010-2014



The cancer continuum, which includes prevention, early detection, care and treatment and survivorship, is a useful framework to view plans, priorities and progress as well as identifying research and resource needs.

## North Carolina Colorectal Cancer Rates by Gender

North Carolina men have a 32% higher colorectal cancer incidence rate and a 47% higher mortality rate than women according to the latest available data. According to the 2016 BRFSS survey, only 72.0% of men indicated that they had ever had a sigmoidoscopy or colonoscopy, compared to 76.3% of women.<sup>25</sup> There are no gender disparities in the discovery of colorectal cancer at a distant stage (cancer has spread to distant parts of the body). Colorectal cancer was diagnosed at a distant stage in 21.7% of both males and females according to 2010-2014 data.

### N.C. 2010-2014 Colorectal Cancer Incidence by Gender

Age-adjusted rates per 100,000 population



### N.C. 2011-2015 Colorectal Cancer Mortality by Gender

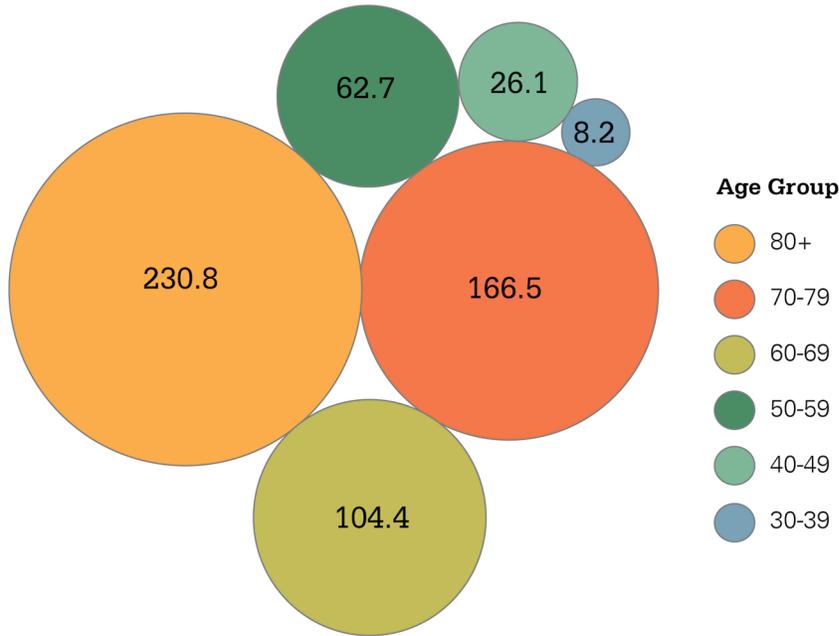
Age-adjusted rates per 100,000 population



<sup>25</sup> N.C. State Center for Health Statistics, <http://www.schs.state.nc.us/data/brfss/2016/nc/all/hadsigm3.html>

### N.C. 2010-2014 Colorectal Cancer Incidence Rate by Age Group

Age-adjusted rates per 100,000 population

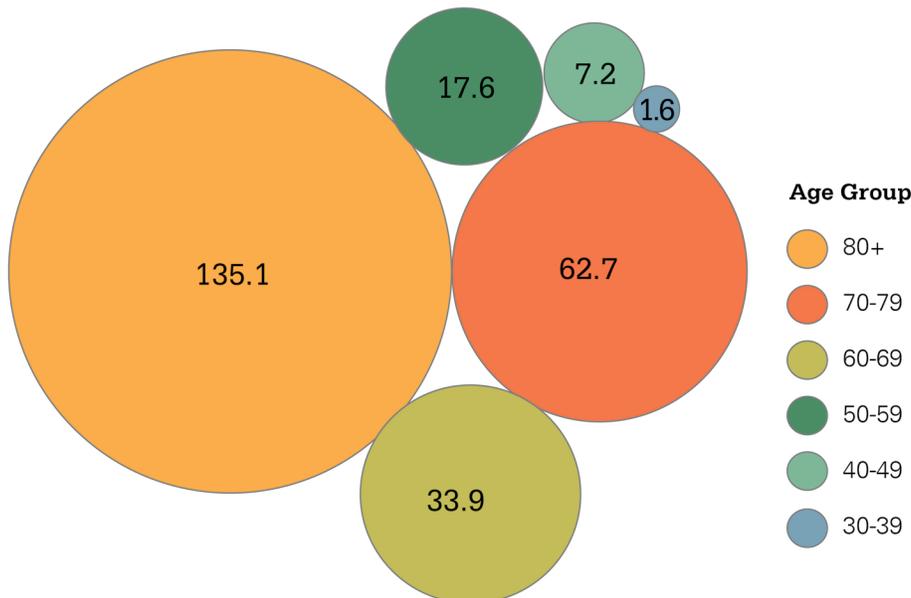


### North Carolina Colorectal Cancer Rates by Age Group

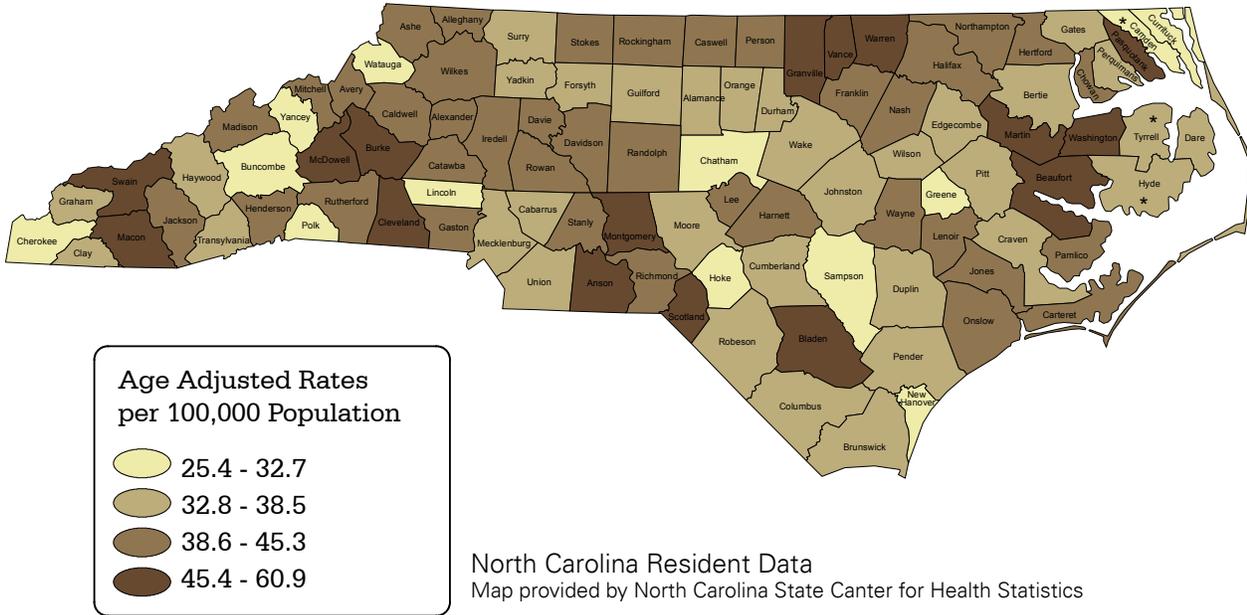
The risk for developing colorectal cancer increases as one ages. It rises significantly from an incidence rate of 26.1 per 100,000 in the 40-49 age range to 230.8 per 100,000 in the 80-plus age range. Individuals over 80 years old are twice as likely to die from colorectal cancer (135.1 per 100,000) than those in the 70-79 age range (62.7 per 100,000), and four times as likely to die from colorectal cancer than those in the 60-69 age range (33.9 per 100,000).

### N.C. 2011-2015 Colorectal Cancer Mortality Rate by Age Group

Age-adjusted rates per 100,000 population



## N.C. Colorectal Cancer Incidence Rates 2010-2014

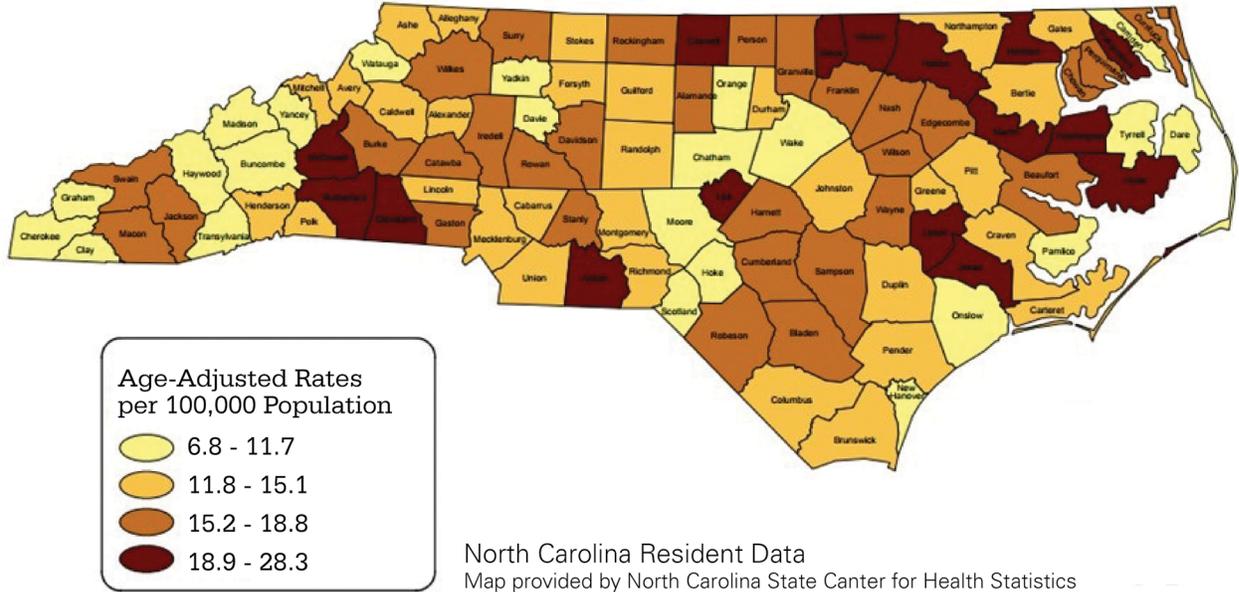


### N.C. Counties with Colorectal Cancer Incidence Rates Exceeding 45.4 per 100,000.<sup>26</sup>

County	Number of Cases	2010-2014 Incidence Rate	County	Number of Cases	2010-2014 Incidence Rate
<b>North Carolina</b>	<b>20,407</b>	<b>37.7</b>	Bladen	114	47.5
Swain	54	60.9	Montgomery	86	47.3
Warren	80	54.9	Anson	76	47.0
Washington	51	54.5	Burke	273	47.0
Vance	134	50.9	Macon	128	46.6
Granville	172	50.3	Martin	82	46.5
McDowell	141	49.3	Beaufort	155	46.2
Scotland	98	48.5	Cleveland	278	46.2
Pasquotank	108	47.8			

<sup>26</sup> N.C. State Center for Health Statistics, [http://www.schs.state.nc.us/data/cancer/incidence\\_rates.htm](http://www.schs.state.nc.us/data/cancer/incidence_rates.htm)

## N.C. Colorectal Cancer Mortality Rates 2011-2015



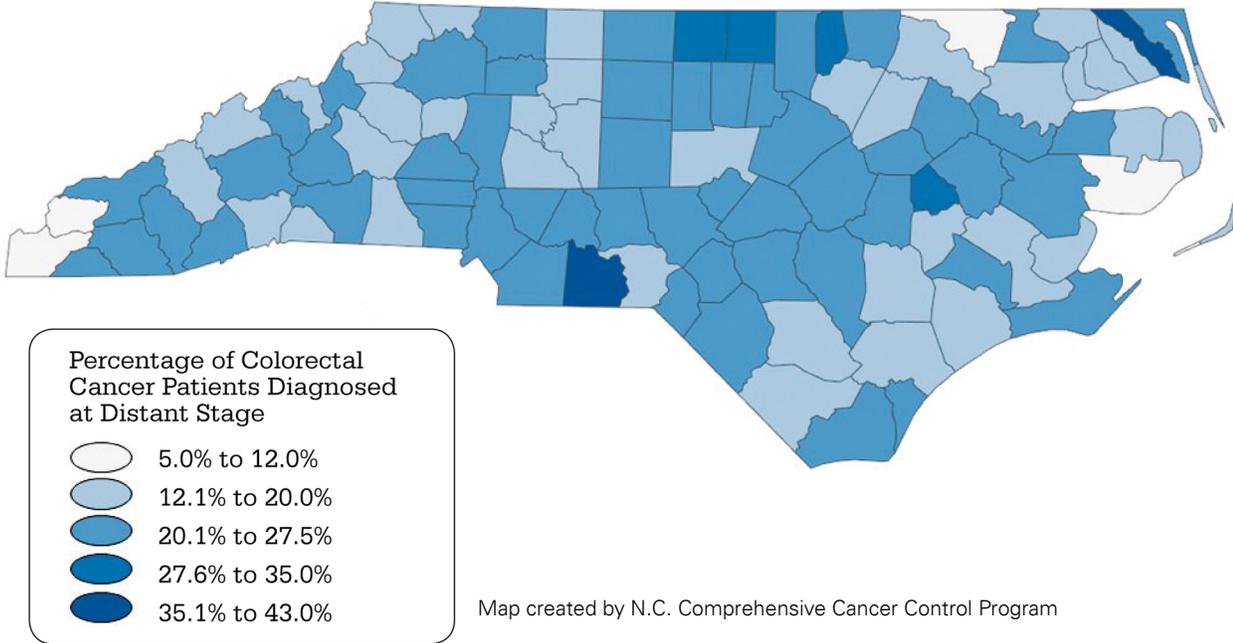
### N.C. Counties with Colorectal Cancer Mortality Rates Exceeding 18.9 per 100,000<sup>27</sup>

County	Number of Deaths	2011-2015 Mortality Rate	County	Number of Deaths	2011-2015 Mortality Rate
<b>North Carolina</b>	<b>7,701</b>	<b>14.0</b>	Washington	21	20.8
Hyde*	13	28.1	Jones*	12	20.4
Caswell	40	24.2	Cleveland	123	20.3
Hertford	37	23.0	Halifax	74	20.2
Rutherford	97	21.4	Martin	36	19.8
Anson	34	20.9	Lee	66	19.6
Lenoir	81	20.8	McDowell	55	19.0
Vance	56	20.8	Warren	29	18.9

\*Counties with mortality rates based on counts less than 16. Use these rates with caution.

<sup>27</sup> N.C. State Center for Health Statistics, [http://www.schs.state.nc.us/data/cancer/mortality\\_rates.htm](http://www.schs.state.nc.us/data/cancer/mortality_rates.htm)

**N.C. Colorectal Cancer Distant Stage Diagnosis by County  
2010-2014**



**N.C. Counties with Distant Stage Colorectal Cancer Diagnosis Percentages Exceeding 27.6%**

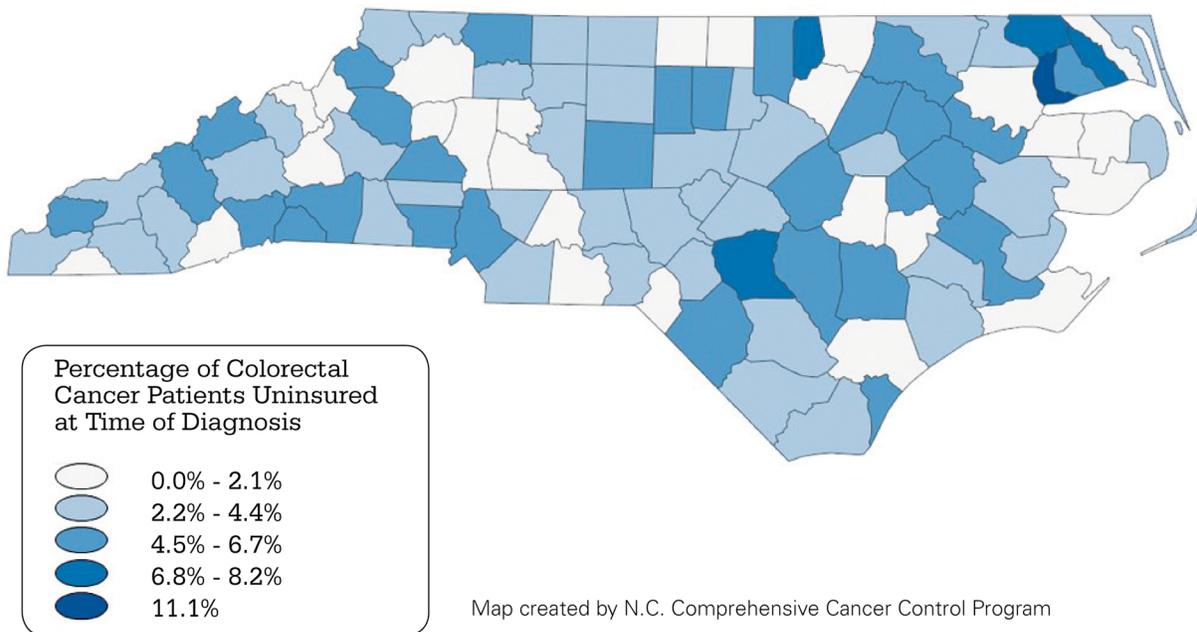
County	Distant Stage Diagnosis Percentage	County	Distant Stage Diagnosis Percentage
<b>North Carolina</b>	<b>21.7%</b>	Person	31.4%
Camden	42.9%	Vance	31.3%
Anson	35.5%	Caswell	27.8%
Greene	33.3%		

Note: Cancers can be diagnosed at different stages in their development. The distant stage refers to when cancer has spread from the original tumor to distant organs or distant lymph nodes.

## North Carolina Colorectal Cancer Cases Uninsured at Diagnosis by County

Most colorectal cancer cases and deaths occur in individuals over 60 years old. Exactly 60.5 percent of patients diagnosed with colorectal cancer between 2010 and 2014 received their primary health insurance through some governmental program. In total, 3.8 percent of North Carolinians diagnosed with colorectal cancer between 2010 and 2014 were uninsured at the time of their diagnosis. There are, however, a few counties in the state with higher levels of colorectal cancer patients being uninsured at the time of their diagnosis, including five counties with rates at least three percentage points higher than the state average.

**N.C. Colorectal Cancer Uninsured at Diagnosis by County  
2010-2014**



### N.C. Counties with Percentages of Uninsured Patients at Diagnosis Exceeding 6.8%

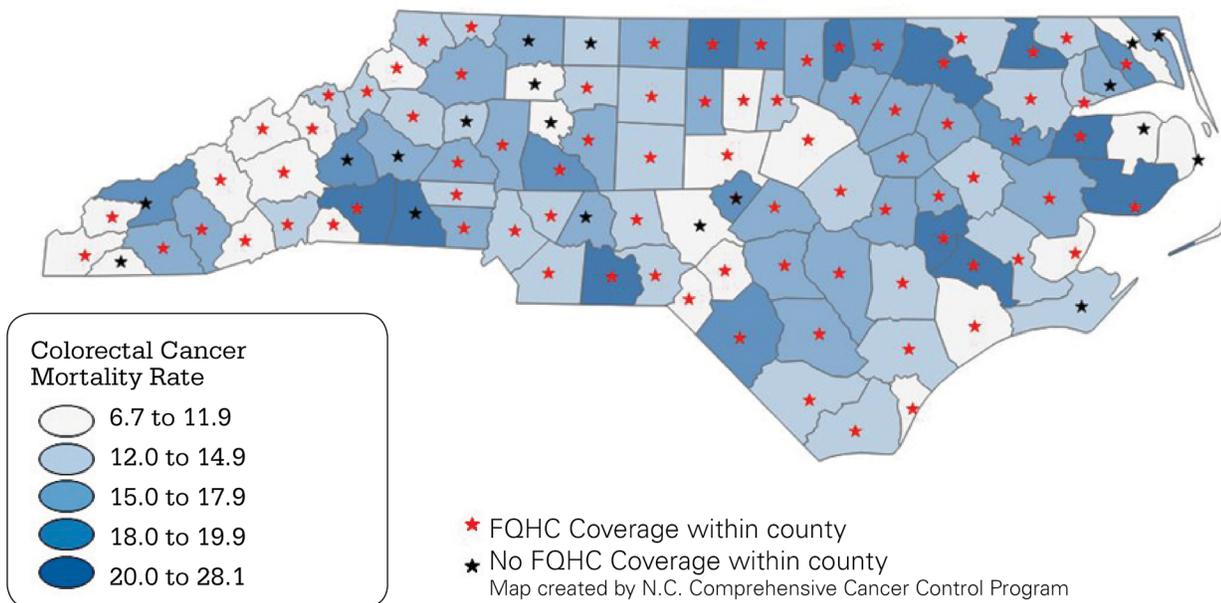
County	Percent Uninsured at Diagnosis	County	Percent Uninsured at Diagnosis
<b>North Carolina</b>	<b>3.8%</b>	Gates	7.4%
Chowan	11.1%	Pasquotank	7.4%
Vance	8.2%	Cumberland	6.8%

## North Carolina Federally Qualified Health Centers

Federally Qualified Health Centers (FQHC) are non-profit entities providing health services to patients regardless of their ability to pay. They offer a sliding pay scale to help underserved populations get needed services, including cancer screening. Currently, there are 40 FQHCs in North Carolina with more than 220 clinic locations in 81 of the 100 counties. FQHCs screened 35.3% of patients between the ages of 50 and 75 for colorectal cancer in 2015. There are 16 counties with colorectal mortality rates above the North Carolina average (14.0 per 100,000) without an FQHC within their county borders. These are Alexander, Burke, Carteret, Cleveland, Currituck, Lee, McDowell, Perquimans, Stanly, Stokes, Surry, and Swain counties.

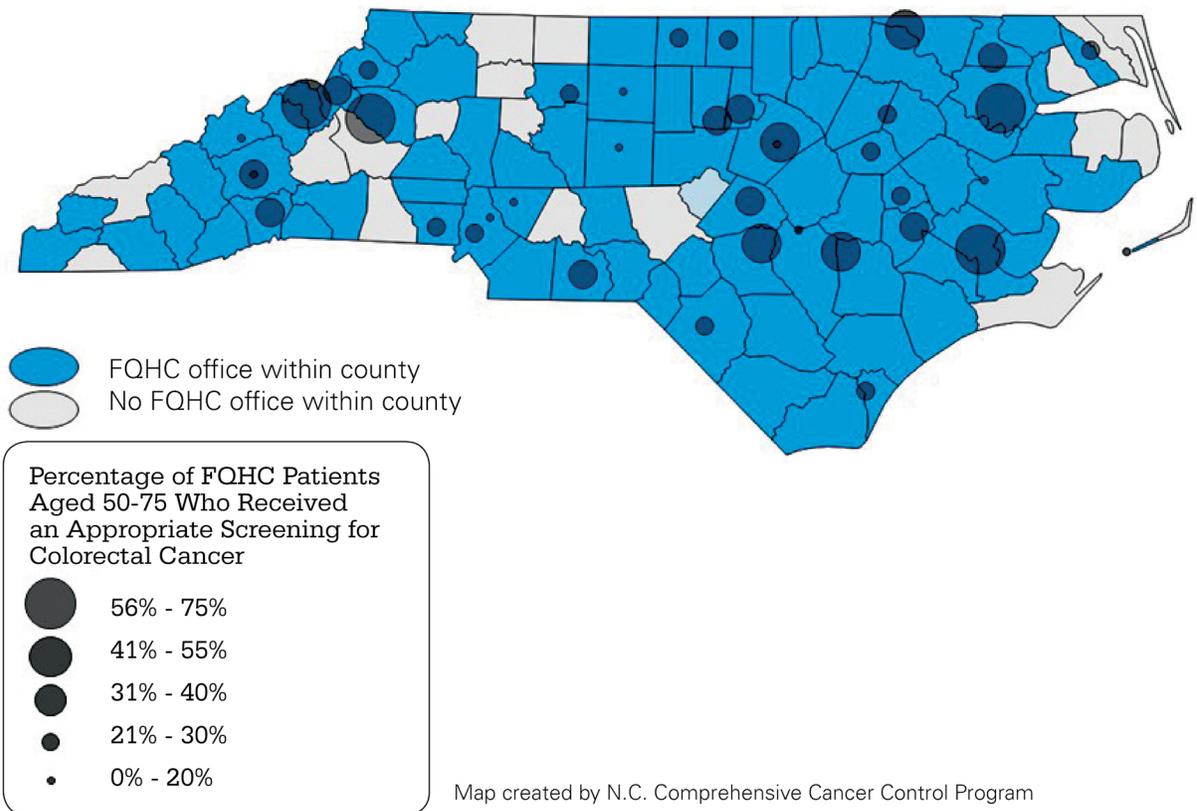
### N.C. Federally Qualified Health Center (FQHC) County Coverage and Colorectal Cancer Mortality Rate by County, 2011-2015

Age-adjusted rates per 100,000 population



Counties represented in blue in the map below have at least one FQHC office located in the county. Each dot represents one FQHC. These are sized according to the percentage of their patients between the ages of 50 and 75 that received an appropriate colorectal cancer screening, per the Health Resources and Services Administration.

### N.C. Federally Qualified Health Center (FQHC) County Coverage and FQHC Colorectal Cancer Screening Provision in 2015



For more information on individual FQHC colorectal cancer screening performance, visit the Health Resources and Services Administrations (HRSA) 2015 Health Center Program Grantee Profiles.<sup>28</sup>

<sup>28</sup> FQHC Location and Screening data obtained from Health Resources and Services Administrations (HRSA) 2015 Health Center Program Grantee Profiles. <http://bphc.hrsa.gov/uds/datacenter.aspx?q=d&state=NC&year=2015#glist>

**N.C. County Rankings (Colorectal Cancer Incidence, Mortality, Distant-Stage Diagnosis, and Insurance Status)** The 20 counties with the highest rates or percentages by data category are listed below in descending order with the highest rate or percentage listed first.

Incidence Rate 2010-2014	Mortality Rate 2011-2015	Distant Stage Diagnosis 2010-2014	Uninsured at Diagnosis 2010-2014
Swain	Hyde*	Camden	Chowan
Warren	Caswell	Anson	Vance
Washington	Hertford	Greene	Gates
Vance	Rutherford	Person	Pasquotank
Granville	Anson	Vance	Cumberland
McDowell	Lenoir	Caswell	Surry
Scotland	Vance	Warren	Sampson
Pasquotank	Washington	Avery	Granville
Bladen	Jones*	Durham	Madison
Montgomery	Cleveland	Jones	Orange
Anson	Halifax	Jackson	Polk
Burke	Martin	Clay	Watauga
Macon	Lee	Iredell	Robeson
Martin	McDowell	Beaufort	Edgecombe
Beaufort	Warren	Montgomery	Greene
Cleveland	Robeson	Alamance	Mecklenburg
Wayne	Pasquotank	Mecklenburg	Johnston
Lee	Person	Union	Caldwell
Gaston	Swain	Cumberland	Henderson
Caswell	Rowan	Granville	Nash

\*Counties with rates based on fewer than 16 cases. Use this rate with caution.

**N.C. Counties with Multiple Places Within the Bottom Quintile of the Above Categories**

Four Categories in Top Quintile	Three Categories in Top Quintile	Two Categories in Top Quintile		
Vance	Anson	Beaufort	Lee	Person
	Caswell	Cleveland	Martin	Robeson
	Granville	Jones	McDowell	Swain
	Pasquotank	Cumberland	Mecklenburg	Warren
		Greene	Montgomery	Washington



## North Carolina Colorectal Cancer Evidence-Based Intervention Strategies

There are many evidence-based intervention strategies to address colorectal cancer. Below are a few examples of CDC recommended evidence-based intervention strategies with suggested activities. Specific health equity activities are marked with an asterisk (\*).

- Provide educational programs with emphasis on senior populations about on the benefits of colorectal screenings.
- Conduct messaging campaigns (e.g., posters or placards on buses) to increase awareness of the importance of age-appropriate colorectal cancer screening.
- \*Provide educational programs on the benefits of colorectal screenings in rural Northeast counties such as Pasquotank, Hertford, Halifax, Martin, Washington and Hyde counties. These counties have high African-American populations, who disproportionately bear the burden of high incidence and/or mortality from colorectal cancer.
- Organize cancer partners within or near counties with low colorectal cancer screening rates to work together to increase colorectal cancer screenings and make referrals to community partners with prevention-related programs.
- \*Develop or support media campaigns in regional markets northeast of Wake County, east of Cumberland County and west of Mecklenburg County, where large clusters of counties with high colorectal cancer mortality rates are located.
- \*Provide and/or sponsor educational opportunities and outreach efforts to reach targeted populations and communities.
- \*Use linguistically and culturally appropriate health education materials and interpreter services, as needed.
- Educate the public that cancer is a chronic disease and people can and do survive.

**Intervention: Group education to increase community demand for cancer screening services.**



**Intervention: Reduce barriers to increase community access to cancer screening.**

- \*Explore opportunities for addressing the transportation barriers for low-income people, (e.g., local transportation system providing no or low fares).
- Encourage government and businesses to provide health insurance coverage to all workers and to allow paid time off to get appropriate screenings.
- \*Identify and evaluate culturally-appropriate outreach and education efforts, especially for the most vulnerable populations.
- \*Encourage providers to use lay health advisors, native language speakers or health educators to provide education about risk factors and preventive health behaviors and addressing barriers to care.

**Intervention: Client reminders to increase community demand for cancer clinical services.**

- Encourage providers to use patient reminders (e.g., reminder cards, email, text messages, etc.) and client incentives to encourage use of clinical services.
- Offer assistance to providers to establish a patient reminder process, if they do not have one in place.
- Request appointment reminder cards from N.C. Comprehensive Cancer Control Program.

**Intervention: Multicomponent interventions to influence health behaviors.**

- \*Provide and/or sponsor educational opportunities and outreach efforts to reach targeted populations and communities.
- Encourage community partners to plan and implement colorectal education programs.



- Encourage businesses, governments, schools, community colleges and universities to adopt policies and practices that support healthy behaviors, (e.g., tobacco-free policies, paid leave for annual physicals and routine screenings, healthy eating and physical activities opportunities).
- Encourage businesses to maintain a tobacco-free work place inside and outside of the buildings and to promote *QuitlineNC* to tobacco users.
- \*Work with public health, non-profit organizations and non-traditional partners to encourage healthy lifestyle components (obesity prevention, nutrition and physical activity) in counties with high African-American populations to provide education on the increased risk of colorectal cancer among African Americans who are obese.
  
- Team up with local health departments, hospitals, cancer centers and Federally Qualified Health Centers (FQHCs) to offer cancer survivorship educational forums and classes for patients and caregivers. (Cancer survivorship begins at diagnosis and continues through a person's life.)
- Equip patient navigators and community health workers with educational resources to support their work to empower survivors to make informed decisions thought out their cancer care.
  
- Organize cancer partners to work with FQHCs with low colorectal cancer screening rates to increase colorectal screenings and make referrals to community partners with prevention programs.
- \*Develop cultural sensitivity training for health care providers.
  
- Support or develop media educational campaign to reduce tobacco use initiation and increase awareness and knowledge of non-smokers about the risk of lung cancer.
- Support messaging campaigns about cancer risk factors that include tobacco use and exposure to secondhand smoke

**Intervention: Adopt organizational policies and practices to improve healthy behaviors.**

**Intervention: Develop and disseminate public education programs that empower survivors to make informed decisions.**

**Intervention: Provider assessment and feedback to increase service delivery by healthcare providers.**

**Intervention: Mass media educational campaigns to reduce tobacco use initiation.**

## Resources

- Consult with the N.C. Comprehensive Cancer Control Program (N.C. CCCP) for technical assistance and resource suggestions.  
<http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm>
- Use *A Call to Action: North Carolina Comprehensive Cancer Control Plan 2014-2020* for information and additional strategies. <http://www.ncpublichealth.com/chronicdiseaseandinjury/cancerpreventionandcontrol/docs/ComprehensiveCancerControlPlan-2014-2020.pdf>
- Partner with the N.C. Advisory Committee on Cancer Coordination and Control, its Subcommittees and Cancer Partners to develop and implement cancer prevention and control programs.  
<http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/acccc.htm>
- Partner with N.C. Community and Clinical Connections for Prevention and Health to increase physical activity and healthy eating opportunities. <http://www.communityclinicalconnections.com>
- Partner with N.C. CCCP and N.C. Tobacco Prevention and Control Branch (N.C. TPCB) for technical assistance with producing messaging campaigns on smoking, lung cancer, and the benefits of quitting.
  - N.C. CCCP – <http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm>
  - N.C. TPCB – <http://www.tobaccopreventionandcontrol.ncdhhs.gov/>
  - *QuitlineNC* – <http://www.quitlinenc.com/>
- Explore *The Community Guide* from CDC for evidence-based recommendations about community preventive services, programs and policies to improve health.  
<https://www.thecommunityguide.org/>

- Partner with the N.C. Colorectal Cancer Roundtable (N.C. CRCRT) for technical assistance on colorectal cancer, (e.g., consultation and linking partners and resources, producing or adopting messaging campaigns and educational resources). <http://www.ncpublichealth.com/chronicdiseaseandinjury/cancerpreventionandcontrol/colorectal.htm#crc>
- Partner with American Cancer Society Cancer Action Network, Inc. (ACS CAN) a nonprofit, nonpartisan advocacy affiliate of the American Cancer Society to support evidence-based policy and legislative solutions designed to eliminate cancer as a major health problem. <http://www.acscan.org/>
- Work with American Cancer Society a community-based, voluntary health organization, for research, education, advocacy, and service to eliminate cancer as a major health problem by preventing cancer, saving lives, and diminishing suffering from cancer. <http://www.cancer.org/>
- Explore resources from the Patient Advocate Foundation for patient resources, case management and access to care services. <http://patientadvocate.org/>
- Explore resources from North Carolina Health Info, to find reliable, easy-to-use information on health insurance, choosing a provider or health care service and more. <http://www.nchealthinfo.org/>

# Heat Map - Colorectal Cancer Statistics by N.C. County

Green indicates low-risk      Yellow indicates average risk      Red indicates high-risk

County	Number of Cases	Incidence Rate	Number of Deaths	Mortality Rate	Distant Stage	Uninsured at
	2010-2014	2010-2014	2011-2015	2011-2015	Diagnosis	Diagnosis
	2010-2014	2010-2014	2011-2015	2011-2015	2010-2014	2010-2014
<b>North Carolina</b>	<b>20,407</b>	<b>37.7</b>	<b>7,701</b>	<b>14.0</b>	<b>21.7%</b>	<b>3.8%</b>
Alamance	322	35.1	148	15.6	24.2%	5.0%
Alexander	97	41.7	34	14.4	18.6%	2.1%
Alleghany*	36	39.6	13	14.0	19.4%	2.8%
Anson	76	47.0	34	20.9	35.5%	0.0%
Ashe	83	40.6	29	13.8	16.9%	2.4%
Avery	48	38.9	16	13.3	27.1%	2.1%
Beaufort	155	46.2	53	15.2	24.5%	3.2%
Bertie	50	35.1	19	14.3	16.0%	0.0%
Bladen	114	47.5	39	15.0	17.5%	4.4%
Brunswick	297	33.7	109	12.1	21.2%	2.4%
Buncombe	498	32.0	186	11.1	22.9%	3.0%
Burke	273	47.0	102	17.1	17.9%	4.0%
Cabarrus	351	37.3	123	13.1	21.4%	2.3%
Caldwell	224	42.7	71	13.8	19.6%	5.4%
Camden**	14	25.4	5	9.5	42.9%	0.0%
Carteret	210	41.5	73	14.5	21.9%	1.4%
Caswell	72	44.6	40	24.2	27.8%	1.4%
Catawba	386	41.6	153	16.5	22.8%	4.9%
Chatham	147	31.2	53	10.2	19.0%	3.4%
Cherokee	77	32.3	26	10.7	10.4%	2.6%
Chowan	45	41.1	18	14.1	13.3%	11.1%
Clay*	32	35.4	11	10.9	25.0%	0.0%
Cleveland	278	46.2	123	20.3	19.8%	3.2%
Columbus	131	36.7	52	14.2	16.0%	3.8%
Craven	210	34.1	85	13.1	17.6%	4.8%
Cumberland	502	35.4	214	15.2	23.9%	6.8%
Currituck	42	32.7	22	15.4	23.8%	2.4%
Dare	79	35.7	21	9.8	15.2%	3.8%
Davidson	434	43.0	157	15.4	19.6%	2.5%
Davie	115	40.8	33	10.9	18.3%	0.9%
Duplin	127	36.2	50	13.7	16.5%	4.7%
Durham	445	34.4	189	14.3	27.0%	4.3%
Edgecombe	125	36.3	56	15.9	21.6%	5.6%
Forsyth	744	37.5	257	12.8	19.8%	3.9%
Franklin	143	40.9	59	16.7	18.9%	1.4%
Gaston	537	44.9	199	16.8	21.2%	4.5%
Gates*	27	35.9	11	14.4	14.8%	7.4%
Graham*	20	37.1	7	10.3	5.0%	5.0%
Granville	172	50.3	54	16.0	23.8%	6.4%
Greene	36	31.2	20	16.1	33.3%	5.6%
Guilford	955	35.2	337	12.2	22.6%	2.6%
Halifax	157	44.1	74	20.2	19.1%	5.1%
Harnett	213	38.9	84	15.3	22.1%	3.3%
Haywood	154	33.5	48	10.2	17.5%	4.5%
Henderson	359	41.1	132	14.2	18.1%	5.3%
Hertford	65	40.6	37	23.0	23.1%	3.1%
Hoke	61	31.8	16	8.9	21.3%	3.3%
Hyde**	13	34.1	11	28.1	7.7%	0.0%
Iredell	381	41.5	144	16.2	24.7%	1.3%
Jackson	99	44.2	36	16.6	26.3%	3.0%
Johnston	293	35.1	123	14.3	21.8%	5.5%
Jones*	30	42.0	12	20.4	26.7%	3.3%
Lee	148	45.0	66	19.6	20.3%	4.1%

Green indicates low-risk      Yellow indicates average risk      Red indicates high-risk

County	Number of Cases 2010-2014	Incidence Rate 2010-2014	Number of Deaths 2011-2015	Mortality Rate 2011-2015	Distant Stage Diagnosis 2010-2014	Uninsured at Diagnosis 2010-2014
<b>North Carolina</b>	<b>20,407</b>	<b>37.7</b>	<b>7,701</b>	<b>14.0</b>	<b>21.7%</b>	<b>3.8%</b>
Lenoir	161	42.2	81	20.8	19.3%	0.0%
Lincoln	149	32.6	62	14.0	22.1%	2.7%
McDowell	141	49.3	55	19.0	21.9%	3.1%
Macon	128	46.6	43	15.9	17.5%	6.3%
Madison*	63	41.2	14	10.0	22.0%	4.9%
Martin	82	46.5	36	19.8	22.0%	1.4%
Mecklenburg	1,464	34.7	528	12.4	24.1%	5.5%
Mitchell	53	44.6	16	12.0	13.2%	0.0%
Montgomery	86	47.3	26	13.7	24.4%	2.3%
Moore	254	35.2	79	10.1	20.5%	2.8%
Nash	228	39.0	103	17.9	19.3%	5.3%
New Hanover	355	29.6	130	10.3	20.6%	4.5%
Northampton	69	41.7	24	14.1	11.6%	4.3%
Onslow	252	40.4	62	10.5	18.3%	2.4%
Orange	211	33.1	60	9.9	22.3%	6.2%
Pamlico*	39	38.8	12	11.8	15.4%	2.6%
Pasquotank	108	47.8	44	18.6	19.4%	7.4%
Pender	115	34.3	43	12.7	17.4%	0.9%
Perquimans	38	38.5	17	16.0	18.4%	5.3%
Person	102	41.8	47	18.5	31.4%	2.0%
Pitt	261	33.5	100	13.0	21.5%	5.0%
Polk	50	28.4	22	11.7	14.0%	6.0%
Randolph	351	41.6	114	13.3	22.2%	4.6%
Richmond	118	42.3	41	14.0	19.5%	4.2%
Robeson	264	38.2	128	18.8	22.7%	5.7%
Rockingham	278	43.8	112	17.6	21.9%	3.6%
Rowan	356	42.2	153	18.0	18.8%	2.0%
Rutherford	186	40.6	97	21.4	22.6%	4.8%
Sampson	124	32.6	62	16.1	22.6%	6.5%
Scotland	98	48.5	26	11.8	21.4%	1.0%
Stanly	160	41.1	60	15.2	23.8%	1.3%
Stokes	126	39.7	46	14.6	18.3%	3.2%
Surry	185	38.3	89	17.7	23.8%	6.5%
Swain	54	60.9	16	18.3	20.4%	3.7%
Transylvania	99	35.9	30	11.1	20.2%	0.0%
Tyrrell**	10	33.9	2	6.7	20.0%	0.0%
Union	343	35.3	124	13.6	23.9%	3.5%
Vance	134	50.9	56	20.8	31.3%	8.2%
Wake	1,410	33.8	469	11.5	23.5%	4.3%
Warren	80	54.9	29	18.9	27.5%	0.0%
Washington	51	54.5	21	20.8	21.6%	2.0%
Watauga	67	26.0	18	6.8	14.9%	6.0%
Wayne	304	45.3	116	16.7	21.4%	2.0%
Wilkes	189	39.6	87	17.6	23.8%	0.5%
Wilson	166	33.2	75	15.1	20.5%	3.0%
Yadkin	86	34.4	28	11.4	23.3%	2.3%
Yancey*	41	28.4	14	11.1	22.0%	2.4%

\*Counties with mortality rates based on counts less than 16. Use these rates with caution.

\*\*Counties with incidence *and* mortality rates based on counts less than 16. Use these rates with caution.

Heat Map created by N.C. Comprehensive Cancer Control Program



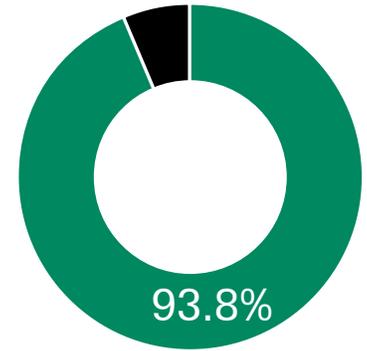
# Female Breast Cancer

Breast cancer is a malignant tumor that originates in cells in the breast. While men can get breast cancer, the burden of disease is almost entirely carried by women. It is the most frequently diagnosed cancer and the second leading cause of cancer deaths in women in North Carolina.<sup>29</sup> In 2017, an estimated 10,279 women will be diagnosed with breast cancer, and 1,428 women will die from breast cancer.

The strongest risk factor for breast cancer is being female. Other risk factors include increasing age, a family history of breast cancer, early puberty, late menopause, obesity, smoking and alcohol use. According to the American Institute for Cancer Research, 33% of female breast cancer cases are preventable by diet, physical activity and weight management.<sup>30</sup>

Mammograms are the most effective method to detect breast cancer early before it causes symptoms or can be detected by touch. According to the 2016 Behavioral Risk Factor Surveillance System (BRFSS) survey, 66.6% of North Carolina women reported “ever having a mammogram.”<sup>31</sup> Treatment is most successful

*continued on next page*



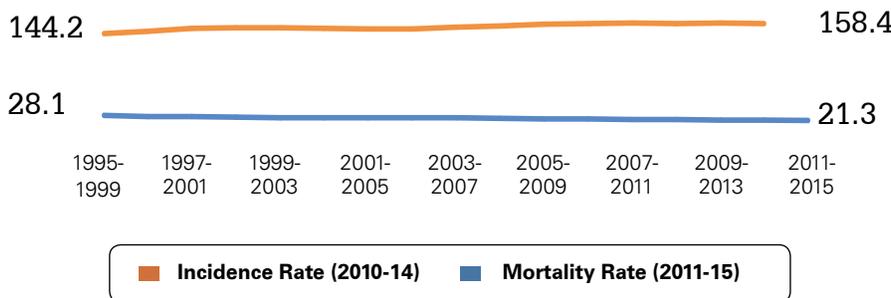
**N.C. Cumulative Relative 5-Year Female Breast Cancer Survival Rate 2010-2014** Survival Rate is in Green

**N.C. DATA:** Female breast cancer incidence in North Carolina steadily increased from 144.2 cases per 100,000 in 1995-1999 to 158.4 cases per 100,000 in 2010-2014. The latest available one-year incidence data for 2015 indicates a slight increase in incidence rate, reaching a rate of 160.2 per 100,000.

The female breast cancer mortality rate declined by 24.2% from the 1995-1999 measurement period at a rate of 28.1 cases per 100,000, to a rate of 21.3 per 10,000 in 2011-2015. The latest available one-year mortality data (2015) indicates a slight increase in the female breast cancer mortality rate, reaching a rate of 21.7 per 100,000. North Carolina lags behind the national rate, which stood at 20.5 deaths per 100,00 in 2014.<sup>32</sup>

## N.C. Female Breast Cancer Incidence and Mortality Rate 1995 to 2015

Age-adjusted rates per 100,000 women



<sup>29</sup> N.C. State Center for Health Statistics, North Carolina Department of Health and Human Resources. North Carolina Central Cancer Registry. Statistics and Reports: Cancer. <http://www.schs.state.nc.us/data/cancer/incidence/2014.htm>

<sup>30</sup> American Institute for Cancer Research, <http://www.aicr.org/can-prevent/need-to-know/preventable-cancers.html>

<sup>31</sup> N.C. State Center for Health Statistics, <http://www.schs.state.nc.us/data/brfss/2016/nc/all/hadmam.html>

<sup>32</sup> CDC 2014 National vs. State Comparisons, <https://nccd.cdc.gov/uscs/statevsnational.aspx>

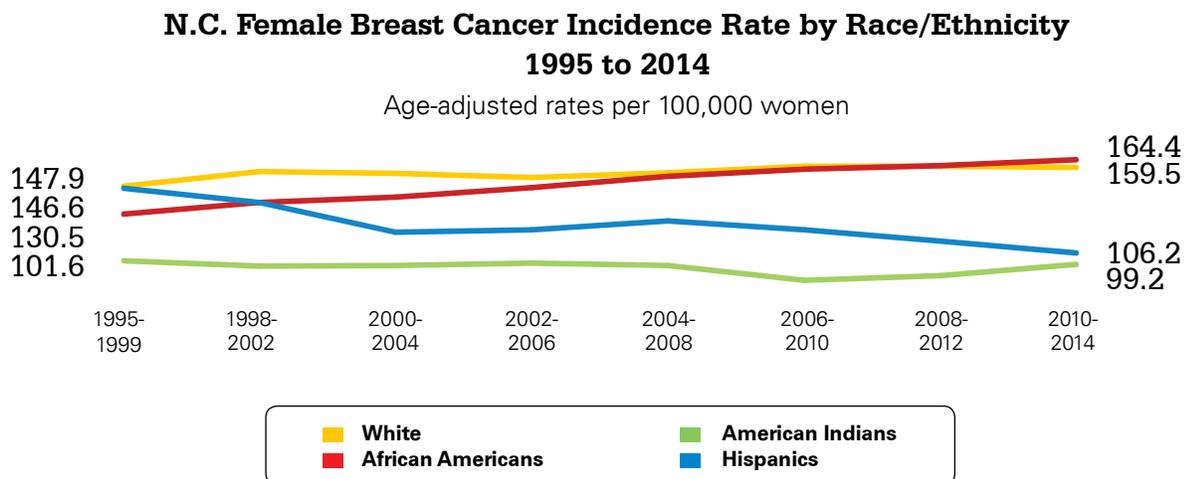
continued from page 49

when detected early and may include surgery, chemotherapy, radiation and other therapies. The five-year and ten-year relative survival rates for invasive breast cancer is 90% and 83%, respectively. Though survival rates for women have increased over time, African-American women still have a 10% lower five-year survival rate (82%) than White women (92%).<sup>33</sup>

## North Carolina Female Breast Cancer Rates by Race and Ethnicity

African-American women have the highest rates of breast cancer incidence and mortality compared to measurable racial/ethnic groups. White women have the second highest incidence and mortality. African-American women are the most likely racial/ethnic group to have their breast cancer discovered at a distant stage (cancer has spread to distant parts of the body). Lack of health insurance coverage for access to early screening, early detection and treatment contribute to higher breast cancer mortality rates for African Americans.<sup>34</sup> According to 2016 North Carolina BRFSS survey, 69.5% of non-Hispanic White women reported ever having a mammogram, compared to 64.5% of non-Hispanic African-American women.<sup>35</sup>

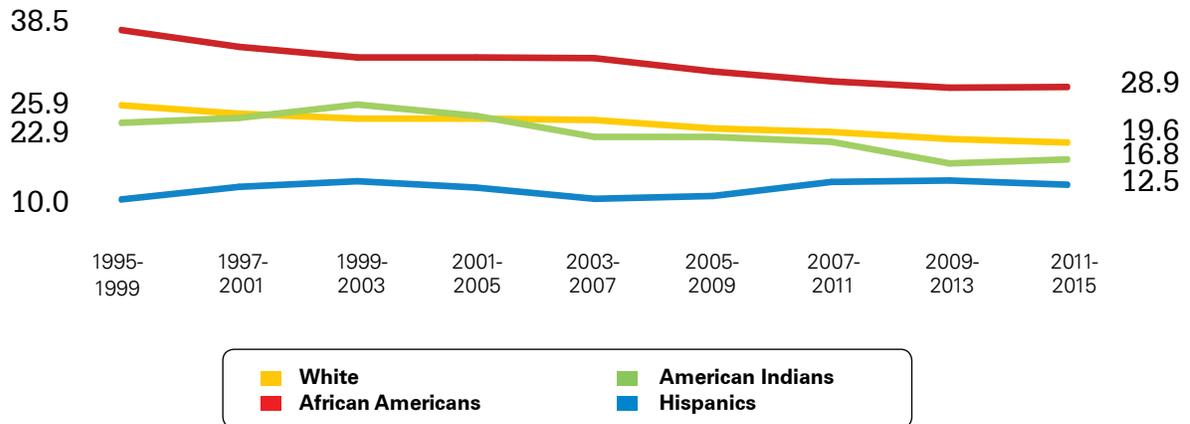
Recent research suggests that the more aggressive breast cancers are more common among younger African-American and Hispanic/Latina women living in areas of low socio-economic status. Cancer data for American-Indian women is subject to racial misclassification, which contributes to lower breast cancer incidence and death rates by as much as 40 to 57%.<sup>36</sup>



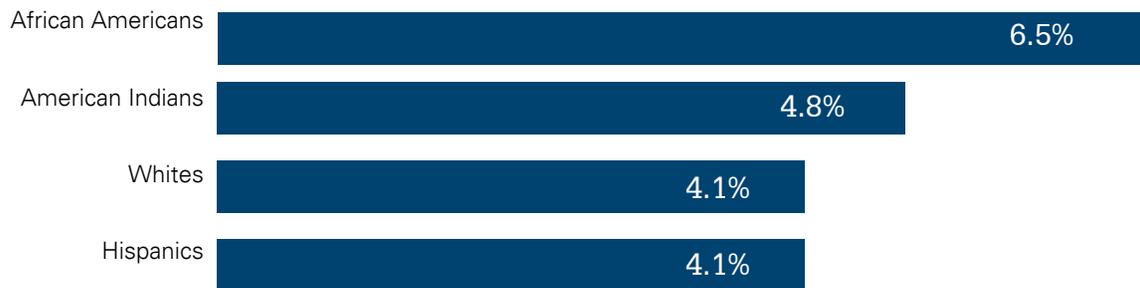
<sup>33</sup> NIH SEER Program: Cancer Stat Facts: Female Breast Cancer, <https://seer.cancer.gov/statfacts/html/breast.html>  
<sup>34</sup> National Cancer Institute: Cancer Health Disparities, <https://www.cancer.gov/about-nci/organization/crhd/cancer-health-disparities-fact-sheet#q6>  
<sup>35</sup> N.C. State Center for Health Statistics, <http://www.schs.state.nc.us/data/brfss/2016/nc/all/hadmam.html>  
<sup>36</sup> CDC: Interpreting Race and Ethnicity in Cancer Data, [https://www.cdc.gov/cancer/npcr/uscs/technical\\_notes/interpreting\\_race.htm](https://www.cdc.gov/cancer/npcr/uscs/technical_notes/interpreting_race.htm)

### N.C. Female Breast Cancer Mortality Rate by Race/Ethnicity 1995 to 2015

Age-adjusted rates per 100,000 women

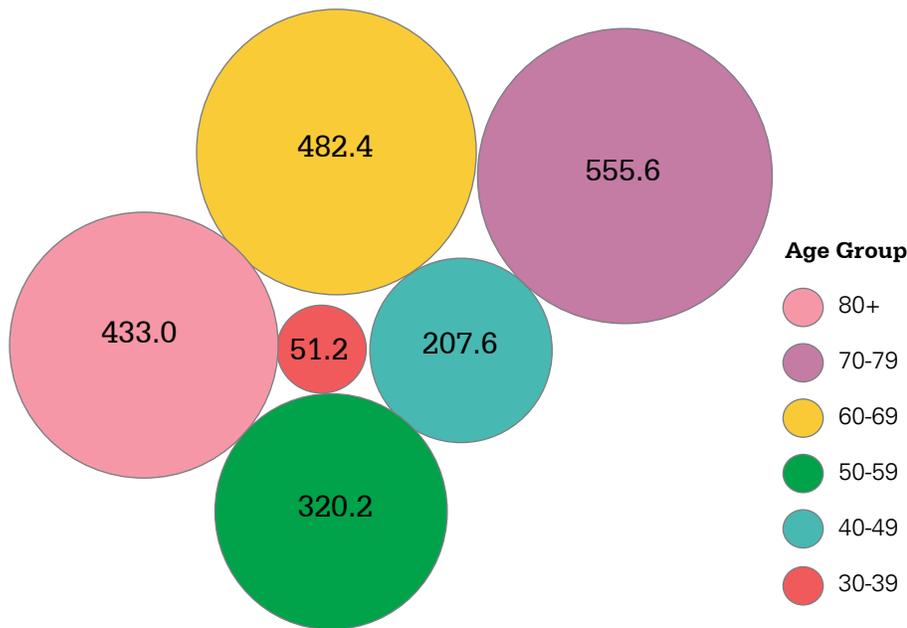


### N.C. Female Breast Cancer Distant Stage Diagnosis by Race/Ethnicity 2010-2014



### N.C. 2010-2014 Female Breast Cancer Incidence Rate by Age Group

Age-adjusted rates per 100,000 women

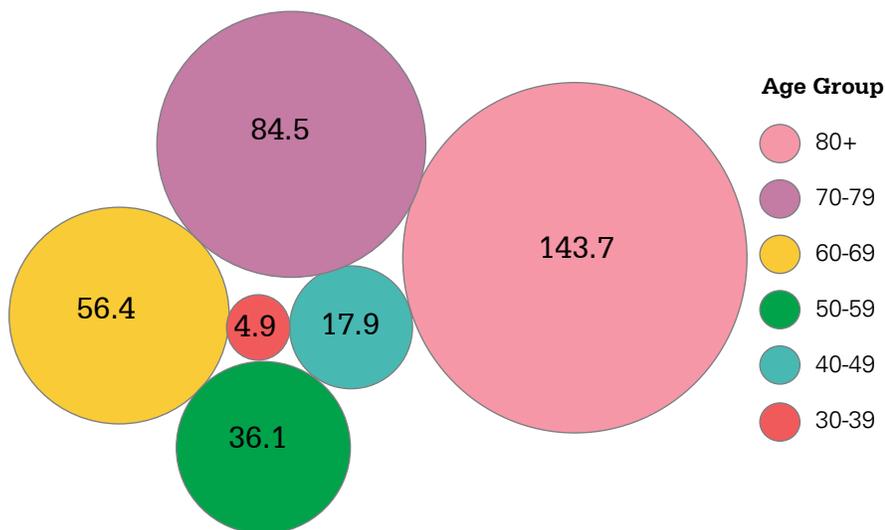


### North Carolina Female Breast Cancer Rates by Age Group

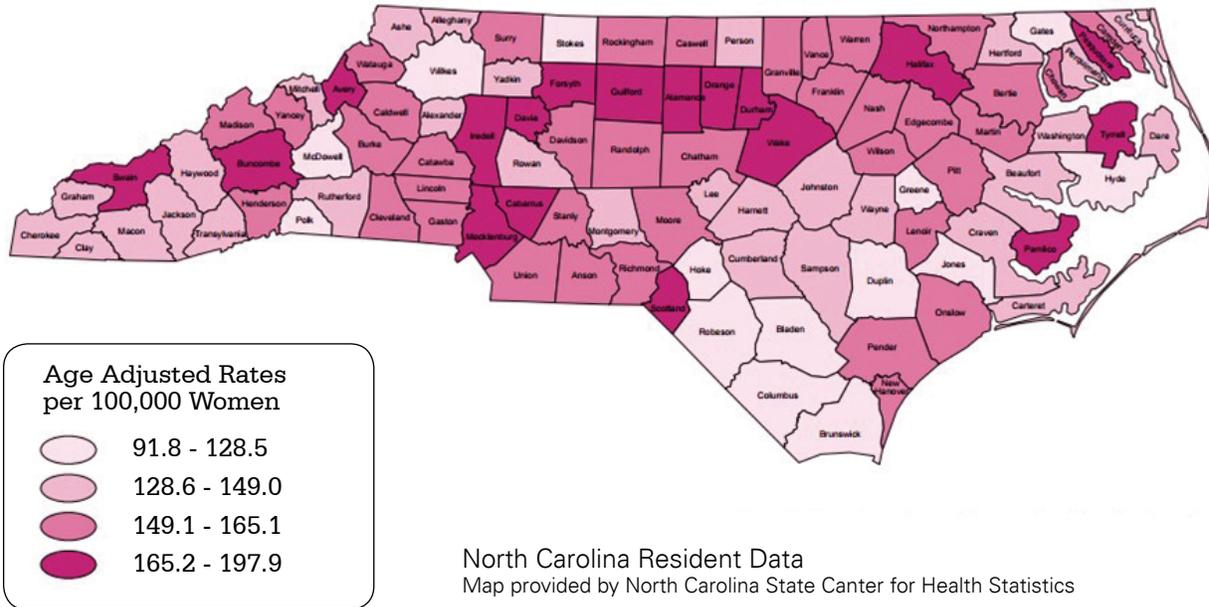
Fewer than 5% of women of diagnosed with breast cancer between 2010 and 2014 were under the age of 40. Breast cancer incidence increases with age among women between 40 to 70 years old. Cancer death also increases with age, with the highest mortality rate of 143.7 deaths per 100,000 occurring among women over 80 years old in 2011-2015.

### N.C. 2011-2015 Female Breast Cancer Mortality Rate by Age Group

Age-adjusted rates per 100,000 women



## N.C. Female Breast Cancer Incidence Rates 2010-2014

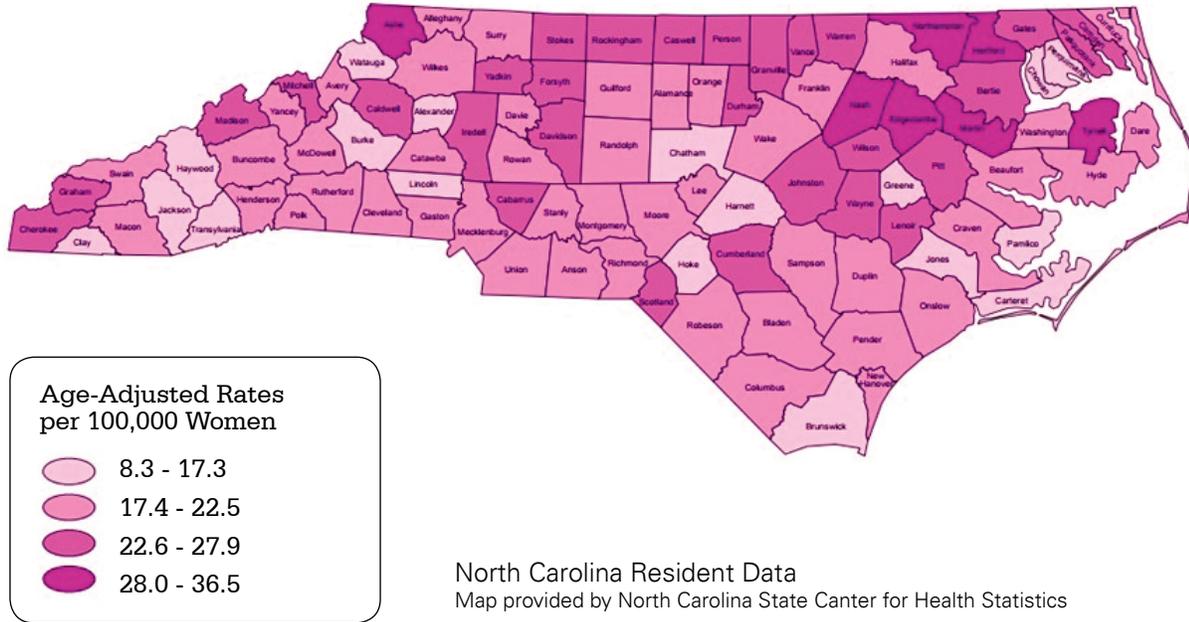


### N.C. Counties with Female Breast Cancer Incidence Rates Exceeding 165.1 cases per 100,000.<sup>37</sup>

County	Number of Cases	2010-2014 Incidence Rate	County	Number of Cases	2010-2014 Incidence Rate
<b>North Carolina</b>	<b>46,420</b>	<b>158.4</b>	Mecklenburg	4,252	173.2
Tyrrell	25	197.9	Alamance	860	172.9
Durham	1,368	183.9	Iredell	855	172.9
Guilford	2,662	179.9	Cabarrus	886	172.0
Orange	645	177.9	Wake	4,141	171.5
Pamlico	91	175.3	Pasquotank	214	170.9
Forsyth	1,894	174.2	Swain	82	170.7
Halifax	327	173.6	Scotland	190	169.8
Davie	252	173.5	Avery	97	166.8
Buncombe	1,441	173.3			

<sup>37</sup> N.C. State Center for Health Statistics: Cancer Incidence, <http://www.schs.state.nc.us/data/cancer/incidence/2014.htm>

## N.C. Female Breast Cancer Mortality Rates 2011-2015



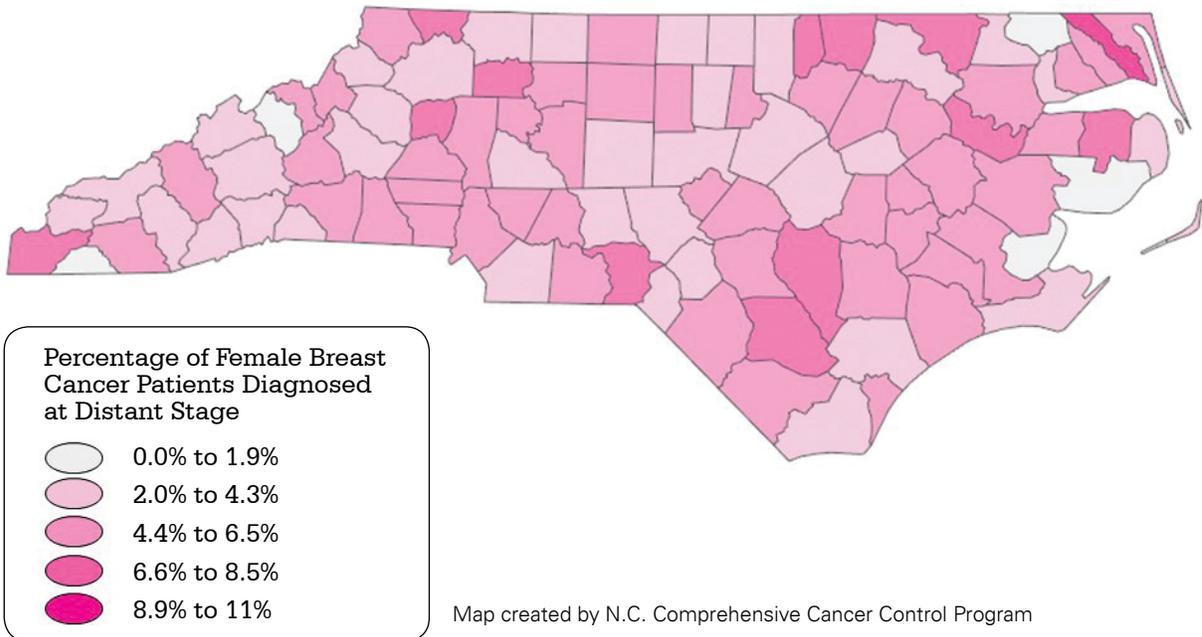
### N.C. Counties with Female Breast Cancer Mortality Rates Exceeding 27.9 per 100,000<sup>38</sup>

County	Number of Deaths	2011-2015 Mortality Rate	County	Number of Deaths	2011-2015 Mortality Rate
<b>North Carolina</b>	<b>6,553</b>	<b>21.3</b>	Northampton	25	30.7
Tyrrell*	5	34.0	Edgecombe	61	29.9
Martin	32	33.1	Hertford	23	29.5
Nash	99	31.1	Ashe	27	29.4

\*Counties with mortality rates based on counts less than 16. Use these rates with caution.

<sup>38</sup> N.C. State Center for Health Statistics: Cancer Mortality, [http://www.schs.state.nc.us/data/cancer/mortality\\_rates.htm](http://www.schs.state.nc.us/data/cancer/mortality_rates.htm)

**N.C. Female Breast Cancer Distant Stage Diagnosis by County  
2010-2014**



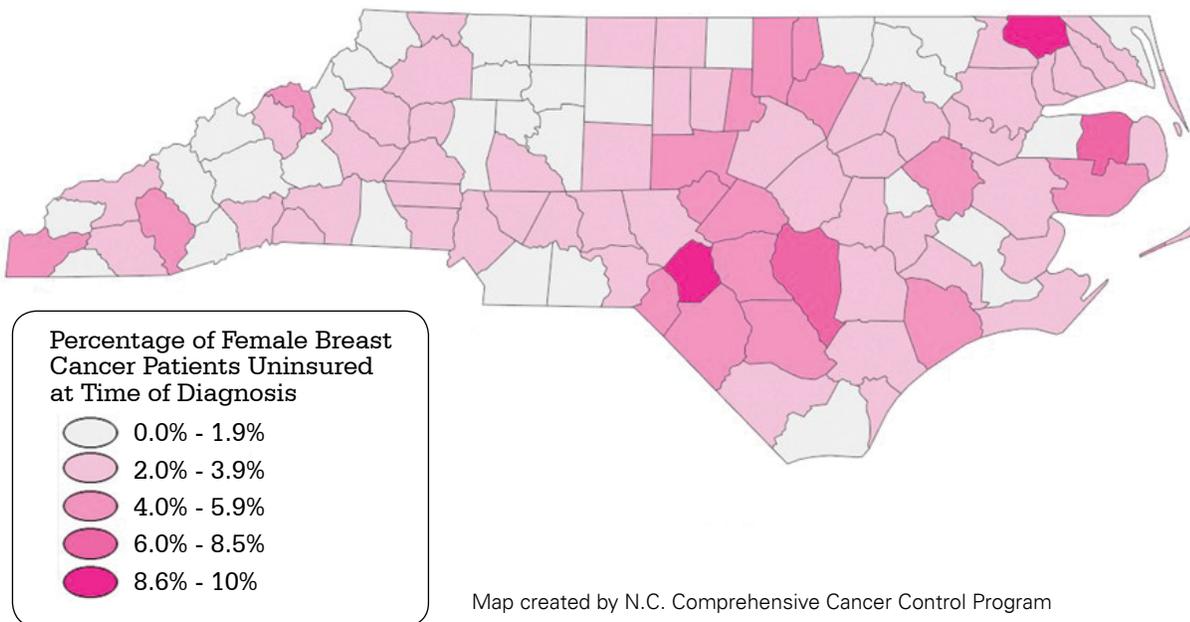
**N.C. Counties with Distant Stage Female Breast Cancer Diagnosis Percentages Exceeding 6.5%**

County	Distant Stage Diagnosis Percentage	County	Distant Stage Diagnosis Percentage
<b>North Carolina</b>	<b>4.6%</b>	Warren	7.1%
Camden	10.9%	Cherokee	7.1%
Northampton	8.6%	Richmond	7.0%
Martin	8.2%	Yadkin	6.8%
Tyrrell	8.0%	Vance	6.7%
Bladen	7.8%	Alleghany	6.6%
Alexander	7.4%	Columbus	6.5%
Sampson	7.1%		

## North Carolina Female Breast Cancer Cases Uninsured at Diagnosis by County

Under-and-uninsured women in North Carolina may access free or lower-cost breast cancer screening services through the N.C. Breast and Cervical Cancer Control Program (N.C. BCCCP) in the Cancer Prevention and Control Branch, N.C. Division of Public Health. Those who do not qualify for N.C. BCCCP services or are not diagnosed through N.C. BCCCP providers require alternate avenues for treatment. In total, 2.8% of North Carolina women diagnosed with breast cancer were uninsured at the time of diagnoses between 2010 and 2014.

**N.C. Female Breast Cancer Uninsured at Diagnosis by County  
2010-2014**



### N.C. Counties with Percentages of Uninsured Patients at Diagnosis Exceeding 5.9%

County	Percent Uninsured at Diagnosis	County	Percent Uninsured at Diagnosis
<b>North Carolina</b>	<b>2.8%</b>	Tyrrell	8.0%
Gates	10.0%	Sampson	6.4%
Hoke	8.6%	Mitchell	6.0%

**N.C. County Rankings (Female Breast Cancer Incidence, Mortality, Distant-Stage Diagnosis and Insurance Status)** The 20 counties with the highest rates or percentages by data category are listed below in descending order with the highest rate or percentage listed first.

Incidence Rate 2010-2014	Mortality Rate 2011-2015	Distant Stage Diagnosis 2010-2014	Uninsured at Diagnosis 2010-2014
Tyrrell	Tyrrell*	Camden	Gates
Durham	Martin	Northampton	Hoke
Guilford	Nash	Martin	Tyrrell
Orange	Northampton	Tyrrell	Sampson
Pamlico	Edgecombe	Bladen	Mitchell
Forsyth	Hertford	Alexander	Pitt
Halifax	Ashe	Sampson	Robeson
Davie	Caswell	Warren	Jackson
Buncombe	Gates*	Cherokee	Franklin
Mecklenburg	Pitt	Richmond	Scotland
Alamance	Camden	Yadkin	Lee
Iredell	Vance	Vance	Bladen
Cabarrus	Bertie	Alleghany	Onslow
Wake	Mitchell	Columbus	Durham
Pasquotank	Graham*	Rockingham	Cumberland
Swain	Wilson	Ashe	Cherokee
Scotland	Pasquotank	Avery	Harnett
Avery	Madison	Nash	Hyde
Bertie	Cherokee	McDowell	Chatham
Chowan	Durham	Mitchell	Vance

\*Counties with rates based on fewer than 16 cases. Use this rate with caution.

**N.C. Counties with Multiple Places Within the Bottom Quintile of the Above Categories**

Four Categories in Top Quintile	Three Categories in Top Quintile	Two Categories in Top Quintile		
Tyrrell	Cherokee	Avery	Martin	Pitt
	Durham	Bertie	Mitchell	Sampson
		Camden	Northampton	Scotland
		Gates	Pasquotank	Vance



## N.C. Female Breast Cancer Evidence-Based Intervention Strategies

There are many evidence-based intervention strategies to address female breast cancer. Below are just a few examples of CDC recommended evidence-based intervention strategies with suggested activities. Specific health equity activities are marked with an asterisk (\*).

**Intervention: Use group education and small media to increase community demand for breast cancer screening services.**

- Identify effective outreach efforts for women at elevated risk for breast cancer, particularly those who have been previously diagnosed with cancer and/or have relatives who were diagnosed with breast cancer.
- Conduct messaging campaigns (e.g., posters or placards on buses) to increase awareness of the importance of age-appropriate breast cancer screening.
- Re-assess breast cancer screening promotion and education efforts in bottom 20 ranked counties for distant stage diagnosis, incidence and mortality.
- \*Enhance early detection efforts in counties with higher rates of late stage diagnosis.
- Organize cancer partners within or near counties with low breast cancer screening rates to work together to increase breast cancer screenings and make referrals to community partners with prevention-related programs.
- Identify partners to create or adopt small media campaign(s) to increase awareness about the importance of mammograms and the importance of following up with appropriate treatment, if needed.
- \*Provide and/or sponsor educational opportunities and outreach efforts to reach targeted populations and communities.
- \*Use linguistically and culturally appropriate health education materials and interpreter services, as needed.
- Educate the public that cancer is a chronic disease and people can and do survive.



- \*Develop strong partnerships with local health departments, Federally Qualified Health Centers (FQHCs) and other women's health care organizations that offer or have the potential of offering N.C. Breast and Cervical Cancer Control Program (N.C. BCCCP) services. Create a referral process for eligible women to receive low or no cost mammograms.
  - \*Explore opportunities for addressing the transportation barriers for low-income women, (e.g., local transportation system providing no or low fares).
  - Encourage government and businesses to provide health insurance coverage to all workers and to allow paid time off to get appropriate screenings.
  - \*Identify and evaluate culturally-appropriate outreach and education efforts, especially for the most vulnerable populations.
  - \*Encourage providers to use lay health advisors, native language speakers or health educators to provide education about risk factors and preventive health behaviors and addressing barriers to care.
- 
- Encourage providers to use patient reminders (e.g., reminder cards, email, text messages, etc.) and client incentives to encourage use of clinical services.
  - Offer assistance to providers to establish a patient reminder process, if they do not have one in place.
  - Request appointment reminder cards from N.C. Breast and Cervical Cancer Control Program.
- 
- \*Maintain and/or cultivate traditional and non-traditional partnerships with community organizations that serve African-American, Hispanic and American-Indian women to raise awareness of breast cancer screening and early detection, as well as services like N.C. BCCCP which are available to eligible women.

**Intervention: Reduce barriers to increase community access to cancer screening.**

**Intervention: Client reminders to increase community demand for cancer clinical services.**

**Intervention: Multicomponent interventions to influence health behaviors.**



Intervention: Adopt organizational policies and practices to improve healthy behaviors.

- Encourage businesses, governments, schools, community colleges and universities to adopt policies and practices that support healthy behaviors, (e.g., tobacco-free policies, paid leave for annual physicals and routine screenings, healthy eating and physical activities opportunities).
- Encourage businesses to maintain a tobacco-free work place inside and outside of the buildings and to promote *QuitlineNC* to tobacco users.

Intervention: Develop and disseminate public education programs that empower survivors to make informed decisions.

- Team up with N.C. Breast and Cervical Cancer Control Program (N.C. BCCCP), local hospitals and Federally Qualified Health Centers (FQHCs) to offer cancer survivorship educational forums and classes for patients and caregivers. (Cancer survivorship begins at diagnosis and continues through a person's life.)
- Equip patient navigators and community health workers with educational resources to support their work to empower survivors to make informed decision thought out their cancer care.



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“Never give up and early detection saves lives.”

– Patricia, cancer survivor

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- Develop patient navigation protocol for providers to refer patients who do not qualify for N.C. BCCCP services to FQHCs.
- Educate primary care providers about the need to refer patients to N.C. BCCCP before diagnosis so the patient can get N.C. BCCCP services.
- \*Develop cultural sensitivity training for health care providers.

**Intervention: Provider assessment and feedback to increase service delivery by healthcare providers.**

- Support or develop media educational campaign(s) to reduce tobacco use initiation and increase awareness and knowledge of the risk of cancer.
- Support messaging campaigns about cancer risk factors that include tobacco use and exposure to secondhand smoke.

**Intervention: Mass media educational campaigns to reduce tobacco use initiation.**

## Resources

- Consult with the N.C. Comprehensive Cancer Control Program (N.C. CCCP) for technical assistance and resource suggestions.  
<http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm>
- Use *A Call to Action: North Carolina Comprehensive Cancer Control Plan 2014-2020* for information and additional strategies. <http://www.ncpublichealth.com/chronicdiseaseandinjury/cancerpreventionandcontrol/docs/ComprehensiveCancerControlPlan-2014-2020.pdf>
- Partner with the N.C. Advisory Committee on Cancer Coordination and Control, its Subcommittees and Cancer Partners to develop and implement cancer prevention and control programs.  
<http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/acccc.htm>
- Partner with N.C. Community and Clinical Connections for Prevention and Health to increase physical activity and healthy eating opportunities. <http://www.communityclinicalconnections.com>
- Partner with N.C. CCCP and N.C. Tobacco Prevention and Control Branch (N.C. TPCB) for technical assistance with producing messaging campaigns on smoking, lung cancer, and the benefits of quitting.
  - N.C. CCCP – <http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm>
  - N.C. TPCB – <http://www.tobaccopreventionandcontrol.ncdhhs.gov/>
  - *QuitlineNC* – <http://www.quitlinenc.com/>
- Partner with N.C. Comprehensive Cancer Control Program (N.C. CCCP), N.C. Breast and Cervical Cancer Control Program (N.C. BCCCP) and N.C. WISEWOMAN Program for technical assistance on producing messaging campaigns and other programs.
  - N.C. CCCP – <http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm>
  - N.C. BCCCP – <http://bcccp.ncdhhs.gov/>
  - N.C. WISEWOMAN - <http://bcccp.ncdhhs.gov/wisewoman.htm>
- Explore The Community Guide from CDC for evidence-based recommendations about community preventive services, programs and policies to improve health.  
<https://www.thecommunityguide.org/>
- Partner with American Cancer Society Cancer Action Network, Inc. (ACS CAN) a nonprofit, nonpartisan advocacy affiliate of the American Cancer Society to support evidence-based policy and legislative solutions designed to eliminate cancer as a major health problem.  
<http://www.acscan.org/>

- Work with American Cancer Society a community-based, voluntary health organization, for research, education, advocacy, and service to eliminate cancer as a major health problem by preventing cancer, saving lives, and diminishing suffering from cancer. <http://www.cancer.org/>
- Partner with Susan G. Komen North Carolina Triangle to the Coast for breast health services, breast cancer education and outreach. <http://komennctc.org/>
- Explore resources from the Patient Advocate Foundation for patient resources, case management and access to care services. <http://patientadvocate.org/>
- Link to resources from North Carolina Health Info, to find reliable, easy-to-use information on health insurance, choosing a provider or health care service and more. <http://www.nchealthinfo.org/>
- Connect with resources from Pretty in Pink Foundation to provide uninsured and under-insured breast cancer patients with financial assistance for quality, life-saving medical treatment. <http://prettyinpinkfoundation.org/>




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“...we can live with hope because we are not alone in this journey.”

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– Lidia and Ana Maria,  
breast cancer survivors

# Heat Map - Female Breast Cancer Statistics by N.C. County

Green indicates low-risk      Yellow indicates average risk      Red indicates high-risk

County	Number of Cases	Incidence Rate	Number of Deaths	Mortality Rate	Distant Stage	Uninsured at
	2010-2014	2010-2014	2011-2015	2011-2015	Diagnosis 2010-2014	Diagnosis 2010-2014
<b>North Carolina</b>	<b>46,420</b>	<b>158.4</b>	<b>6,553</b>	<b>21.3</b>	<b>4.6%</b>	<b>2.8%</b>
Alamance	860	172.9	115	21.3	5.0%	2.6%
Alexander	175	143.1	21	15.9	7.4%	2.9%
Alleghany*	61	137.7	9	18.4	6.6%	3.3%
Anson	124	154.5	19	21.3	4.8%	1.6%
Ashe	145	138.6	27	29.4	6.2%	0.7%
Avery*	97	166.8	12	23.1	6.2%	0.0%
Beaufort	270	148.7	36	18.9	5.9%	2.2%
Bertie	120	165.1	20	26.4	5.0%	3.3%
Bladen	116	92.8	23	18.0	7.8%	5.2%
Brunswick	610	127.4	85	17.5	3.6%	1.1%
Buncombe	1441	173.3	166	17.8	4.2%	1.7%
Burke	498	160.4	50	15.6	2.6%	3.4%
Cabarrus	886	172.0	120	22.8	4.6%	2.6%
Caldwell	441	161.0	64	22.4	2.3%	2.7%
Camden*	46	151.1	9	26.6	10.9%	2.2%
Carteret	382	147.6	45	15.0	4.2%	2.4%
Caswell	128	155.3	25	27.6	3.1%	3.9%
Catawba	787	159.3	112	20.3	5.3%	2.7%
Chatham	407	161.0	43	14.3	2.9%	4.2%
Cherokee	156	144.7	30	25.3	7.1%	4.5%
Chowan*	89	163.8	9	13.7	2.2%	3.4%
Clay*	62	130.5	9	14.7	1.6%	1.6%
Cleveland	507	153.2	77	22.6	5.1%	1.6%
Columbus	231	121.4	38	20.2	6.5%	2.2%
Craven	478	148.6	76	21.7	4.4%	1.5%
Cumberland	1175	144.6	204	25.0	5.9%	4.5%
Currituck*	108	142.2	14	18.6	5.6%	0.9%
Dare	175	148.0	21	19.3	3.4%	2.9%
Davidson	840	158.6	129	23.2	4.4%	1.4%
Davie	252	173.5	30	20.3	5.6%	0.8%
Duplin	238	128.1	39	20.1	4.6%	3.8%
Durham	1368	183.9	194	25.2	4.7%	5.0%
Edgecombe	288	150.9	61	29.9	5.9%	2.1%
Forsyth	1894	174.2	285	25.0	5.0%	1.5%
Franklin	301	153.8	45	22.0	5.3%	5.3%
Gaston	998	153.0	126	18.7	4.5%	2.2%
Gates*	40	101.4	12	27.4	0.0%	10.0%
Graham*	46	145.9	8	26.1	2.2%	0.0%
Granville	269	153.2	41	22.0	3.3%	4.1%
Greene*	55	91.8	12	15.8	5.5%	1.8%
Guilford	2662	179.9	320	20.4	4.4%	1.8%
Halifax	327	173.6	45	21.2	3.4%	1.5%
Harnett	452	146.2	53	16.8	4.9%	4.4%
Haywood	322	144.0	36	14.1	5.9%	1.9%
Henderson	689	158.1	88	17.9	3.3%	2.2%
Hertford	119	141.5	23	29.5	2.5%	2.5%
Hoke*	139	123.3	14	11.3	4.3%	8.6%
Hyde*	23	111.9	3	19.2	0.0%	4.3%
Iredell	855	172.9	121	23.3	5.0%	1.6%
Jackson	167	134.1	20	16.0	3.6%	5.4%
Johnston	679	138.8	112	22.6	3.4%	3.2%
Jones*	51	122.7	2	8.2	5.9%	3.9%
Lee	268	148.3	41	20.7	5.2%	5.2%
Lenoir	324	152.1	55	24.7	5.9%	2.2%

Green indicates low-risk      Yellow indicates average risk      Red indicates high-risk

County	Number of Cases	Incidence Rate	Number of Deaths	Mortality Rate	Distant Stage	Uninsured at
	2010-2014	2010-2014	2011-2015	2011-2015	Diagnosis	Diagnosis
	2010-2014	2010-2014	2011-2015	2011-2015	2010-2014	2010-2014
<b>North Carolina</b>	<b>46,420</b>	<b>158.4</b>	<b>6,553</b>	<b>21.3</b>	<b>4.6%</b>	<b>2.8%</b>
Lincoln	387	150.6	44	16.7	4.7%	2.1%
Macon	198	145.8	32	21.1	6.1%	3.8%
Madison	208	153.3	19	25.5	5.3%	0.0%
Martin	110	160.1	32	33.1	2.7%	2.7%
McDowell	146	128.5	32	20.9	8.2%	1.0%
Mecklenburg	4252	173.2	545	21.7	4.6%	3.3%
Mitchell	84	141.4	16	26.2	6.0%	6.0%
Montgomery	129	138.5	19	21.4	3.1%	3.9%
Moore	554	160.3	73	18.9	4.3%	2.7%
Nash	485	153.9	99	31.1	6.2%	3.7%
New Hanover	1001	156.7	139	19.8	4.6%	2.1%
Northampton	128	154.5	25	30.7	8.6%	1.6%
Onslow	524	154.4	73	21.6	5.9%	5.2%
Orange	645	177.9	72	20.0	3.4%	2.6%
Pamlico*	91	175.3	11	17.2	1.1%	3.3%
Pasquotank	214	170.9	35	25.7	5.6%	3.7%
Pender	275	157.6	36	19.6	2.9%	2.2%
Perquimans*	82	146.0	8	16.6	4.9%	2.4%
Person	187	144.9	31	23.0	2.7%	1.6%
Pitt	678	157.5	123	27.1	5.5%	5.9%
Polk	91	100.0	21	21.8	3.3%	2.2%
Randolph	683	151.1	90	18.7	4.2%	2.8%
Richmond	230	161.6	31	20.2	7.0%	3.9%
Robeson	414	108.2	78	20.1	5.1%	5.6%
Rockingham	507	158.9	81	23.6	6.3%	2.2%
Rowan	646	149.0	99	21.4	3.7%	2.3%
Rutherford	333	137.3	55	21.4	5.7%	3.0%
Sampson	280	141.5	44	21.4	7.1%	6.4%
Scotland	190	169.8	28	24.3	4.2%	5.3%
Stanly	291	150.1	46	21.7	4.5%	3.1%
Stokes	209	126.2	40	23.2	3.8%	0.0%
Surry	406	154.0	59	19.6	2.7%	1.7%
Swain*	82	170.7	10	21.4	2.4%	2.4%
Transylvania	211	143.8	29	15.8	3.3%	0.5%
Tyrrell*	25	197.9	5	34.0	8.0%	8.0%
Union	875	157.4	102	19.1	4.0%	1.8%
Vance	240	162.6	40	26.5	6.7%	4.2%
Wake	4141	171.5	520	21.6	4.2%	2.7%
Warren	126	160.0	20	25.2	7.1%	1.6%
Washington*	63	135.6	11	21.8	4.8%	1.6%
Watauga	210	158.9	22	15.3	2.4%	1.0%
Wayne	555	146.6	92	23.5	5.4%	2.3%
Wilkes	289	119.0	51	19.1	3.5%	2.1%
Wilson	406	155.4	74	25.8	4.2%	3.9%
Yadkin	192	144.4	35	23.9	6.8%	1.6%
Yancey*	102	151.2	12	20.3	2.0%	2.9%

\*Counties with mortality rates based on counts less than 16. Use these rates with caution.

Heat Map created by N.C. Comprehensive Cancer Control Program



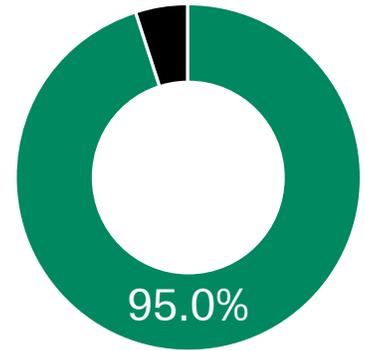
# Prostate Cancer

Prostate cancer is the presence of abnormal cells and/or a tumor in the prostate gland, a part of the male reproductive system. Prostate cancer was the fifth leading cause of cancer deaths in North Carolina in 2015 (4.7%). It is the most frequently diagnosed cancer in men.<sup>39</sup> It is estimated that 7,577 males in North Carolina will be diagnosed with prostate cancer, and 990 males will die from prostate cancer in 2017.

Risk factors for prostate cancer include being male, increasing age, African-American or American-Indian ancestry and a family history. Prostate cancer is more common in African-American men than men of other racial backgrounds. They are over two times more likely to die from prostate cancer than White men. Any man with a father, brother or son who has had prostate cancer is two to three times more likely to develop the disease.

There is no known cause of prostate cancer. Dietary practices such as eating red meats, dairy products, fatty foods and cooking meats at high temperatures appear to increase the risk of prostate cancer. Obesity appears to increase the risk of

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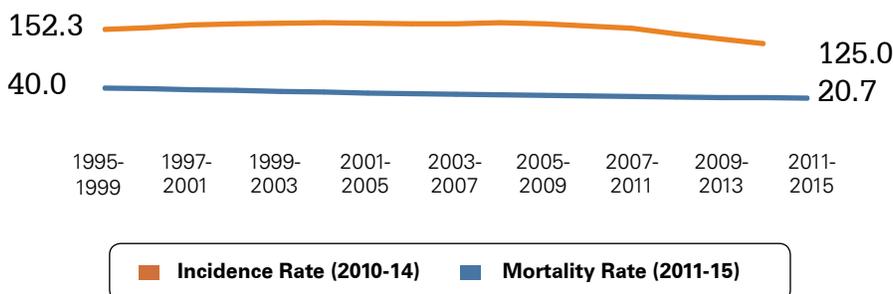
**N.C. Cumulative Relative 5-Year Prostate Cancer Survival Rate 2010-2014** Survival Rate is in Green

**N.C. DATA:** Prostate cancer incidence in North Carolina peaked in 2000-2004 at a rate of 164.8 cases per 100,000 population. Beginning with the 2007-2011 period, prostate cancer incidence has been on a rapid decline, dropping 19.3% from the 2007-2011 rate of 154.9 cases per 100,000 to 125.0 cases per 100,000 in 2010-2014. The latest available one-year incidence data for 2014 indicates a further decline in incidence rate, reaching a rate of 109.2 per 100,000. In 2014, the national prostate cancer incidence rate stood at 95.5 per 100,000.<sup>40</sup>

The prostate cancer mortality rate declined by 48.3% from the 1995-1999 measurement period at a rate of 40.0 cases per 100,000, to a low of 20.7 per 100,000 in 2011-2015. The latest available one-year mortality data (2015) indicates a continued decline in the prostate cancer mortality rate, reaching a rate of 20.7 per 100,000 in 2015. North Carolina still lags behind the national rate, however, which stood at 19.1 per per 100,000 in 2014.<sup>41</sup>

## N.C. Prostate Cancer Incidence and Mortality Rate 1995 to 2015

Age-adjusted rates per 100,000 men



<sup>39</sup> N.C. State Center for Health Statistics, [http://www.schs.state.nc.us/data/cancer/incidence\\_rates.htm](http://www.schs.state.nc.us/data/cancer/incidence_rates.htm)  
<sup>40</sup> CDC 2014 National vs. State Comparisons, <https://nccd.cdc.gov/uscs/statevsnational.aspx>  
<sup>41</sup> N.C. State Center for Health Statistics, [http://www.schs.state.nc.us/data/cancer/mortality\\_rates.htm](http://www.schs.state.nc.us/data/cancer/mortality_rates.htm)

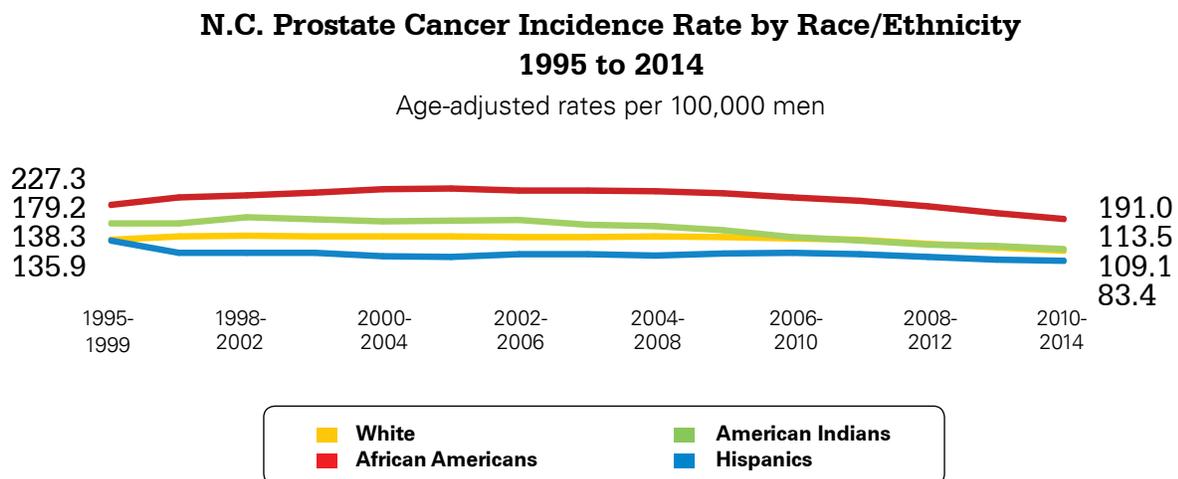
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aggressive prostate cancer. There is some evidence that occupational exposures to certain toxic chemicals increases the risk. Exercising and eating cruciferous vegetables such as broccoli, cabbage and cauliflower and foods with Lycopene may decrease the risk. Some forms of prostate cancer are so slow growing that they may not require treatment. For those who do need treatment, it may include surgery, active surveillance, chemotherapy, radiation and hormone therapy.

## North Carolina Prostate Cancer Rate by Race and Ethnicity

African-American males shoulder the heaviest burden of prostate cancer. The highest five-year incidence period for prostate cancer for male North Carolinians stood at 164.8 per 100,000 population from 2004-2008, but the African-American prostate cancer incidence rate reached as high as 269.1 per 100,000 from 2001-2005. As of 2010-2014, the African-American prostate cancer incidence rate stands at 191.0 per 100,000. According to the 2016 Behavioral Risk Factor Surveillance System (BRFSS) survey, 58.6% of White men reported “ever having a PSA test”, compared with 59.3% of African-American men.<sup>42</sup>

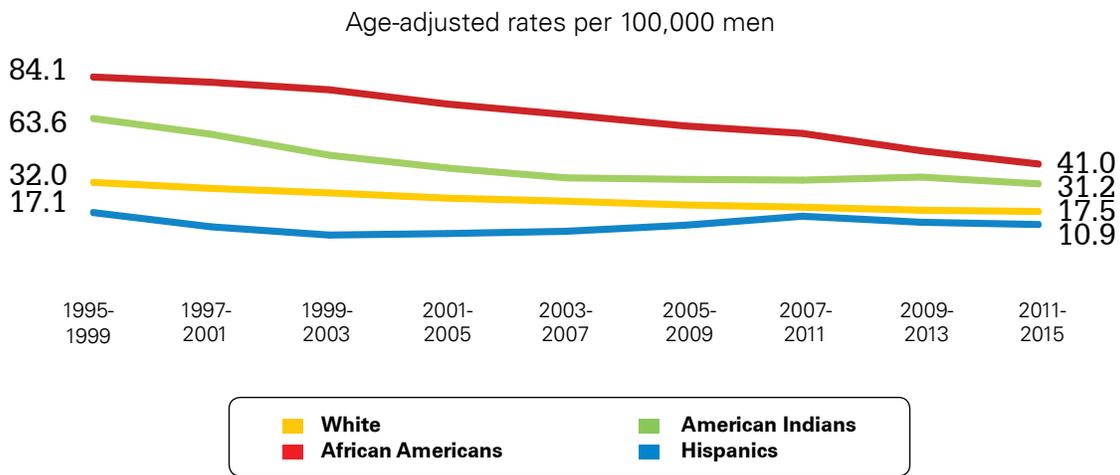
The American-Indian population also experiences a high burden of prostate cancer. Despite having a very similar prostate cancer incidence rate as Whites, their prostate cancer mortality rate is nearly twice as high. Despite consistently having the lowest incidence rate for prostate cancer, Hispanics are the most



<sup>42</sup> N.C. State Center for Health Statistics, <http://www.schs.state.nc.us/data/brfss/2016/nc/all/psatest1.html>

likely racial/ethnic group to have prostate cancer discovered at a distant stage (cancer has spread to distant parts of the body). Access to care is likely the main reason for this disparity. According to the U.S. Census Small Area Health Insurance Estimates, 33.4% of Hispanics under 65 years old were uninsured, as opposed to 16.2% of African Americans and 11.9% of Whites.<sup>43</sup>

### N.C. Prostate Cancer Mortality Rate by Race/Ethnicity 1995 to 2015



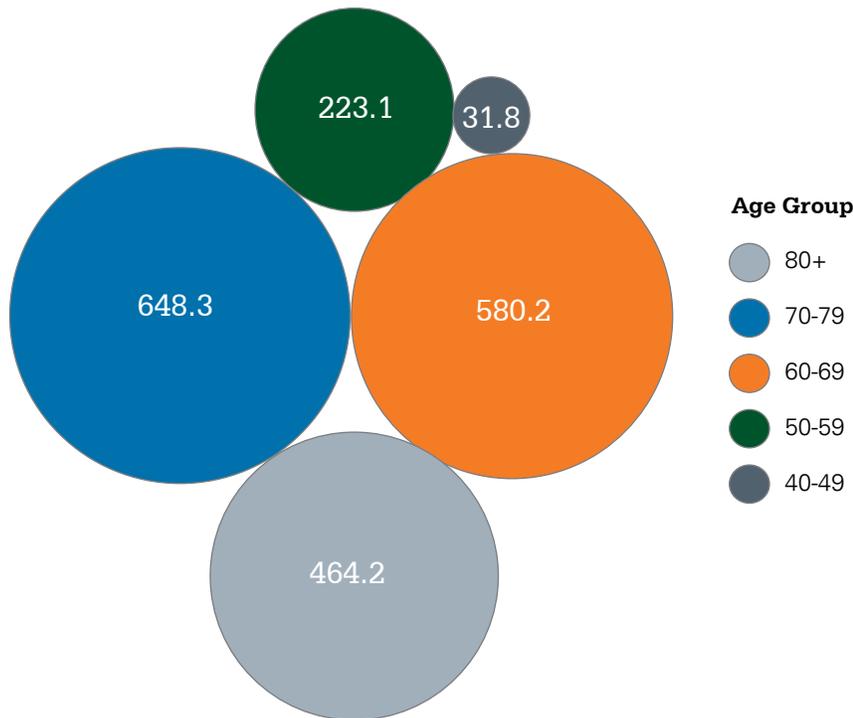
### N.C. Prostate Cancer Distant Stage Diagnosis by Race/Ethnicity 2010-2014



<sup>43</sup> <https://www.census.gov/programs-surveys/sahie.html>

### N.C. 2010-2014 Prostate Cancer Incidence Rate by Age Group

Age-adjusted rates per 100,000 men

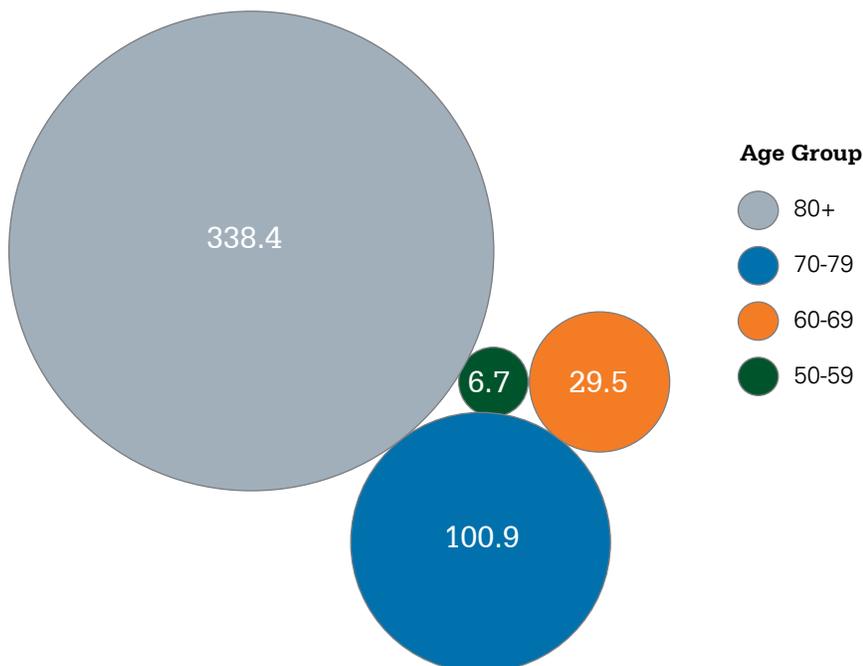


### North Carolina Prostate Cancer Rate by Age Group

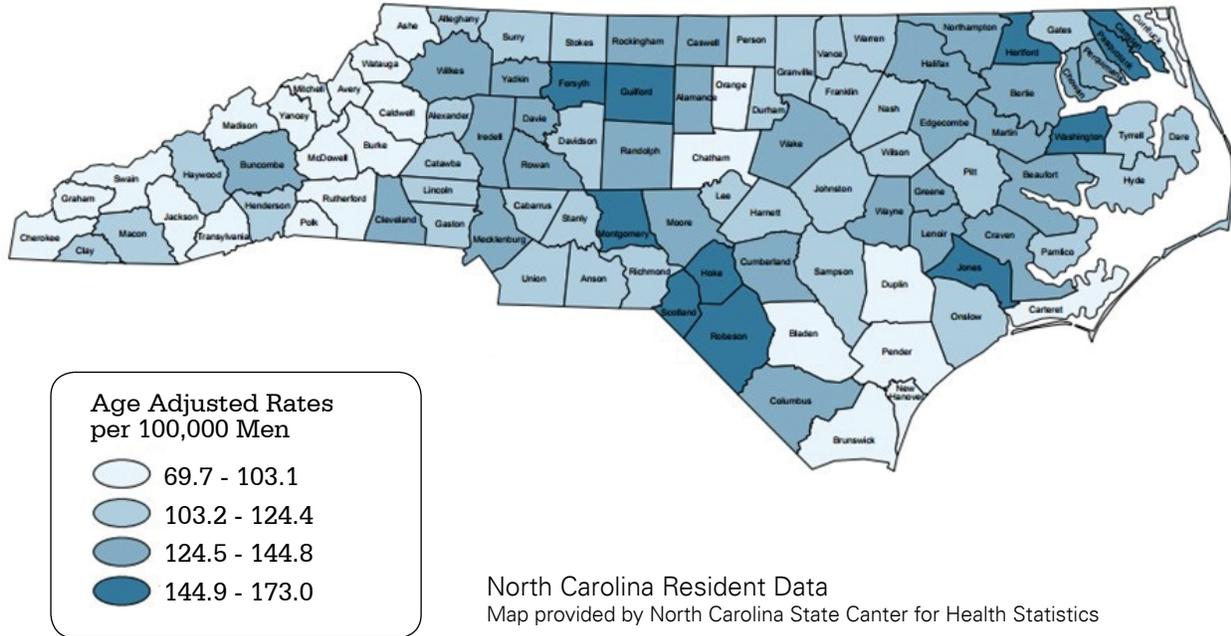
The risk for developing prostate cancer increases as one ages, rising significantly from an incidence rate of 31.8 per 100,000 in the 40-49 age range to 223.1 per 100,000 in the 50-59 age range. Prostate cancer incidence peaks in the 70-79 age range (648.3 per 100,000) and recedes again in the 80-plus age range (464.2 per 100,000). About 80% of prostate cancer cases occur in men over 65 years old. In terms of prostate cancer mortality, men 80 years of age or older are more than three times more likely to die from prostate cancer than men age 70-79.

### N.C. 2011-2015 Prostate Cancer Mortality Rate by Age Group

Age-adjusted rates per 100,000 men



## N.C. Prostate Cancer Incidence Rates 2010-2014

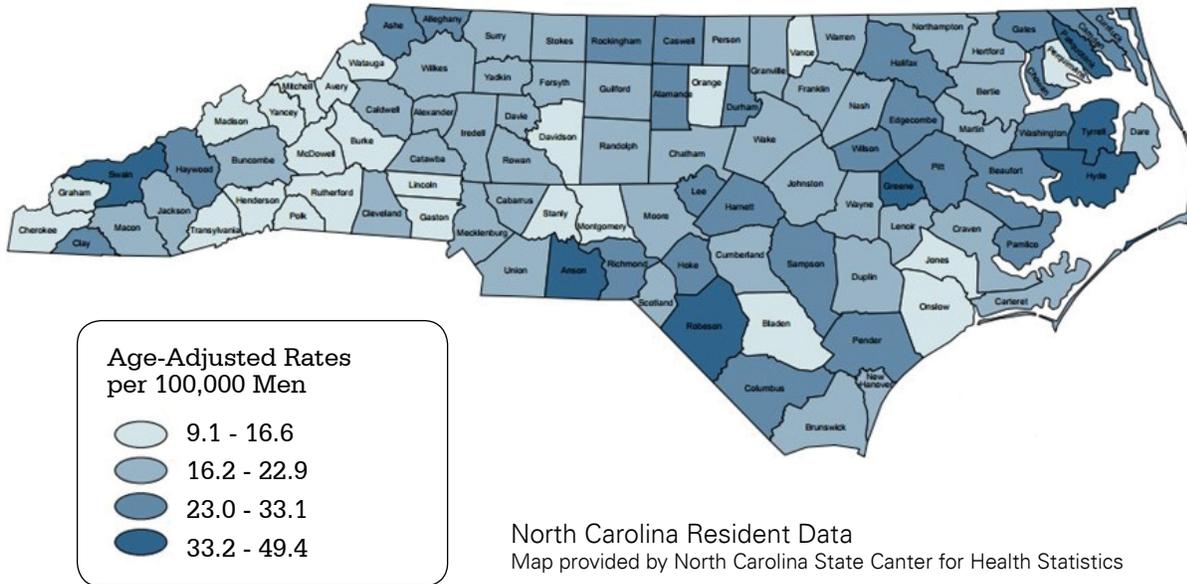


### N.C. Counties with Prostate Cancer Incidence Rates Exceeding 144.9 per 100,000<sup>44</sup>

County	Number of Cases	2010-2014 Incidence Rate	County	Number of Cases	2010-2014 Incidence Rate
<b>North Carolina</b>	<b>32,878</b>	<b>125.0</b>	Hertford	121	155.8
Scotland	181	173.0	Robeson	523	154.5
Hoke	153	171.1	Guilford	1,956	152.9
Jones	58	167.1	Washington	65	150.9
Camden	50	161.9	Pasquotank	163	147.1
Montgomery	138	156.6	Forsyth	1,375	146.9

<sup>44</sup> N.C. State Center for Health Statistics, [http://www.schs.state.nc.us/data/cancer/incidence\\_rates.htm](http://www.schs.state.nc.us/data/cancer/incidence_rates.htm)

## N.C. Prostate Cancer Mortality Rates 2011-2015



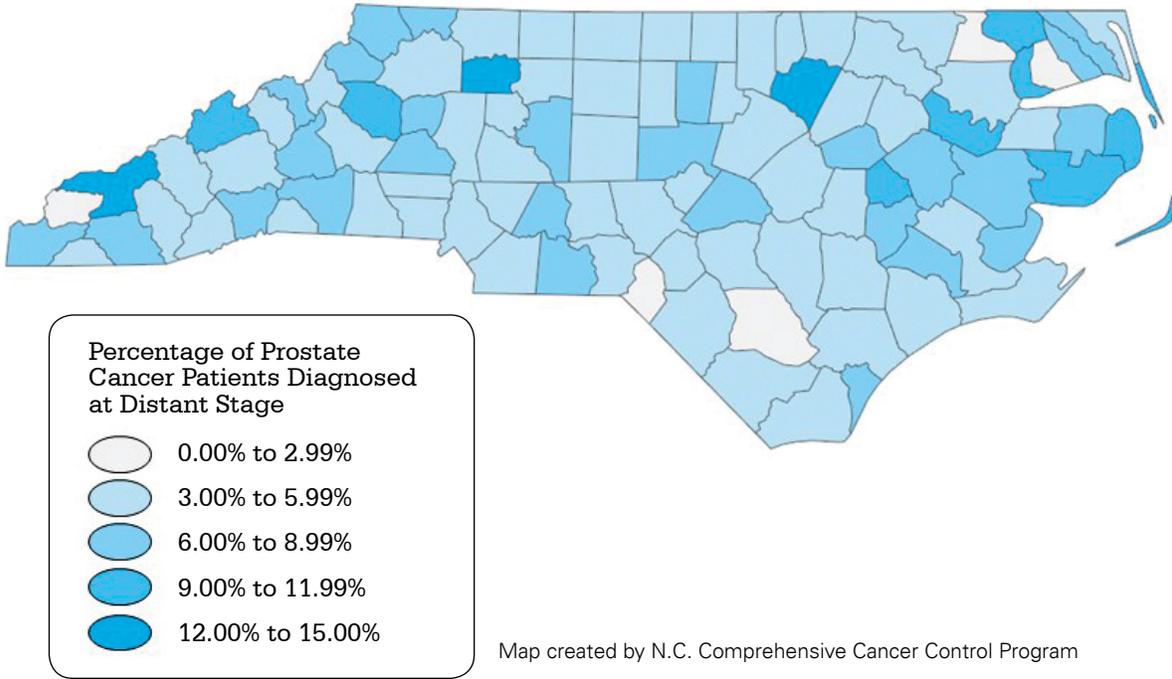
### N.C. Counties with Prostate Cancer Mortality Rates Exceeding 33.2 per 100,000<sup>45</sup>

County	Number of Deaths	2011-2015 Mortality Rate	County	Number of Deaths	2011-2015 Mortality Rate
<b>North Carolina</b>	<b>4,328</b>	<b>20.7</b>	Robeson	85	35.5
Greene	21	46.5	Pasquotank	32	34.8
Hyde*	6	46.4	Anson	20	34.1
Swain*	15	40.9	Halifax	45	33.4
Tyrrell*	4	36.1			

\*Counties with mortality rates based on counts less than 16. Use these rates with caution.

<sup>45</sup> N.C. State Center for Health Statistics, [http://www.schs.state.nc.us/data/cancer/mortality\\_rates.htm](http://www.schs.state.nc.us/data/cancer/mortality_rates.htm)

## N.C. Prostate Cancer Distant Stage Diagnosis by County 2010-2014



### N.C. Counties with Distant Stage Prostate Cancer Diagnosis Percentages Exceeding 9%

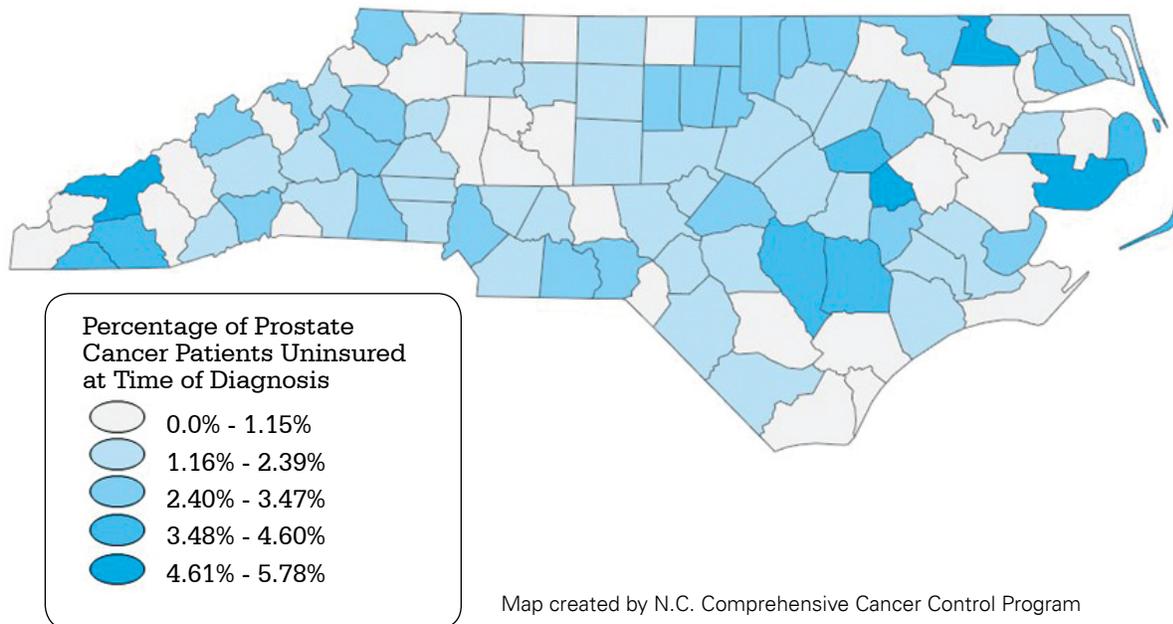
County	Distant Stage Diagnosis Percentage	County	Distant Stage Diagnosis Percentage
<b>North Carolina</b>	<b>5.2%</b>	Chowan	10.6%
Swain	15.0%	Dare	10.4%
Franklin	12.4%	Hyde	10.0%
Yadkin	12.1%	Caldwell	9.1%
Martin	11.9%	Gates	9.1%
Greene	11.6%	Madison	9.1%

Note: Cancers can be diagnosed at different stages in their development. The distant stage refers to when cancer has spread from the original tumor to distant organs or distant lymph nodes.

## North Carolina Prostate Cancer Cases Uninsured at Diagnosis by County

The percentage of prostate cancer cases and deaths are overwhelmingly represented by men over 60 years old. 63.2% of patients diagnosed with prostate cancer between 2010 and 2014 received their primary health insurance through some governmental program. In total, 1.9% of North Carolinians diagnosed with prostate cancer between 2010 and 2014 were uninsured. There are, however, a few counties in the state with higher levels of prostate cancer patients being uninsured at the time of diagnosis, including 10 counties in which the uninsured rate at the time of prostate cancer diagnosis meets or exceeds 3.5%.

**N.C. Prostate Cancer Uninsured at Diagnosis by County  
2010-2014**



### N.C. Counties with Percentages of Uninsured Patients at Diagnosis Exceeding 3.48%

County	Percent Uninsured at Diagnosis	County	Percent Uninsured at Diagnosis
<b>North Carolina</b>	<b>1.9%</b>	Macon	4.3%
Hertford	5.8%	Clay	3.8%
Hyde	5.0%	Sampson	3.8%
Swain	5.0%	Duplin	3.5%
Greene	4.7%	Wilson	3.5%
Dare	4.5%		

**N.C. County Rankings (Prostate Cancer Incidence, Mortality, Distant-Stage Diagnosis, and Insurance Status)** The 20 counties with the highest rates or percentages by data category are listed below in descending order with the highest rate or percentage listed first.

Incidence Rate 2010-2014	Mortality Rate 2011-2015	Distant Stage Diagnosis 2010-2014	Uninsured at Diagnosis 2010-2014
Scotland	Greene	Swain	Hertford
Hoke	Hyde*	Franklin	Swain
Jones	Swain*	Yadkin	Hyde
Camden	Tyrrell*	Martin	Greene
Montgomery	Robeson	Greene	Dare
Hertford	Pasquotank	Chowan	Macon
Robeson	Anson	Dare	Clay
Guilford	Halifax	Hyde	Sampson
Washington	Pender	Caldwell	Duplin
Pasquotank	Caswell	Gates	Wilson
Forsyth	Rockingham	Madison	Mitchell
Northampton	Alleghany*	Pamlico	Person
Greene	Gates*	Mitchell	Anson
Beaufort	Pamlico*	Pasquotank	Durham
Cumberland	Hoke	Alleghany	Warren
Caswell	Wilson	Ashe	Granville
Halifax	Columbus	Watauga	Alamance
Mecklenburg	Edgecombe	Stanly	Mecklenburg
Cleveland	Lee	Alexander	Pamlico
Iredell	Clay*	Cherokee	Harnett

\*Counties with rates based on fewer than 16 cases. Use this rate with caution.

**N.C. Counties with Multiple Places Within the Bottom Quintile of the Above Categories**

Four Categories in Top Quintile	Three Categories in Top Quintile	Two Categories in Top Quintile		
Greene	Hyde	Alleghany	Gates	Hyde
	Pamlico	Anson	Halifax	Mecklenburg
	Pasquotank	Caswell	Hertford	Mitchell
	Swain	Clay	Hoke	Robeson



## N.C Prostate Cancer Evidence-Based Intervention Strategies

There are many evidence-based intervention strategies to address prostate cancer. Below are just a few examples of CDC recommended evidence-based intervention strategies with suggested activities. Specific health equity activities are marked with an asterisk (\*).

**Intervention: Group education and small media to increase community demand for cancer screening services.**

- \*Provide education programs with emphasis on senior populations and African-American and American-Indian men about the early signs and symptoms of prostate cancer.
- Conduct messaging campaigns (e.g., posters or placards on buses) to increase awareness of the importance of informed decision making regarding the treatment of prostate cancer.
- \*Focus early detection efforts in counties in the Northeast region of the state, such as Pasquotank, Tyrrell, and Hyde counties. Each of these have high African-American populations and high incidence and/or mortality from prostate cancer.
- \*Provide and/or sponsor educational opportunities and outreach efforts to reach targeted populations and communities.
- \*Use linguistically and culturally appropriate health education materials and interpreter services, as needed.
- Educate the public that cancer is a chronic disease and people can and do survive cancer.

**Intervention: Reduce barriers to increase community access to cancer screening.**

- \*Explore opportunities for addressing the transportation barriers for low-income people, (e.g., local transportation system providing no or low fares).
- Encourage government and businesses to provide health insurance coverage to all workers and to allow paid time off to get appropriate screenings.
- \*Identify and evaluate culturally-appropriate outreach and education efforts, especially for the most vulnerable populations.
- \*Encourage providers to use lay health advisors, native language speakers or health educators to provide education about risk factors and preventive health behaviors and addressing barriers to care.



- Encourage businesses, governments, schools, community colleges and universities to adopt policies and practices that support healthy behaviors, (e.g., tobacco-free policies, paid leave for annual physicals and routine screenings, healthy eating and physical activities opportunities).
- Encourage businesses to maintain a tobacco-free work place inside and outside of the buildings and to promote *QuitlineNC* to tobacco users.
- \*Team up with public health and non-profit organizations to develop/implement programs on obesity prevention and increased physical activity in counties with high African-American populations. Emphasize the increased risk of prostate cancer among African-American men who are obese.

**Intervention: Adopt organizational policies and practices to improve healthy behaviors.**

- Team up with local health departments, hospitals, cancer centers and Federally Qualified Health Centers (FQHCs) to offer cancer survivorship educational forums and classes for patients and caregivers. (Cancer survivorship begins at diagnosis and continues through a person's life.)
- Equip patient navigators and community health workers with educational resources to support their work to empower survivors to make informed decision thought out their cancer care.

**Intervention: Develop and disseminate public education programs that empower survivors to make informed decisions.**

- Educate providers in high prostate cancer incidence areas about how to discuss the advantages and disadvantages of PSA tests.
- \*Develop cultural sensitivity training for health care providers.

**Intervention: Provider assessment and feedback to increase service delivery by healthcare providers.**

- Support or develop media educational campaign to reduce tobacco use initiation and increase awareness and knowledge about the risk of cancer.
- Support messaging campaigns about cancer risk factors that include tobacco use and exposure to secondhand smoke.

**Intervention: Mass media educational campaigns to reduce tobacco use initiation.**

## Resources

- Consult with the N.C. Comprehensive Cancer Control Program (N.C. CCCP) for technical assistance and resource suggestions.  
<http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm>
- Use *A Call to Action: North Carolina Comprehensive Cancer Control Plan 2014-2020* for information and additional strategies. <http://www.ncpublichealth.com/chronicdiseaseandinjury/cancerpreventionandcontrol/docs/ComprehensiveCancerControlPlan-2014-2020.pdf>
- Partner with the N.C. Advisory Committee on Cancer Coordination and Control, its Subcommittees and Cancer Partners to develop and implement cancer prevention and control programs.  
<http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/acccc.htm>
- Partner with N.C. Community and Clinical Connections for Prevention and Health to increase physical activity and healthy eating opportunities. <http://www.communityclinicalconnections.com>
- Partner with N.C. CCCP and N.C. Tobacco Prevention and Control Branch (N.C. TPCB) for technical assistance with producing messaging campaigns on smoking, lung cancer, and the benefits of quitting.
  - N.C. CCCP – <http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm>
  - N.C. TPCB – <http://www.tobaccopreventionandcontrol.ncdhhs.gov/>
  - *QuitlineNC* – <http://www.quitlinenc.com/>
- Explore *The Community Guide* from CDC for evidence-based recommendations about community preventive services, programs and policies to improve health. <https://www.thecommunityguide.org/>
- Partner with American Cancer Society Cancer Action Network, Inc. (ACS CAN) a nonprofit, nonpartisan advocacy affiliate of the American Cancer Society to support evidence-based policy and legislative solutions designed to eliminate cancer as a major health problem. <http://www.acscan.org/>
- Work with American Cancer Society a community-based, voluntary health organization, for research, education, advocacy, and service to eliminate cancer as a major health problem by preventing cancer, saving lives, and diminishing suffering from cancer. <http://www.cancer.org/>
- Link to resources from the Patient Advocate Foundation for patient resources, case management and access to care services. <http://patientadvocate.org/>
- Explore resources from North Carolina Health Info, to find reliable, easy-to-use information on health insurance, choosing a provider or health care service and more. <http://www.nchealthinfo.org/>

# Heat Map - Prostate Cancer Statistics by N.C. County

Green indicates low-risk      Yellow indicates average risk      Red indicates high-risk

County	Number of Cases	Incidence Rate	Number of Deaths	Mortality Rate	Distant Stage	Uninsured at
	2010-2014	2010-2014	2011-2015	2011-2015	Diagnosis 2010-2014	Diagnosis 2010-2014
<b>North Carolina</b>	<b>32,878</b>	<b>125.0</b>	<b>4,328</b>	<b>20.7</b>	<b>5.2%</b>	<b>1.9%</b>
Alamance	542	127.9	88	23.2	5.0%	3.0%
Alexander	141	115.6	19	20.2	7.1%	2.1%
Alleghany*	52	110.7	11	29.4	7.7%	0.0%
Anson	91	117.9	20	34.1	6.6%	3.3%
Ashe	80	71.6	21	23.4	7.5%	2.5%
Avery*	59	93.5	10	17.1	3.4%	1.7%
Beaufort	234	140.0	38	25.6	6.4%	0.9%
Bertie*	92	133.6	12	20.1	4.3%	0.0%
Bladen*	121	103.1	11	13.5	2.5%	0.8%
Brunswick	477	93.1	82	21.3	4.8%	0.8%
Buncombe	979	127.3	126	18.6	4.9%	1.8%
Burke	295	100.8	38	15.7	5.4%	2.7%
Cabarrus	551	121.1	66	19.1	4.5%	1.8%
Caldwell	274	102.6	40	19.8	9.1%	2.6%
Camden*	50	161.9	6	25.7	6.0%	2.0%
Carteret	265	101.9	41	18.9	3.0%	0.8%
Caswell	111	139.8	19	31.5	3.6%	0.9%
Catawba	550	119.5	61	17.6	6.0%	1.8%
Chatham	250	100.2	46	19.1	6.4%	1.6%
Cherokee*	114	90.6	12	12.5	7.0%	0.0%
Chowan*	66	126.4	13	25.8	10.6%	0.0%
Clay*	52	109.0	11	26.0	3.8%	3.8%
Cleveland	417	138.0	52	22.5	5.3%	2.4%
Columbus	232	132.9	36	27.0	3.4%	2.2%
Craven	389	127.1	51	18.6	3.6%	1.8%
Cumberland	929	139.9	102	20.9	4.1%	1.6%
Currituck*	77	100.1	13	24.6	3.9%	1.3%
Dare	134	113.4	19	20.9	10.4%	4.5%
Davidson	579	118.8	60	15.0	6.0%	1.0%
Davie	177	124.8	22	17.0	5.1%	0.0%
Duplin	171	101.1	24	17.6	5.3%	3.5%
Durham	718	118.1	115	24.3	5.7%	3.2%
Edgecombe	213	129.8	34	26.6	5.2%	2.8%
Forsyth	1375	146.9	155	20.1	5.2%	1.2%
Franklin	210	122.0	36	21.7	12.4%	1.4%
Gaston	638	110.4	74	16.6	5.0%	1.3%
Gates*	44	110.5	9	28.7	9.1%	2.3%
Graham*	23	69.7	3	9.9	0.0%	0.0%
Granville	201	120.1	24	18.8	5.5%	3.0%
Greene	86	141.1	21	46.5	11.6%	4.7%
Guilford	1956	152.9	223	21.2	4.8%	1.6%
Halifax	227	139.0	45	33.4	5.7%	0.9%
Harnett	314	116.6	49	24.3	6.1%	2.9%
Haywood	255	111.1	50	24.3	5.9%	0.8%
Henderson	493	115.7	61	14.4	6.9%	2.4%
Hertford*	121	155.8	12	19.6	0.8%	5.8%
Hoke	153	171.1	20	27.8	3.9%	2.0%
Hyde*	20	118.3	6	46.4	10.0%	5.0%
Iredell	614	137.4	59	17.3	3.6%	1.0%
Jackson	136	103.0	23	22.6	5.9%	0.7%
Johnston	473	114.4	55	18.6	4.2%	1.9%
Jones*	58	167.1	3	8.9	6.9%	1.7%
Lee	193	120.6	33	26.1	5.2%	1.6%
Lenoir	237	130.3	34	22.7	6.8%	2.5%

## Heat Map - Prostate Cancer Statistics by N.C. County, continued

Green indicates low-risk      Yellow indicates average risk      Red indicates high-risk

County	Number of Cases	Incidence Rate	Number of Deaths	Mortality Rate	Distant Stage	Uninsured at
	2010-2014	2010-2014	2011-2015	2011-2015	Diagnosis 2010-2014	Diagnosis 2010-2014
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Lincoln	269	108.6	21	13.1	4.1%	1.9%
Macon	164	109.6	28	19.6	6.1%	4.3%
Madison*	77	96.8	9	14.5	9.1%	2.6%
Martin*	109	124.9	15	20.7	11.9%	0.9%
McDowell	148	99.5	18	16.0	6.1%	1.4%
Mecklenburg	2725	138.7	316	21.8	5.6%	2.9%
Mitchell*	59	95.6	6	12.2	8.5%	3.4%
Montgomery*	138	156.6	10	14.4	5.1%	0.7%
Moore	462	133.7	67	18.1	3.9%	1.9%
Nash	300	106.5	45	21.3	3.7%	1.7%
New Hanover	550	93.6	96	19.2	6.5%	0.2%
Northampton*	109	144.8	14	20.4	3.7%	2.8%
Onslow	325	111.0	35	16.4	4.0%	1.8%
Orange	318	100.0	37	16.9	6.6%	2.5%
Pamlico*	69	113.2	12	27.9	8.7%	2.9%
Pasquotank	163	147.1	32	34.8	8.0%	2.5%
Pender	182	99.7	42	33.0	4.9%	1.1%
Perquimans*	70	129.1	7	13.3	2.9%	2.9%
Person	150	122.1	18	17.6	5.3%	3.3%
Pitt	412	115.1	65	25.3	6.3%	0.5%
Polk*	79	86.8	15	15.6	3.8%	0.0%
Randolph	557	135.4	66	20.2	4.5%	2.0%
Richmond	152	114.5	26	23.4	3.3%	2.6%
Robeson	523	154.5	85	35.5	4.6%	1.5%
Rockingham	405	134.1	71	29.6	5.9%	1.7%
Rowan	520	127.0	61	18.3	5.0%	1.2%
Rutherford	224	97.7	27	14.7	6.7%	1.8%
Sampson	213	116.2	36	24.7	5.2%	3.8%
Scotland*	181	173.0	14	17.7	2.8%	1.1%
Stanly	220	113.4	22	13.2	7.3%	1.4%
Stokes	184	115.0	23	19.3	3.3%	1.1%
Surry	300	124.4	44	21.9	4.3%	1.7%
Swain*	40	87.3	15	40.9	15.0%	5.0%
Transylvania	145	94.4	17	11.3	4.1%	1.4%
Tyrrell*	16	118.1	4	36.1	6.3%	0.0%
Union	574	122.2	71	21.8	5.6%	1.4%
Vance*	152	121.7	15	15.5	3.9%	2.6%
Wake	2659	133.0	305	22.7	4.0%	2.3%
Warren*	99	123.5	13	19.4	4.0%	3.0%
Washington*	65	150.9	9	23.6	4.6%	1.5%
Watauga	123	89.3	19	16.1	7.3%	0.8%
Wayne	435	137.2	53	21.2	5.5%	1.6%
Wilkes	310	130.2	36	18.2	3.2%	1.0%
Wilson	258	109.3	50	27.3	6.6%	3.5%
Yadkin	157	132.0	17	19.4	12.1%	1.3%
Yancey*	66	94.3	7	11.9	4.5%	0.0%

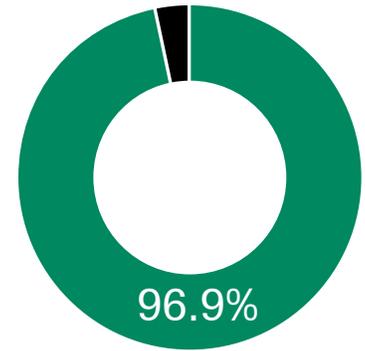
\*Counties with mortality rates based on counts less than 16. Use these rates with caution.  
Heat Map created by N.C. Comprehensive Cancer Control Program

# Melanoma Skin Cancer

Melanoma skin cancer is one of several types of skin cancer. Melanoma forms in the skin cells that make pigment. It is the most serious form of skin cancer, causing 69.7 % of all skin cancer deaths in North Carolina in 2015. Left untreated, it can spread to other organs and is difficult to control. Basal cell and squamous cell cancers are less serious types and make up 95% of all skin cancers. The rate of new melanoma diagnoses rose rapidly in North Carolina from 1995 to 2013, at an average increase of more than 5% per year. From 2013 to 2015, the increase in melanoma diagnoses slowed to an average of 1.1% per year. It is estimated that 2,805 North Carolinians will be diagnosed with and 323 will die from melanoma skin cancer in 2017.<sup>46</sup>

Risk factors for melanoma skin cancer include a personal or family history of melanoma and the presence of large, irregularly shaped or numerous moles. Risk factors for all types of skin cancers include sun sensitivity such as sun burning easily, a history of excessive unprotected sun exposure, the use of tanning

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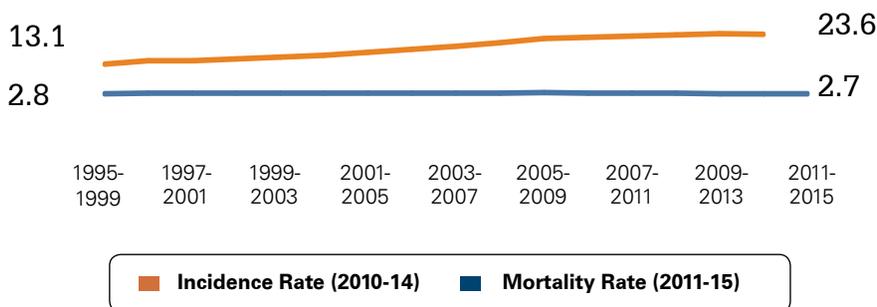
**N.C. Cumulative Relative 5-Year Melanoma Skin Cancer Survival Rate 2010-2014** Survival Rate is in Green

**N.C. DATA:** Melanoma skin cancer incidence peaked during the 2009-2013 five-year measurement period at a rate of 23.8 cases per 100,000 population. It dropped to 23.6 cases per 100,000 population in the 2010-2014 incidence period. The latest available one-year data (2014) indicates a decline in the melanoma cancer incidence rate, reaching a rate of 24.3 per 100,000, representing a decrease from 2013 data where the melanoma incidence rate stood at 24.7 per 100,000.<sup>47</sup> In 2014, the national melanoma skin cancer incidence rate stood at 21.4 per 100,000.<sup>48</sup>

The melanoma skin cancer mortality rate peaked during 2005-2009 five-year measurement period at 3.1 cases per 100,000. It has been on a slow decline since, standing at 2.7 per 100,000 in 2011-2015, matching the national rate in 2013. The latest available one-year mortality data for 2015 indicates a continued decline in the N.C. melanoma skin cancer mortality rate, reaching a rate of 2.5 per 100,000 in 2015.

## N.C. Melanoma Skin Cancer Incidence and Mortality Rate 1995 to 2015

Age-adjusted rates per 100,000 population



<sup>46</sup> N.C. State Center for Health Statistics, <http://www.schs.state.nc.us/schs/CCR/proj17site.pdf>  
<sup>47</sup> N.C. State Center for Health Statistics, [http://www.schs.state.nc.us/data/cancer/incidence\\_rates.htm](http://www.schs.state.nc.us/data/cancer/incidence_rates.htm)  
<sup>48</sup> CDC 2014 National vs. State Comparisons, <https://nccd.cdc.gov/uscs/statevsnational.aspx>

continued from page 81

booths and/or sun lamps, diseases or treatments that suppress the immune system and a history of skin cancer. Skin cancer is more common among people with a light (fair) skin tone, however, it is not limited to people with fair skin. Research shows that there is a correlation between sunburns acquired during childhood and increased risk of some skin cancers later in adulthood. Protection from UV radiation is important all year round, not just during the summer or at the beach. It is important that prevention and education strategies be emphasized for all ages.

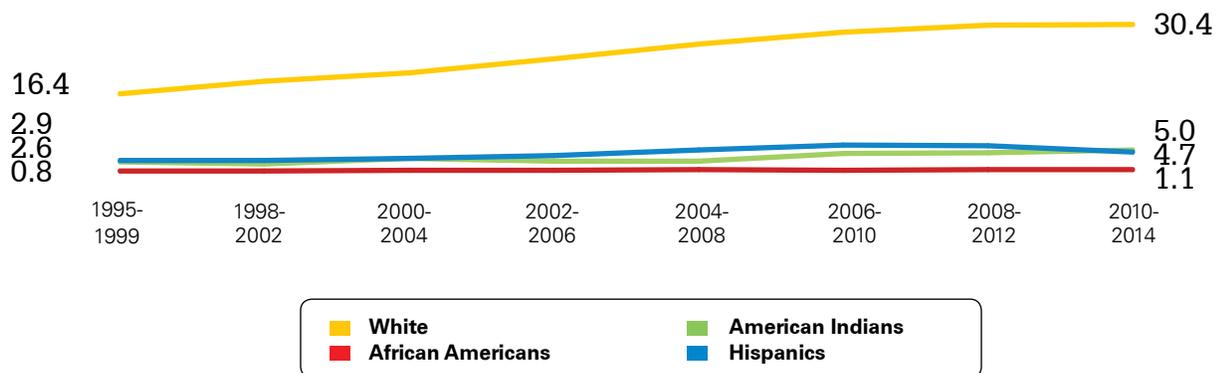
Melanoma skin cancer treatment options include surgery, chemotherapy, immunotherapy and/or radiation therapy. Basal cell and squamous cell cancers are highly curable when treated early. Several methods of treatment include surgical incision, cryosurgery, chemotherapy, tissue destruction by electric current and/or radiation therapy.

## North Carolina Melanoma Skin Cancer Rates by Race and Ethnicity

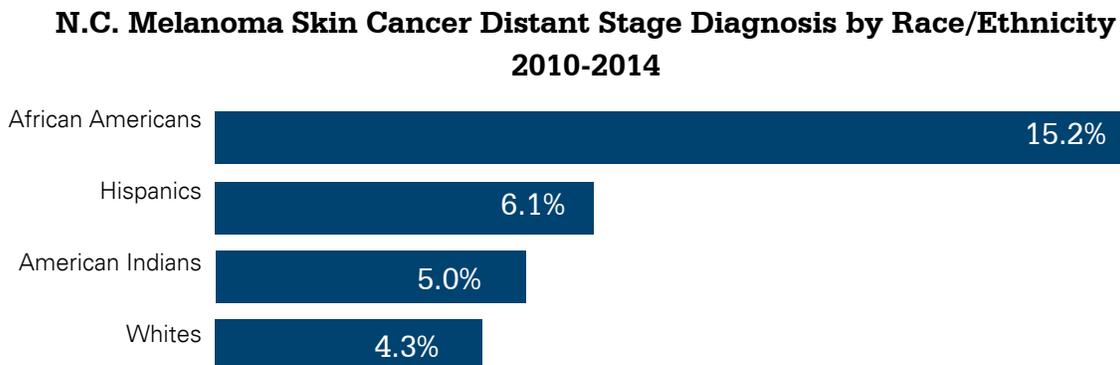
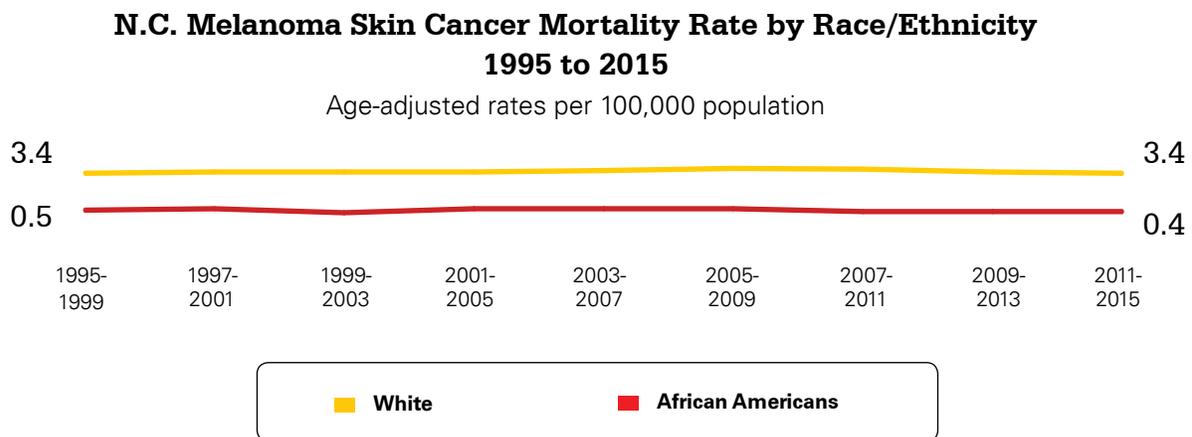
White North Carolinians bear the highest burden of melanoma skin cancer. The highest five-year incidence period for melanoma skin cancer for all North Carolinians stood at 23.8 per 100,000 population from 2009-2013, whereas the White incidence rate currently stands at 30.4 per 100,000. Each of the other measurable racial and ethnic groups—African Americans, American Indians, and Hispanics—have melanoma skin cancer rates less than six times that of Whites. Whites also die from melanoma skin cancer at a rate 8.5 times the number of African Americans.

### N.C. Melanoma Skin Incidence Rates by Race/Ethnicity 1995 to 2014

Age-adjusted rates per 100,000 population



The melanoma skin cancer mortality rate has remained steady for nearly twenty years for both Whites and African Americans. In terms of melanoma skin cancer diagnosis, African Americans (15.6%), Hispanics (6.1%) and American Indians (5.0%) are more likely to receive a late stage diagnosis (cancer has spread to distant parts of the body) than White North Carolinians (4.3%). This disparity in late stage diagnoses particularly afflicts the Area L Health Education Centers (AHEC) region (Edgecombe, Halifax, Nash, Northampton, Wilson Counties), which has a high African-American population.

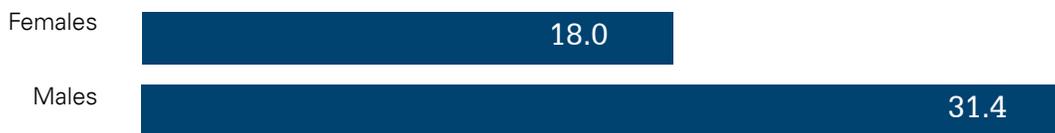


## North Carolina Melanoma Skin Cancer Rates by Gender

North Carolina men are currently 74.4% more likely to get melanoma skin cancer, and 2.6 times more likely to die from melanoma skin cancer than women. This large disparity in cancer deaths from melanoma skin cancer may be due to delays in seeking care. In 2010-2014, 5.2% of North Carolina males were diagnosed with melanoma skin cancer at a distant stage as opposed to 3.2% of North Carolina women.

### N.C. 2010-2014 Melanoma Skin Cancer Incidence by Gender

Age-adjusted rates per 100,000 population



### N.C. 2011-2015 Melanoma Skin Cancer Mortality by Gender

Age-adjusted rates per 100,000 population

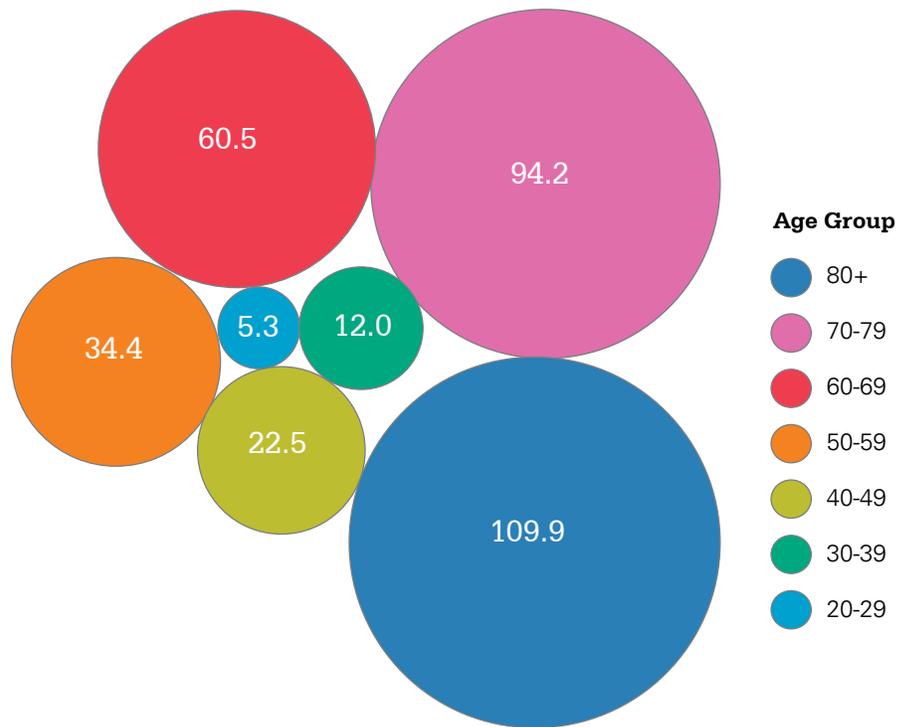


## North Carolina Melanoma Skin Cancer Rates by Age Group

The risk for getting melanoma skin cancer increases as one ages, rising from an incidence rate of 22.5 per 100,000 in the 40-49 age range to 109.9 per 100,000 in the 80-plus age range. While most cancers are more likely to affect people as they age, the difference among age groups in developing melanoma skin cancer isn't as stark compared to other cancers. However, individuals in the 80-plus age range are nearly twice as likely to die from melanoma skin cancer than individuals in the 70-79 age range, so the effects from melanoma skin cancer become more pronounced as one ages.

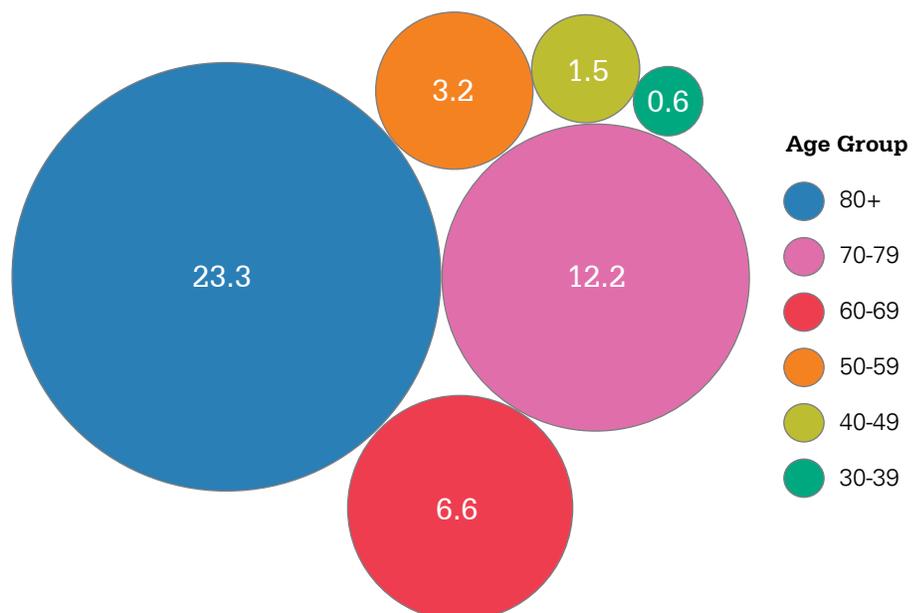
### N.C. 2010-2014 Melanoma Skin Cancer Incidence Rate by Age Group

Age-adjusted rates per 100,000 population



### N.C. 2011-2015 Melanoma Skin Cancer Mortality Rate by Age Group

Age-adjusted rates per 100,000 population



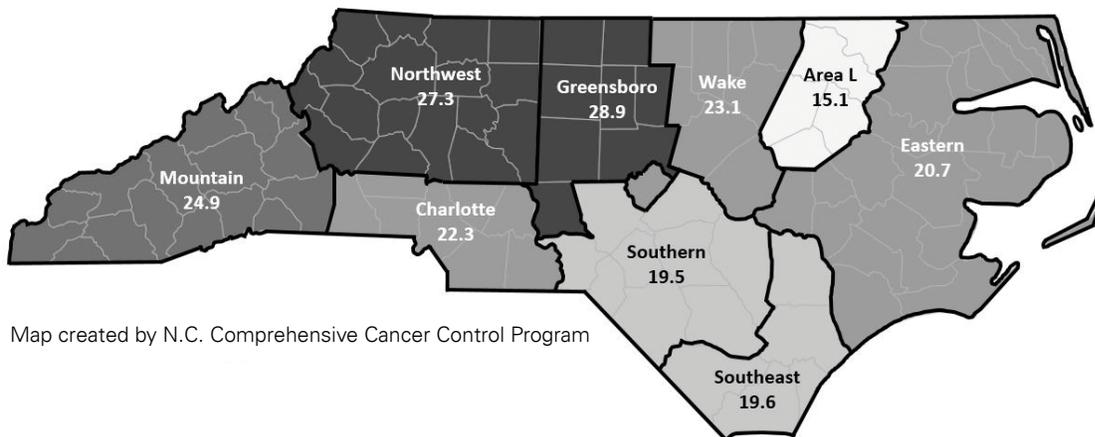
## Melanoma Cancer Rates by N.C. Area Health Education Centers (AHEC) Regions

The latest available five-year data for both melanoma skin cancer incidence and distant stage diagnosis rates are for the incidence period of 2010-2014. Melanoma skin cancer mortality is for the mortality period of 2011-2015. Melanoma rates are reported by Area Health Education Centers because of the low number of cases. The Northwest and Greensboro AHEC regions show the greatest incidence of melanoma skin cancer while the Mountain AHEC shows the higher mortality rate.

**AHEC Regions - Mountain** (Buncombe, Cherokee, Clay, Graham, Haywood, Henderson, Jackson, Macon, Madison, McDowell, Mitchell, Polk, Rutherford, Swain, Transylvania, Yancey), **Northwest** (Alexander, Alleghany, Ashe, Avery, Burke, Caldwell, Catawba, Davidson, Davie, Forsyth, Iredell, Rowan, Stokes, Surry, Watauga, Wilkes, Yadkin), **Charlotte** (Anson, Cabarrus, Cleveland, Gaston, Lincoln, Mecklenburg, Stanly, Union), **Eastern** (Beaufort, Bertie, Camden, Carteret, Chowan, Craven, Currituck, Dare, Gates, Greene, Hertford, Hyde, Jones, Lenoir, Martin, Onslow, Pamlico, Pasquotank, Perquimans, Pitt, Tyrrell, Washington, Wayne) **Greensboro** (Alamance, Caswell, Chatham, Guilford, Montgomery, Orange, Randolph, Rockingham) **Southeast** (Brunswick, Columbus, Duplin, New Hanover, Pender) **Southern** (Bladen, Cumberland, Harnett, Hoke, Moore, Richmond, Robeson, Sampson, Scotland) **Wake** (Durham, Franklin, Granville, Johnston, Lee, Person, Vance, Wake, Warren) **Area L** (Edgecombe, Halifax, Nash, Northampton, Wilson).

### N.C. Melanoma Skin Cancer Incidence Rate by AHEC Region, 2010-2014

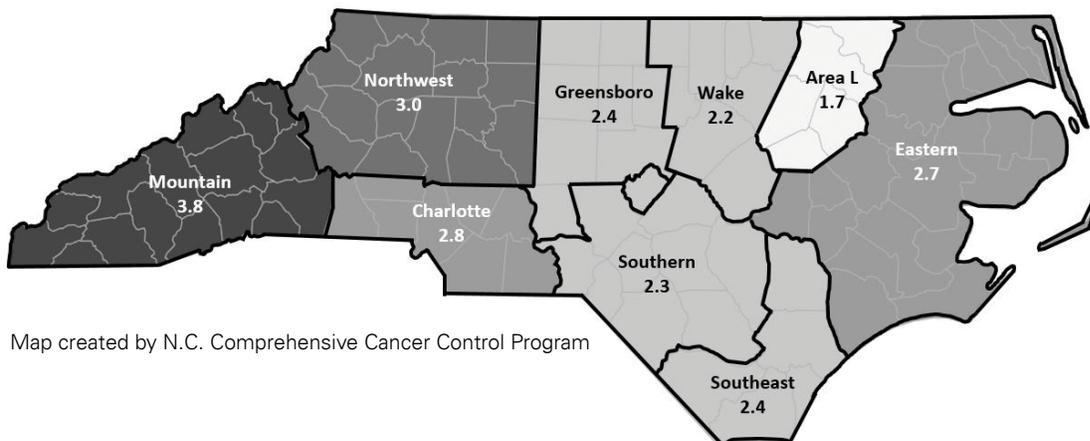
Age-adjusted rates per 100,000 population



Map created by N.C. Comprehensive Cancer Control Program

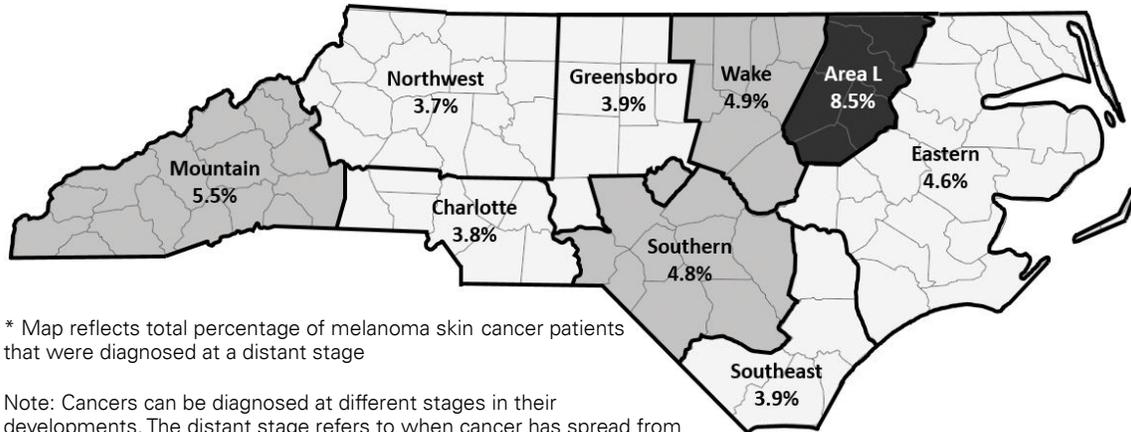
### N.C. Melanoma Skin Cancer Mortality Rate by AHEC Region, 2011-2015

Age-adjusted rates per 100,000 population



Map created by N.C. Comprehensive Cancer Control Program

### N.C. Melanoma Skin Cancer Distant Stage Diagnosis by AHEC Region, 2010-2014



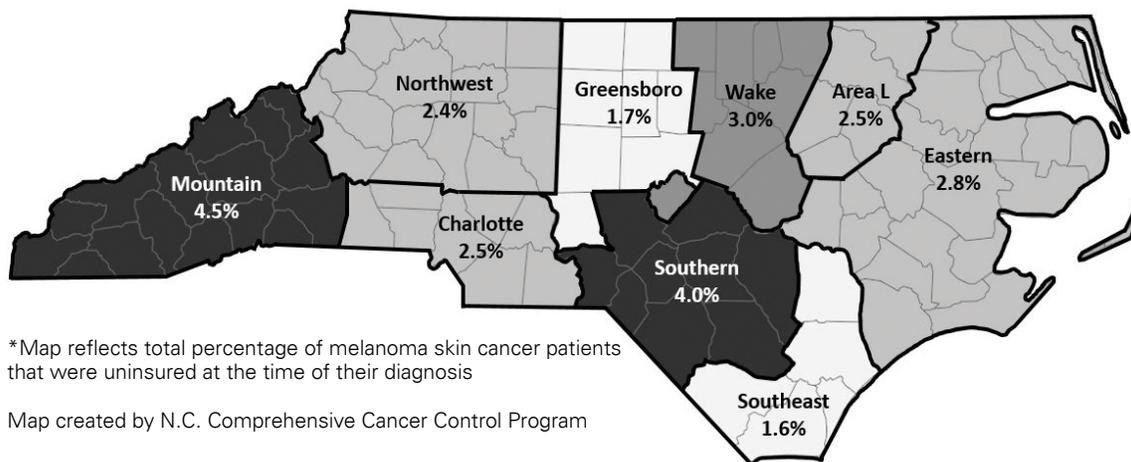
\* Map reflects total percentage of melanoma skin cancer patients that were diagnosed at a distant stage

Note: Cancers can be diagnosed at different stages in their developments. The distant stage refers to when cancer has spread from the original tumor to distant organs or distant lymph nodes

Map created by N.C. Comprehensive Cancer Control Program

While melanoma skin cancer affects individuals more as they age, the age difference in melanoma skin cancer incidence is not as stark as most of the other N.C. priority cancers. This means that a lesser percentage of patients diagnosed are insured by Medicare (40.3%) than other cancers. The rate of uninsured individuals at the time of their diagnoses remains lower (2.7%) than other priority cancers since melanoma skin cancer affects Whites far more than other racial and ethnic groups, and Whites tend to have lower uninsured rates across the state. The Mountain and Southern AHEC regions in the map below show significantly higher percentages of uninsured individuals at the time of their diagnosis.

### N.C. Melanoma Skin Cancer Uninsured at Diagnosis by AHEC Region, 2010-2014



\*Map reflects total percentage of melanoma skin cancer patients that were uninsured at the time of their diagnosis

Map created by N.C. Comprehensive Cancer Control Program



## N.C. Melanoma Skin Cancer Evidence-Based Intervention Strategies

There are many evidence-based intervention strategies to address skin cancer. Below are just a few examples of CDC recommended evidence-based intervention strategies with suggested activities. Specific health equity activities are marked with an asterisk (\*).

**Intervention: Group education and small media to increase community demand for cancer screening services.**

- \*Provide education programs with emphasis on senior populations about early signs of melanoma skin cancer and the importance of skin cancer screening.
- Conduct messaging campaigns (e.g., posters or placards on buses) to increase awareness of the importance of skin cancer screening.
- Prioritize melanoma skin cancer education efforts in the Mountain and Northwest Area Health Education Centers (AHEC) regions of the state, each of which have high incidence and mortality rates.
- \*Focus efforts on Area L, Southern and Northeast AHEC regions, where high concentrations of minority residents reside, to educate on early signs of melanoma skin cancer due to disparities in late-stage diagnoses.
- \*Provide and/or sponsor educational opportunities and outreach efforts to reach targeted populations and communities.
- \*Use linguistically and culturally appropriate health education materials and interpreter services, as needed.
- Educate the public that cancer is a chronic disease and people can and do survive.



- \*Explore opportunities for addressing the transportation barriers for low-income people, (e.g., tobacco-free policies, local transportation system providing no or low fares).
- Encourage government and businesses to provide health insurance coverage to all workers and to allow paid time off to get appropriate screenings.
- \*Identify and evaluate culturally-appropriate outreach and education efforts, especially for the most vulnerable populations.
- \*Encourage providers to use lay health advisors, native language speakers or health educators to provide education about risk factors and preventive health behaviors and addressing barriers to care.

**Intervention: Reduce barriers to increase community access to cancer screening.**

- Encourage providers to use patient reminders (e.g., reminder cards, email, text messages, etc.) and client incentives to encourage use of clinical services.
- Offer assistance to providers to establish a patient reminder process if they do not have one in place.
- Request appointment reminder cards from N.C. Comprehensive Cancer Control Program.

**Intervention: Client reminders to increase community demand for cancer clinical services.**

- Create or expand community partnership efforts to include non-traditional partners such as local parks and recreation offices, schools and childcare centers to increase parent's knowledge about sun protective behaviors to both teach and practice with their children.
- Encourage community partners to plan sun protection programs and to provide sun protection at their outdoor events.

**Intervention: Multicomponent community intervention to influence UV-protective behavior and prevent skin cancer.**



**Intervention: Adopt organizational policies and practices to improve healthy behaviors.**

- Encourage businesses, governments, schools, community colleges and universities to adopt policies and practices that support healthy behaviors, (e.g., paid leave for annual physicals and routine screenings, healthy eating and physical activities opportunities).
- Encourage businesses to maintain a tobacco-free work place inside and outside of the buildings and to promote QuitlineNC to tobacco users.

**Intervention: Develop and disseminate public education programs that empower survivors to make informed decisions.**

- Team up with local health departments, hospitals, cancer centers and Federally Qualified Health Centers (FOHCs) to offer cancer survivorship educational forums and classes for patients and caregivers. (Cancer survivorship begins at diagnosis and continues through a person's life.)
- Equip patient navigators and community health workers with educational resources to support their work to empower survivors to make informed decisions thought out their cancer care.

**Intervention: Provider assessment and feedback to increase service delivery by healthcare providers.**

- Encourage all providers to discuss the advantages of using sun screen and sun protection with their patients.
- \*Develop cultural sensitivity training for health care providers.



- Support or develop media educational campaign to reduce tobacco use initiation and increase awareness and knowledge about the risk of cancer.
- Support messaging campaigns about cancer risk factors that include tobacco use and exposure to secondhand smoke.

**Intervention: Mass media educational campaigns to reduce tobacco use initiation.**

- Encourage businesses and governments to promote and educate employees, especially those who have high sun exposure during work hours, about the importance of wearing sun protective clothing and sunscreen to reduce the incidence of skin cancer.
- Encourage businesses and governments to provide skin protective gear (e.g., sun protective clothing, hats, sunscreen, and sunglasses) for employees with high occurrence of sun exposure during work hours.
- Encourage organizations and governments to adopt policies to support shade areas in parks, sports and pool facilities.

**Intervention: Implementing sun-protection policies to promote sun-protective behaviors.**

## Resources

- Consult with the N.C. Comprehensive Cancer Control Program (N.C. CCCP) for technical assistance and resource suggestions.  
<http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm>
- Use *A Call to Action: North Carolina Comprehensive Cancer Control Plan 2014-2020* for information and additional strategies. <http://www.ncpublichealth.com/chronicdiseaseandinjury/cancerpreventionandcontrol/docs/ComprehensiveCancerControlPlan-2014-2020.pdf>
- Partner with the N.C. Advisory Committee on Cancer Coordination and Control, its Subcommittees and Cancer Partners to develop and implement cancer prevention and control programs.  
<http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/acccc.htm>
- Partner with N.C. Community and Clinical Connections for Prevention and Health to increase physical activity and healthy eating opportunities. <http://www.communityclinicalconnections.com>
- Partner with N.C. CCCP and N.C. Tobacco Prevention and Control Branch (N.C. TPCB) for technical assistance with producing messaging campaigns on smoking, lung cancer, and the benefits of quitting.
  - N.C. CCCP – <http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm>
  - N.C. TPCB – <http://www.tobaccopreventionandcontrol.ncdhhs.gov/>
  - QuitlineNC – <http://www.quitlinenc.com/>
- Explore *The Community Guide* from CDC for evidence-based recommendations about community preventive services, programs and policies to improve health. <https://www.thecommunityguide.org/>
- Partner with N.C. Comprehensive Cancer Control Program (N.C. CCCP), for technical assistance on skin cancer, (e.g., consultation and linking partners and resources, producing or adopting messaging campaigns and educational resources. <http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm>
- Explore the Division of Health Service Regulation, Radiation Protection Section, North Carolina Department of Health and Human Services – Tanning Beds. <http://www.ncradiation.net/tanning/tanning.htm> or <http://www.ncradiation.net/NonIonizing/UVRad.htm>
- Link to resources through the Skin Cancer Foundation – Skin Cancer. <http://www.skincancer.org/>
- Partner with American Cancer Society Cancer Action Network, Inc. (ACS CAN) a nonprofit, nonpartisan advocacy affiliate of the American Cancer Society to support evidence-based policy and legislative solutions designed to eliminate cancer as a major health problem. <http://www.acscan.org/>
- Work with American Cancer Society a community-based, voluntary health organization, for research, education, advocacy, and service to eliminate cancer as a major health problem by preventing cancer, saving lives, and diminishing suffering from cancer. <http://www.cancer.org/>

- Identify resource and partner connections with the North Carolina Alliance for Health to educate the public by producing research, data, and evidence-based solutions to reduce obesity and tobacco. <http://ncallianceforhealth.org/>
- Explore resources from the Patient Advocate Foundation for patient resources, case management and access to care services. <http://patientadvocate.org/>
- Link to resources from North Carolina Health Info, to find reliable, easy-to-use information on health insurance, choosing a provider or health care service and more. <http://www.nchealthinfo.org/>

## Heat Map - Melanoma Skin Cancer Statistics by N.C. AHEC Region

Green indicates low-risk      Yellow indicates average risk      Red indicates high-risk

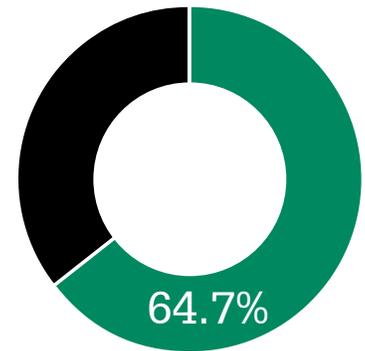
AHEC Region	Number of Cases 2010-2014	Incidence Rate 2010-2014	Number of Deaths 2011-2015	Mortality Rate 2011-2015	Distant Stage Diagnosis 2010-2014	Uninsured at Diagnosis 2010-2014
<b>North Carolina</b>	12,525	23.6	1,465	2.7	4.4%	2.7%
<b>Area L</b> (Edgecombe, Halifax, Nash, Northampton, Wilson)	281	15.1	34	1.7	8.5%	2.5%
<b>Charlotte</b> (Anson, Cabarrus, Cleveland, Gaston, Lincoln, Mecklenburg, Stanly, Union)	2,009	22.3	254	2.8	3.8%	2.5%
<b>Eastern</b> (Beaufort, Bertie, Camden, Carteret, Chowan, Craven, Currituck, Dare, Gates, Greene, Hertford, Hyde, Jones, Lenoir, Martin, Onslow, Pamlico, Pasquotank, Perquimans, Pitt, Tyrrell, Washington, Wayne)	1,186	20.7	153	2.7	4.6%	2.8%
<b>Greensboro</b> (Alamance, Caswell, Chatham, Guilford, Montgomery, Orange, Randolph, Rockingham)	1,857	28.9	159	2.4	3.9%	1.7%
<b>Mountain</b> (Cherokee, Clay, Graham, Haywood, Henderson, Jackson, Macon, Madison, McDowell, Mitchell, Polk, Rutherford, Swain, Transylvania, Yancey)	1,286	24.9	215	3.8	5.5%	4.5%
<b>North West</b> (Alexander, Alleghany, Ashe, Avery, Burke, Caldwell, Catawba, Davidson, Davie, Forsyth, Iredell, rowan, Stokes, Surry, Watauga, Wilkes, Yadkin)	2,490	27.3	286	3.0	3.7%	2.4%
<b>South East</b> (Brunswick, Columbus, Duplin, New Hanover, Pender)	608	19.6	80	2.4	3.9%	1.6%
<b>Southern Regional</b> (Bladen, Cumberland, Harnett, Hoke, Moore, Richmond, Robeson, Sampson, Scotland)	884	19.5	104	2.3	4.8%	4.0%
<b>Wake</b> (Durham, Franklin, Granville, Johnston, Lee, Person, Vance, Wake, Warren)	1,887	23.1	180	2.2	4.9%	3.0%

Heat Map created by N.C. Comprehensive Cancer Control Program

## Cervical Cancer

Cervical cancer is a cancer in women that forms in tissues of the cervix, the mouth of the uterus. Previously the leading cause of cancer death among women, the number of cervical cancer cases and deaths have decreased significantly largely due to an increase in screening.<sup>49</sup> Most cervical cancers are caused by human papillomavirus (HPV) infection. The primary risk factors for cervical cancer are being a woman and having had an HPV infection. Other risk factors include smoking, using oral contraception for five or more years, having given birth to three or more children and having sex with a partner who is infected with HPV.

Cervical cancer prevention methods include HPV vaccination (between ages 9 and 26) and routine screening (between ages 21 and 65). Cervical cancer screening is critical for detecting cervical cancer early when treatment is most effective. Treatment options for cervical cancer include surgery, chemotherapy and/or radiation therapy. The five-year survival rate of cervical cancer for White women is 69% and 57% for African-American women. For localized cervical cancer, five-year survival increases to 91%, and decreases to 17% for women diagnosed with regional or distal stage cancer.<sup>50</sup>

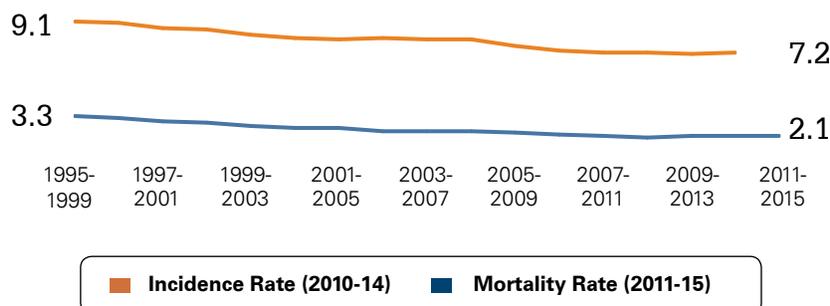


**N.C. Cumulative Relative 5-Year Cervical Cancer Survival Rate 2010-2014** Survival Rate is in Green

**N.C. DATA:** Between 1995-1999 and 2007-2011, the incidence and mortality of cervical cancer declined by 21% and 40%, respectively. In recent years, however, incidence and mortality have begun to level out. Between 2007-2011 and 2010-2014, cervical cancer incidence in North Carolina was around 7.2 cases per 100,000, which is slightly lower than the national incidence rate of 7.5 cases per 100,000. As of the 2011-2015 measurement period, cervical cancer mortality in North Carolina was at 2.1 deaths per 100,000, compared to 2.3 deaths per 100,000 nationally (2010-2014).<sup>51</sup>

### N.C. Cervical Cancer Incidence and Mortality Rate 1995 to 2015

Age-adjusted rates per 100,000 women

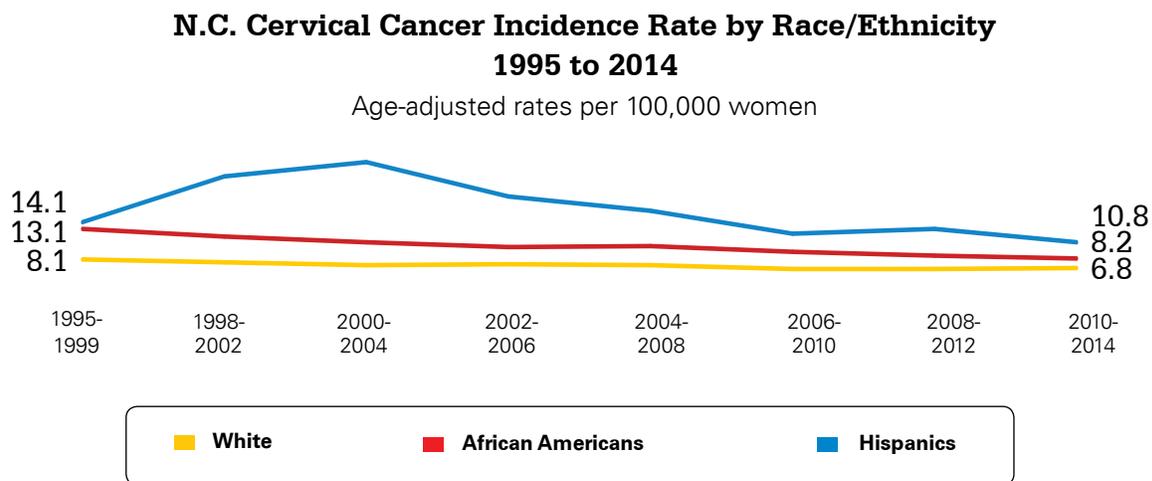


<sup>49</sup> American Cancer Society Cancer Facts and Figures, <https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2017/cancer-facts-and-figures-2017.pdf>  
<sup>50</sup> NIH SEER Program: Cancer Stat Facts: Cervix Uteri Cancer, <https://seer.cancer.gov/statfacts/html/cervix.html>  
<sup>51</sup> N.C. State Center for Health Statistics, [http://www.schs.state.nc.us/data/cancer/mortality\\_rates.htm](http://www.schs.state.nc.us/data/cancer/mortality_rates.htm)

## North Carolina Cervical Cancer Rates by Race and Ethnicity

Cervical cancer incidence and mortality declined in all races/ethnicities between the 1996-2000 and 2010-2014 measurement periods. However, there is a clear racial/ethnic disparity in the burden of cervical cancer. Hispanic women, who have experienced the highest burden of cervical cancer incidence among all races/ethnicities, peaked at 23.8 cases per 100,000 in 2000-2004, but decreased to 10.8 cases per 100,000 in 2010-2014. Incidence in White women has remained relatively steady in recent years, though it did slightly increase to 6.8 cases per 100,000 in the 2010-2014 measurement period. African-American women continue to experience the highest mortality among measurable racial/ethnic groups with a rate of 3.2 deaths per 100,000 in 2011-2015. According to the 2016 Behavioral Risk Factor Surveillance System survey, 91.6% of White women have had a pap test, compared to 90.6% of African-American women and 89.6% of Hispanic women.<sup>52</sup>

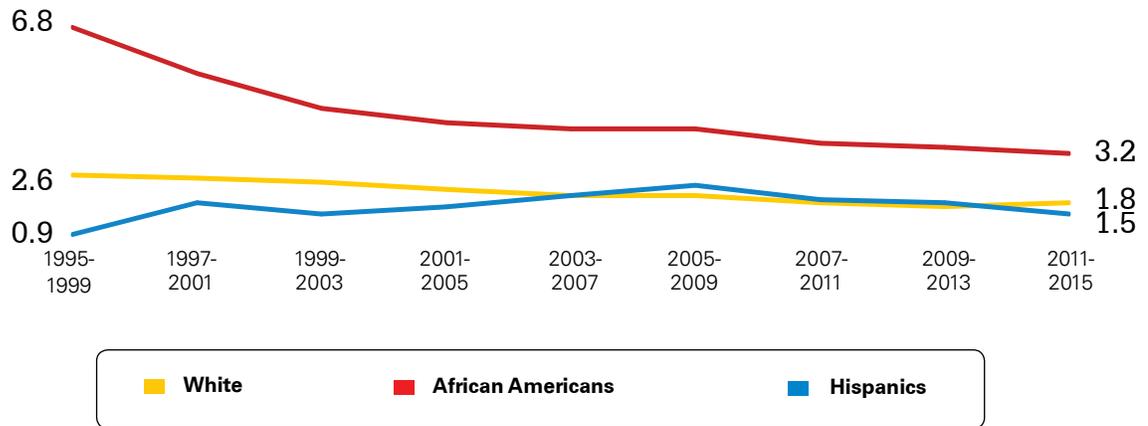
Cancer data for American-Indian women is subject to racial misclassification. This contributes to lower rates for both cervical cancer cases and deaths. Incidence rates during 2010-2014 was at a low of 14 cases per 100,000, and the mortality rate was 1.5 deaths per 100,000 in 2011-2015. While recognizing limitations in reliability of data due to the small number of cases, American-Indian women currently carry the heaviest burden in terms of proportion of women diagnosed at a distant stage (cancer has spread to distant parts of the body) with a rate of 35.7%.



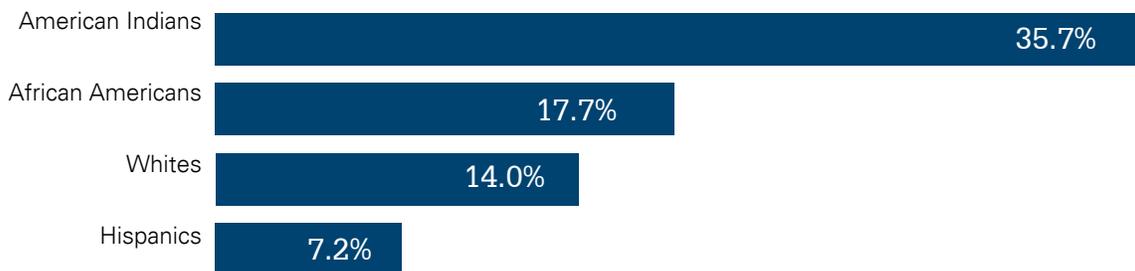
<sup>52</sup> N.C. State Center for Health Statistics <http://www.schs.state.nc.us/data/brfss/2016/nc/all/hadpap.html>

### N.C. Cervical Cancer Mortality Rate by Race/Ethnicity 1995 to 2015

Age-adjusted rates per 100,000 women

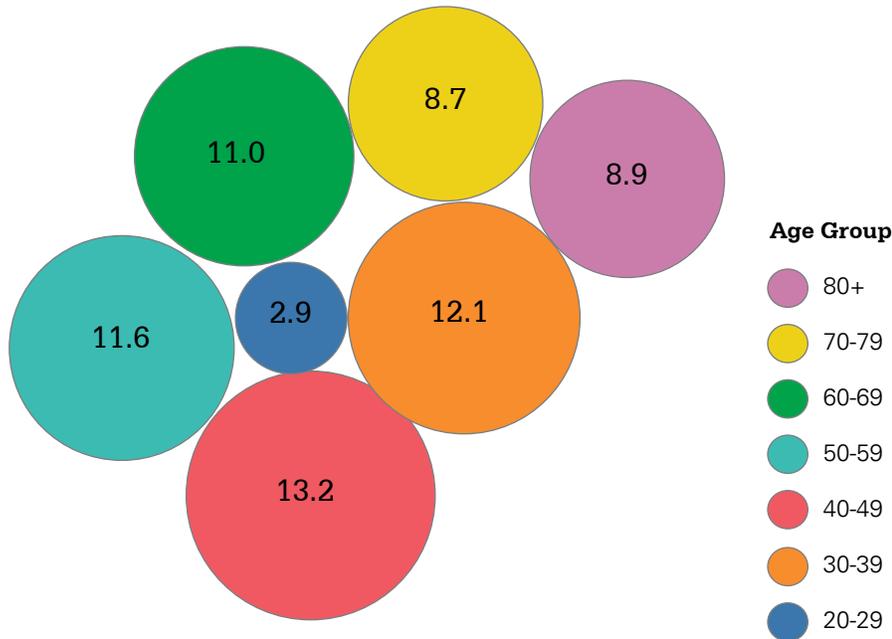


### N.C. Cervical Cancer Distant Stage Diagnosis by Race/Ethnicity 2010-2014



### N.C. 2010-2014 Cervical Cancer Incidence Rate by Age Group

Age-adjusted rates per 100,000 women

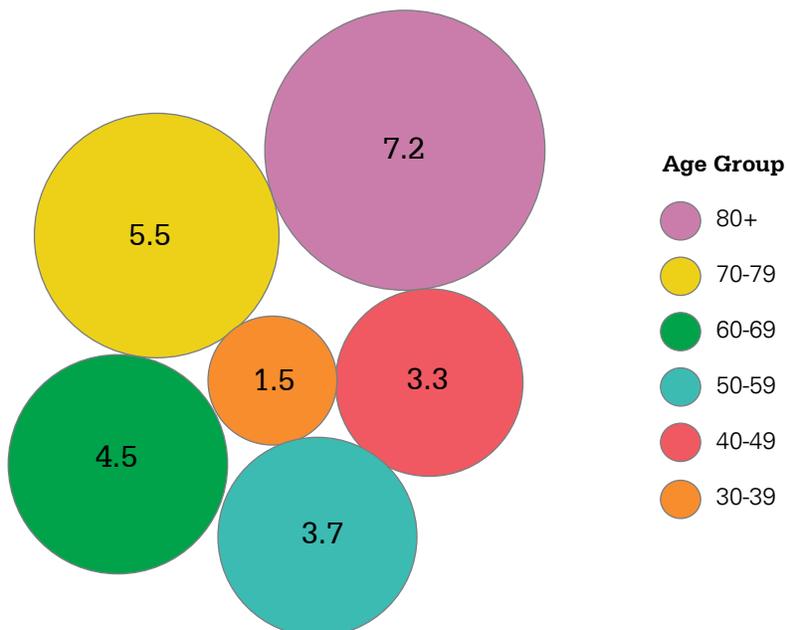


### North Carolina Cervical Cancer Rates by Age Group

Cervical cancer incidence is highest among women aged 40-49 at a rate of 13.2 cases per 100,000. This is followed by women aged 30-39 with a rate of 12.1 cases per 100,000. Cervical cancer incidence is lower among women age 50 and above. Women ages 20-29 have the lowest incidence at 2.9 per 100,000. Cervical cancer mortality increases with age, with the highest rate of 7.2 deaths per 100,000 among women age 80-plus.

### N.C. 2011-2015 Cervical Cancer Mortality Rate by Age Group

Age-adjusted rates per 100,000 women



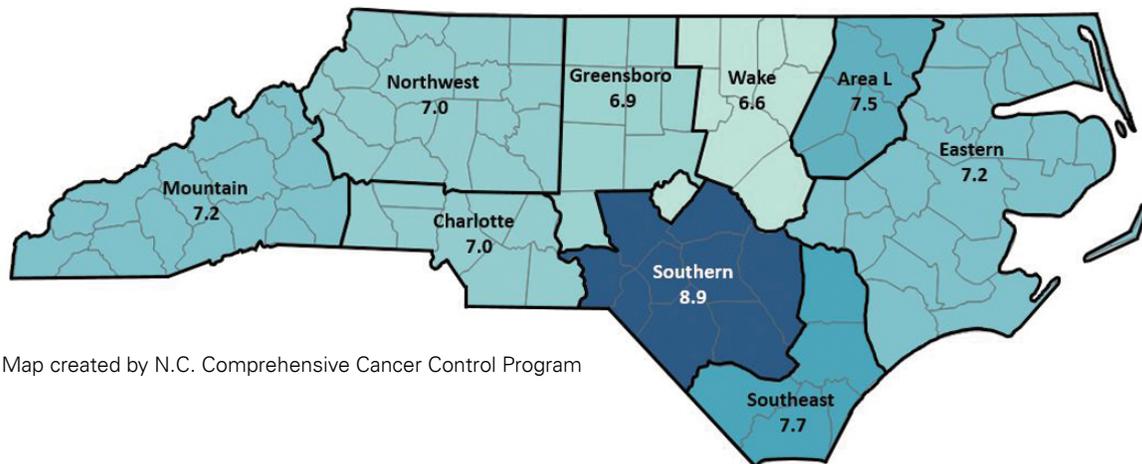
## Cervical Cancer Rates by N.C. Area Health Education Centers (AHEC) Regions

The latest available five-year data for both cervical cancer incidence and distant stage diagnosis rates (cancer has spread to distant parts of the body) are for the five-year period of 2010-2014. For cervical cancer mortality, the latest available data is for the five-year period of 2011-2015. Cervical cancer rates are reported by Area Health Education Centers because of the low number of cases.

**AHEC Regions - Mountain** (Buncombe, Cherokee, Clay, Graham, Haywood, Henderson, Jackson, Macon, Madison, McDowell, Mitchell, Polk, Rutherford, Swain, Transylvania, Yancey), **Northwest** (Alexander, Alleghany, Ashe, Avery, Burke, Caldwell, Catawba, Davidson, Davie, Forsyth, Iredell, Rowan, Stokes, Surry, Watauga, Wilkes, Yadkin), **Charlotte** (Anson, Cabarrus, Cleveland, Gaston, Lincoln, Mecklenburg, Stanly, Union), **Eastern** (Beaufort, Bertie, Camden, Carteret, Chowan, Craven, Currituck, Dare, Gates, Greene, Hertford, Hyde, Jones, Lenoir, Martin, Onslow, Pamlico, Pasquotank, Perquimans, Pitt, Tyrrell, Washington, Wayne) **Greensboro** (Alamance, Caswell, Chatham, Guilford, Montgomery, Orange, Randolph, Rockingham) **Southeast** (Brunswick, Columbus, Duplin, New Hanover, Pender) **Southern** (Bladen, Cumberland, Harnett, Hoke, Moore, Richmond, Robeson, Sampson, Scotland) **Wake** (Durham, Franklin, Granville, Johnston, Lee, Person, Vance, Wake, Warren) **Area L** (Edgecombe, Halifax, Nash, Northampton, Wilson).

### N.C. Cervical Cancer Incidence Rate by AHEC Region, 2010-2014

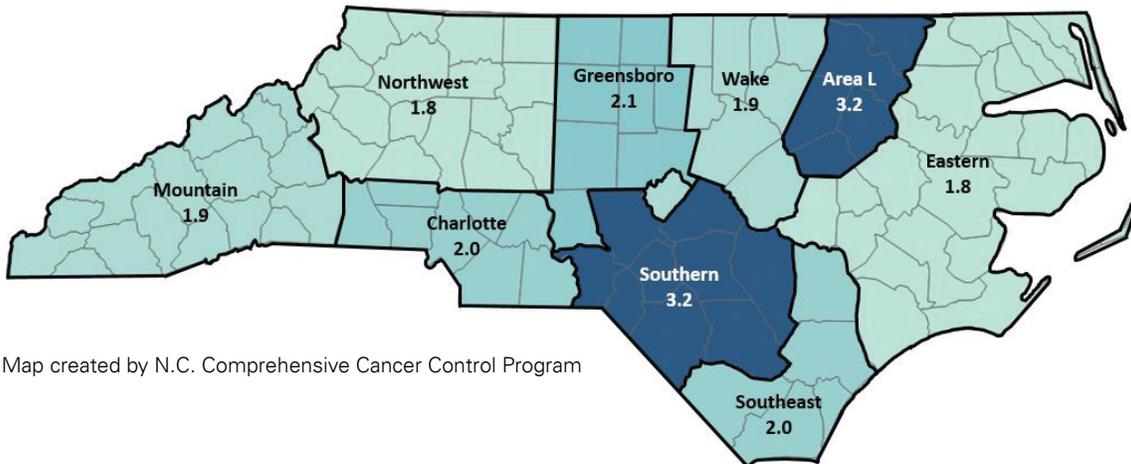
Age-adjusted rates per 100,000 women



Map created by N.C. Comprehensive Cancer Control Program

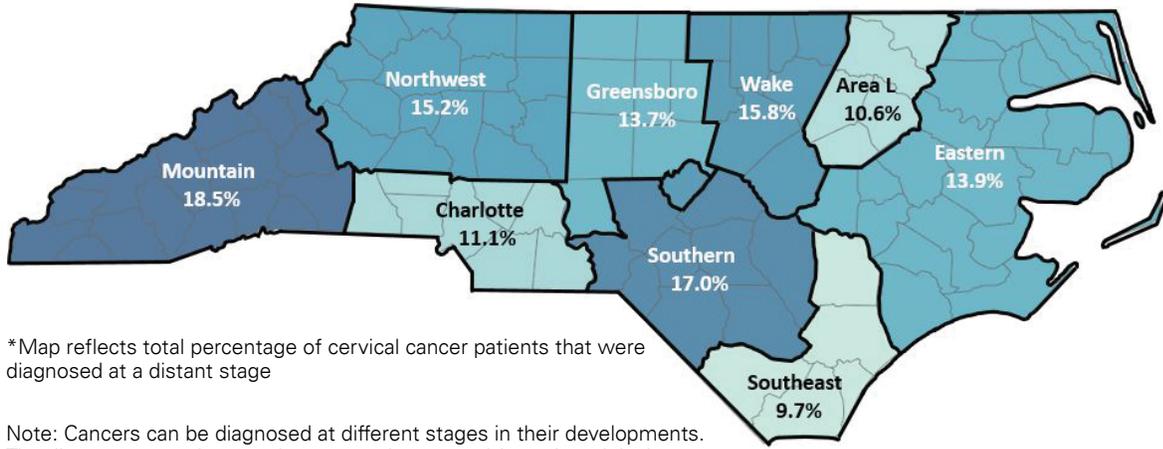
### N.C. Cervical Cancer Mortality Rate by AHEC Region, 2011-2015

Age-adjusted rates per 100,000 women



Map created by N.C. Comprehensive Cancer Control Program

## N.C. Cervical Cancer Distant Stage Diagnosis by AHEC Region, 2010-2014



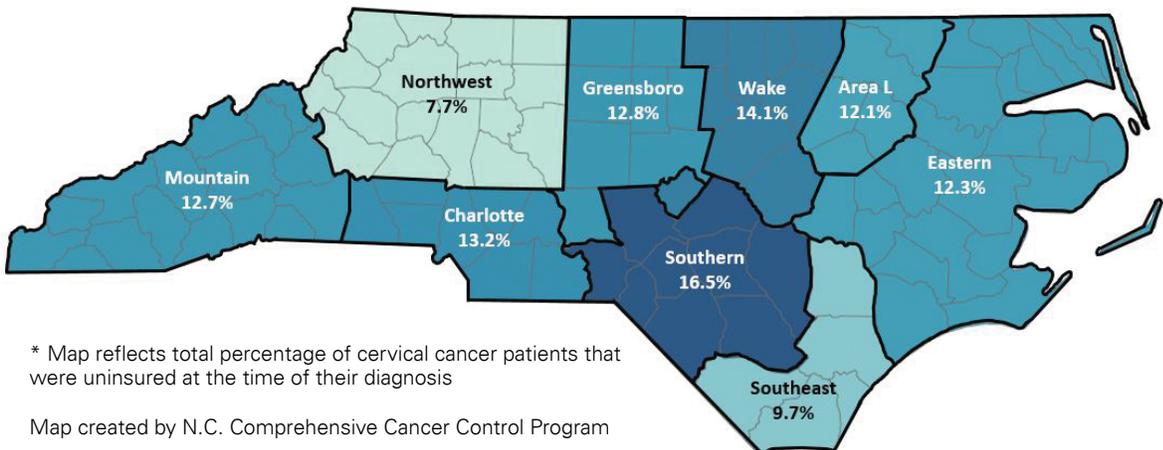
\*Map reflects total percentage of cervical cancer patients that were diagnosed at a distant stage

Note: Cancers can be diagnosed at different stages in their developments. The distant stage refers to when cancer has spread from the original tumor to distant organs or distant lymph nodes

Map created by N.C. Comprehensive Cancer Control Program

Under-and-uninsured women in North Carolina may access free or low-cost cervical cancer screening services through the N.C. Breast and Cervical Cancer Control Program (N.C. BCCCP) in the Cancer Prevention and Control Branch, N.C. Division of Public Health. Those who do not qualify for N.C. BCCCP services or are not diagnosed through N.C. BCCCP providers require alternate avenues for treatment. Cervical cancer is generally diagnosed at a younger age than the other five cancers targeted in the N.C. Cancer Plan. Thus, it is not surprising that patients are less frequently covered by some form of governmental insurance at the time of diagnosis. In total, 12.4% of North Carolina women diagnosed with cervical cancer were uninsured at the time of diagnoses between 2010 and 2014, ranging from as low as 7.7% in the Northwest AHEC region to a high of 16.5% in the Southern AHEC region.

## N.C. Percentage of Uninsured Patients at Cervical Cancer Diagnosis by AHEC Region 2010-2014



\* Map reflects total percentage of cervical cancer patients that were uninsured at the time of their diagnosis

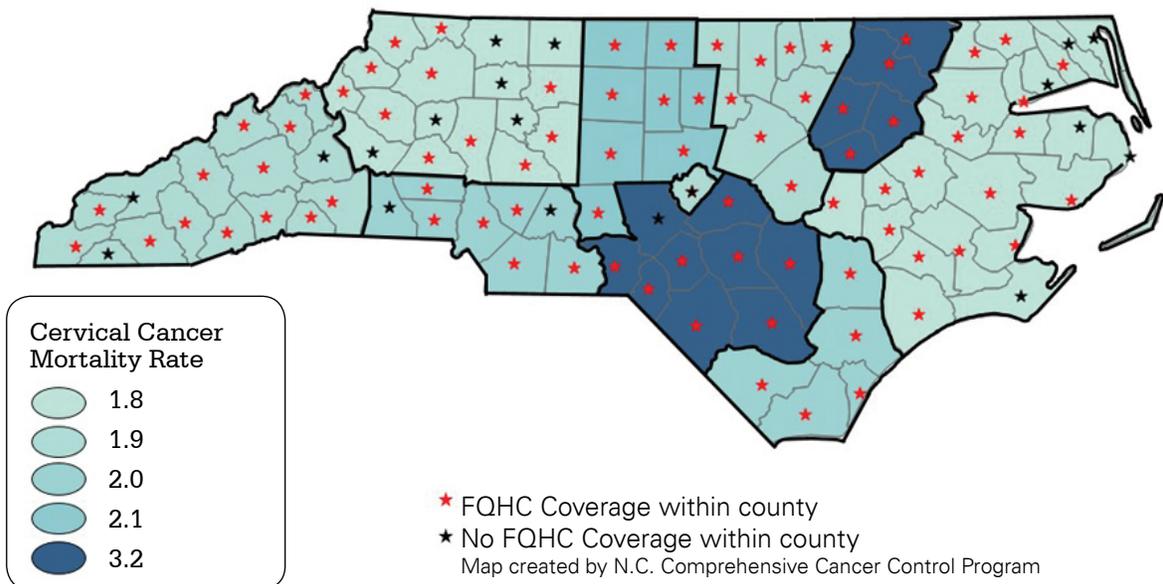
Map created by N.C. Comprehensive Cancer Control Program

## North Carolina Federally Qualified Health Centers

Federally Qualified Health Centers (FOHCs) are non-profit entities providing health services to patients regardless of their ability to pay. They offer a sliding pay scale to help underserved populations get needed services, including cancer screening. Currently, there are 40 FOHCs in North Carolina with more than 220 clinic locations in 81 of the 100 counties.

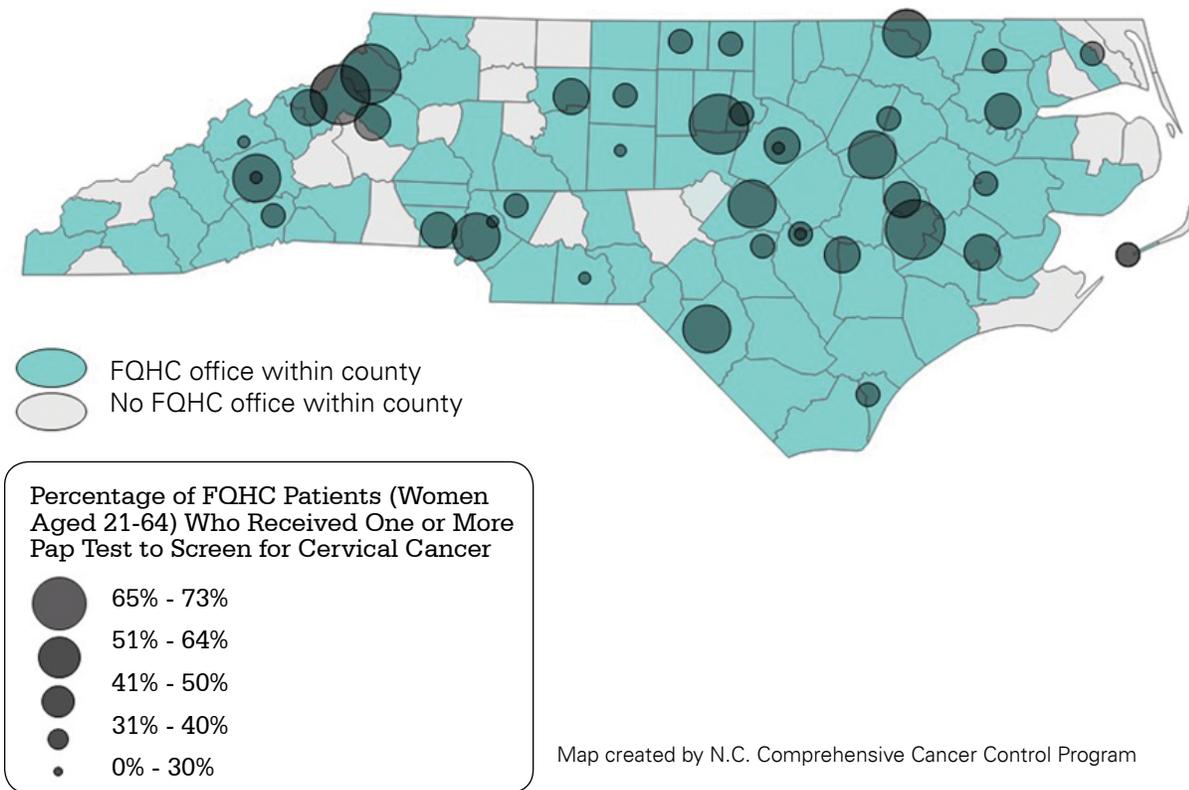
### N.C. Federally Qualified Health Center (FOHC) County Coverage and Cervical Cancer Mortality Rate by County, 2011-2015

Age-adjusted rates per 100,000 women



Counties represented in teal in the map below have at least one FQHC office located in the county. Each dot represents one FQHC. These are sized according to the percentage of patients between the ages of 21 and 64 that received an appropriate pap test per the Health Resources and Services Administration (HRSA).

### N.C. Federally Qualified Health Center (FQHC) County Coverage and FQHC Cervical Cancer Screening Provision in 2015



For more information on individual FQHC cervical cancer screening performance, visit the Health Resources and Services Administrations (HRSA) 2015 Health Center Program Grantee Profiles.<sup>52</sup>

<sup>52</sup> FQHC Location and Screening data obtained from Health Resources and Services Administrations (HRSA) 2015 Health Center Program Grantee Profiles. <http://bphc.hrsa.gov/uds/datacenter.aspx?q=d&state=NC&year=2015#glist>



## N.C. Cervical Cancer Evidence-Based Intervention Strategies

There are many evidence-based intervention strategies to address cervical cancer. Below are just a few examples of CDC recommended evidence-based intervention strategies with suggested activities. Specific health equity activities are marked with an asterisk (\*).

- Identify partners willing to incorporate cervical cancer screening education using group education and small media into their programs and materials to increase community demand for cervical cancer screening services.
- Conduct messaging campaigns (e.g., posters and placards on buses) to increase awareness of the importance of age-appropriate cervical cancer screening.
- Encourage school programs to educate staff and students about the importance of age-appropriate human papillomavirus (HPV) vaccinations.
- Organize cancer partners within or near counties with low cervical cancer screening rates to work together to increase cervical cancer screenings and make referrals to community partners with prevention-related programs.
- \*Provide and/or sponsor educational opportunities and outreach efforts to reach high-risk populations and communities.
- \*Use linguistically and culturally appropriate health education materials and interpreter services, as needed.
- Educate the public that cancer is a chronic disease and people can and do survive.

**Intervention: Group education and small media to increase community demand for cancer screening services.**



**Intervention: Reduce barriers to increase community access to cancer screening services.**

- Develop strong partnerships with local health departments and other organizations that offer N.C. Breast and Cervical Cancer Control Program (N.C. BCCCP) services which include N.C. WISEWOMAN services. Create a referral process for eligible women to receive low or no cost cervical cancer screening.
- \*Explore opportunities for addressing the transportation barriers for low-income women, (e.g., local transportation system providing no or low fares).
- Encourage government and businesses to provide health insurance coverage to all workers and to allow paid time off to get appropriate screenings.
- \*Identify and evaluate culturally-appropriate outreach and education efforts, especially for the most vulnerable populations.
- \*Encourage providers to use lay health advisors, native language speakers or health educators to provide education about risk factors and preventive health behaviors and addressing barriers to care.

**Intervention: Use client reminders to increase community demand for cancer clinical services.**

- Encourage providers to use patient reminders (e.g., reminder cards, email, text messages, etc.) and client incentives to encourage use of clinical services.
- Offer assistance to providers to establish a patient reminder process if they do not have one in place.
- Request appointment reminder cards from N.C. Breast and Cervical Cancer Control Program.

**Intervention: Multicomponent interventions to influence health behaviors.**

- \*Maintain and cultivate traditional and non-traditional partnerships with community organizations that serve Hispanic and African-American women to raise awareness of cervical cancer screening and early detection, as well as services available to under- and uninsured women. Emphasize medically underserved areas such as the Southern, Area L and Mountain AHEC regions and tribal organizations.



- Encourage businesses, governments, schools, community colleges and universities to adopt policies and practices that support healthy behaviors, (e.g., tobacco-free policies, paid leave for annual physicals and routine screenings, healthy eating and physical activities opportunities).
- Encourage businesses to maintain a tobacco-free work place inside and outside of the buildings and to promote *QuitlineNC* to tobacco users.

**Intervention: Adopt organizational policies and practices to improve healthy behaviors.**

- Team up with N.C. BCCCP, local hospitals and Federally Qualified Health Centers (FQHCs) to offer cancer survivorship educational forums and classes for patients and caregivers. (Cancer survivorship begins at diagnosis and continues through a person's life.)
- Equip patient navigators and community health workers with educational resources to support their work to empower survivors to make informed decisions thought out their cancer care.

**Intervention: Develop and disseminate public education programs that empower survivors to make informed decisions.**

- Develop patient navigation protocol for providers to refer patients who do not qualify for N.C. BCCCP services to FQHCs.
- \*Develop cultural sensitivity training for health care providers.

**Intervention: Provider assessment and feedback to increase service delivery by healthcare providers.**

- Support or develop media educational campaign(s) to reduce tobacco use initiation and increase awareness and knowledge about the risk of cancer.
- Support messaging campaigns about cancer risk factors that include tobacco use and exposure to secondhand smoke.

**Intervention: Mass media educational campaigns to reduce tobacco use initiation.**

## Resources

- Consult with the N.C. Comprehensive Cancer Control Program (N.C. CCCP) for technical assistance and resource suggestions.  
<http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm>
- Use *A Call to Action: North Carolina Comprehensive Cancer Control Plan 2014-2020* for information and additional strategies. <http://www.ncpublichealth.com/chronicdiseaseandinjury/cancerpreventionandcontrol/docs/ComprehensiveCancerControlPlan-2014-2020.pdf>
- Partner with the N.C. Advisory Committee on Cancer Coordination and Control, its Subcommittees and Cancer Partners to develop and implement cancer prevention and control programs.  
<http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/acccc.htm>
- Partner with N.C. Community and Clinical Connections for Prevention and Health to increase physical activity and healthy eating opportunities. <http://www.communityclinicalconnections.com>
- Partner with N.C. CCCP and N.C. Tobacco Prevention and Control Branch (N.C. TPCB) for technical assistance with producing messaging campaigns on smoking, lung cancer, and the benefits of quitting.
  - N.C. CCCP – <http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm>
  - N.C. TPCB – <http://www.tobaccopreventionandcontrol.ncdhhs.gov/>
  - QuitlineNC – <http://www.quitlinenc.com/>
- Partner with the N.C. Breast and Cervical Cancer Control Program (N.C. BCCCP) and N.C. WISEWOMAN Program for technical assistance on producing messaging campaigns and other programs.
  - N.C. CCCP – <http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm>
  - N.C. BCCCP – <http://bcccp.ncdhhs.gov/>
  - N.C. WISEWOMAN – <http://bcccp.ncdhhs.gov/wisewoman.htm>
- Explore *The Community Guide* from CDC for evidence-based recommendations about community preventive services, programs and policies to improve health. <https://www.thecommunityguide.org/>
- Partner with the North Carolina Division of Public Health: Immunization Branch for resources and services on HPV vaccine and cervical cancer prevention. <http://www.immunize.nc.gov/>

- Partner with American Cancer Society Cancer Action Network, Inc. (ACS CAN) a nonprofit, nonpartisan advocacy affiliate of the American Cancer Society to support evidence-based policy and legislative solutions designed to eliminate cancer as a major health problem. <http://www.acscan.org/>
- Work with American Cancer Society a community-based, voluntary health organization, for research, education, advocacy, and service to eliminate cancer as a major health problem by preventing cancer, saving lives, and diminishing suffering from cancer. <http://www.cancer.org/>
- Identify resource and partner connections with the North Carolina Alliance for Health to educate the public by producing research, data, and evidence-based solutions to reduce obesity and tobacco. <http://ncallianceforhealth.org/>
- Explore resources from the Patient Advocate Foundation for patient resources, case management and access to care services. <http://patientadvocate.org/>
- Link to resources from North Carolina Health Info, to find reliable, easy-to-use information on health insurance, choosing a provider or health care service and more. <http://www.nchealthinfo.org/>
- Connect to resources and partners from the Cervical Cancer-Free Coalition North Carolina for educational resources, improving cervical cancer policies and programs. <http://www.cervicalcancercoalition.org/>

## Heat Map - Cervical Cancer Statistics by N.C. AHEC Region

Green indicates low-risk

Yellow indicates average risk

Red indicates high-risk

AHEC Region	Number of Cases 2010-2014	Incidence Rate 2010-2014	Number of Deaths 2011-2015	Mortality Rate 2011-2015	Distant Stage Diagnosis 2010-2014	Uninsured at Diagnosis 2010-2014
<b>North Carolina</b>	1,869	7.2	589	2.1	14.3%	12.4%
<b>Area L</b> (Edgecombe, Halifax, Nash, Northampton, Wilson)	66	7.5	34	3.2	10.6%	12.7%
<b>Charlotte</b> (Anson, Cabarrus, Cleveland, Gaston, Lincoln, Mecklenburg, Stanly, Union)	341	7.0	100	2.0	11.1%	7.7%
<b>Eastern</b> (Beaufort, Bertie, Camden, Carteret, Chowan, Craven, Currituck, Dare, Gates, Greene, Hertford, Hyde, Jones, Lenoir, Martin, Onslow, Pamlico, Pasquotank, Perquimans, Pitt, Tyrrell, Washington, Wayne)	187	7.2	52	1.8	13.9%	13.2%
<b>Greensboro</b> (Alamance, Caswell, Chatham, Guilford, Montgomery, Orange, Randolph, Rockingham)	211	6.9	74	2.1	13.7%	12.8%
<b>Mountain</b> (Cherokee, Clay, Graham, Haywood, Henderson, Jackson, Macon, Madison, McDowell, Mitchell, Polk, Rutherford, Swain, Transylvania, Yancey)	157	7.2	48	1.9	18.5%	16.5%
<b>North West</b> (Alexander, Alleghany, Ashe, Avery, Burke, Caldwell, Catawba, Davidson, Davie, Forsyth, Iredell, rowan, Stokes, Surry, Watauga, Wilkes, Yadkin)	297	7.0	86	1.8	15.2%	14.1%
<b>South East</b> (Brunswick, Columbus, Duplin, New Hanover, Pender)	103	7.7	32	2.0	9.7%	9.7%
<b>Southern Regional</b> (Bladen, Cumberland, Harnett, Hoke, Moore, Richmond, Robeson, Sampson, Scotland)	206	8.9	77	3.2	17.0%	12.1%
<b>Wake</b> (Durham, Franklin, Granville, Johnston, Lee, Person, Vance, Wake, Warren)	297	6.6	86	1.9	15.8%	12.3%

Heat Map created by N.C. Comprehensive Cancer Control Program

# Cancer Screening Guidelines

Cancer screening involves looking for cancer before it causes symptoms. Finding cancer at an early stage increases the chances for successful treatment. This chart below lists recommended screening guidelines for five of the six priority cancers in the *N.C. Comprehensive Cancer Control Plan 2014-2020-A Call to Action* (lung, colorectal, breast, prostate and cervical cancers).

For more detailed information on screening guidelines visit the websites listed.

- Centers for Disease Control and Prevention (CDC) website  
<https://www.cdc.gov/cancer/dcpc/prevention/screening.htm>
- United States Preventive Services Task Force (USPSTF)  
<https://www.uspreventiveservicestaskforce.org/BrowseRec/Index/browse-recommendations>
- American Cancer Society and/or American Cancer Society (ACS)  
<https://www.cancer.org/cancer.html>
- American Lung Association website: <http://www.lung.org>

Lung Cancer Guidelines	Colon Cancer Guidelines	Breast Cancer Guidelines	Prostate Cancer Guidelines	Cervical Cancer Guidelines
<p><b>Low-dose spiral computed tomography (LDCT)</b> scans are recommended annually for current or former smokers age 55 to 74 years with <math>\geq 30</math> pack-year smoking history (an average of a pack per day for 30 years), who either currently smoke or have quit within the past 15 years and who are in relatively good health.</p> <p><b>Last Updated: 2014</b></p>	<ul style="list-style-type: none"> <li>• Individuals should discuss colon cancer screening with their healthcare provider at age 50 or sooner if there is a personal or family history that increases the colon cancer risk.</li> <li>• The U.S. Preventive Services Task force recommends screening for colorectal cancer in adults age 76 to 85 years be performed selectively, taking into account patients' overall health and prior screening history</li> <li>• Public and healthcare providers should follow current expert group guidelines for colon cancer screening, with preference given to screening options supported by the strongest clinical research.</li> </ul> <p><b>Recommended Screening tests and intervals are:</b></p> <p><b>Stool-based tests: fecal occult blood testing (gFOBT) or fecal immunochemical testing (FIT)</b> test each year multi-targeted stool DNA testing/ <b>(FIT – DNA)</b> test every 1 or 3 years</p> <p><b>Colonoscopy</b> should be done every 10 years. Colonoscopies can be used as screening tests or as follow-up diagnostic tools when the results of another screening are positive.</p> <p><b>Flexible Sigmoidoscopy</b> - every 5 years; <b>Flexible Sigmoidoscopy with FIT</b> – every 10 years plus FIT every year</p> <p><b>CT Colonography</b> (virtual colonoscopy) every 5 years</p> <p>For more information on guidelines, go to the U.S. Preventive Services Task force (USPSTF) website.</p> <p><b>Last Updated: 2016</b></p>	<ul style="list-style-type: none"> <li>• Women age 45 to 74 should receive mammography screening everyone to two years</li> <li>• Women age 40 to 49 should be counseled regarding the risks and benefits of screening, including the mortality benefit and the potential risk of over diagnosis in this age group.</li> <li>• Women age 75 and older should also share decision-making regarding mammography screening with their health care providers, discussing individual factors affecting risks and benefits.</li> <li>• Because of conflicting opinion on the utility of clinical breast exam (CBE) and breast self-exam (BSE) woman be educated about the potential benefits and harms of breast self-exam.</li> <li>• Because of conflicting opinion on the utility of digital breast tomosynthesis, review screening guidelines from expert resources.</li> <li>• Individual should discuss breast cancer screenings with their healthcare provider at age 45 or sooner if there is a personal or family history that increases the breast</li> </ul> <p><b>Last Updated: 2016</b></p>	<p>Men aged 50 years or older should discuss <b>prostate cancer screening</b> with their health care provider (Informed Decision Making). Men in high-risk groups should start this discussion at age 40-45.</p> <p><b>Currently being reviewed by USPSTF.</b></p> <p><b>Last Updated: 2013</b></p>	<p><b>Pap test screening</b> should start at age 21 and stop at age 65 unless there are other risk factors.</p> <p><b>Human papillomavirus (HPV) co-testing</b> should begin after age 30 and be repeated every 5 years.</p> <p><b>Currently being reviewed by USPSTF.</b></p> <p><b>Last Updated: 2012</b></p>

**Appendix Table 1 - 2014 N.C. Age Demographics**

County	Total Population	0 to 9	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 to 79	80+
<b>North Carolina</b>	<b>9,940,387</b>	<b>12.6%</b>	<b>13.1%</b>	<b>13.8%</b>	<b>12.7%</b>	<b>13.5%</b>	<b>13.7%</b>	<b>11.0%</b>	<b>6.2%</b>	<b>3.5%</b>
Alamance	156,357	12.2%	14.0%	13.0%	11.4%	13.7%	13.9%	10.9%	6.6%	4.4%
Alexander	37,364	10.8%	12.0%	11.1%	11.6%	14.3%	14.7%	13.1%	8.4%	4.0%
Alleghany	10,878	9.5%	10.7%	9.2%	9.7%	12.8%	15.5%	16.2%	10.4%	6.0%
Anson	26,122	10.5%	11.6%	14.4%	13.0%	13.5%	14.1%	11.9%	6.7%	4.3%
Ashe	27,101	9.9%	10.4%	9.7%	10.8%	12.8%	15.0%	15.7%	10.5%	5.4%
Avery	17,726	8.0%	10.9%	13.5%	12.4%	14.2%	14.0%	13.3%	8.7%	5.0%
Beaufort	47,513	11.2%	11.8%	10.3%	10.6%	11.8%	14.9%	15.3%	9.4%	4.6%
Bertie	20,406	9.7%	10.8%	13.7%	10.8%	12.1%	16.0%	13.2%	8.5%	5.2%
Bladen	34,542	11.4%	12.4%	11.3%	11.1%	12.5%	14.9%	14.3%	8.2%	3.9%
Brunswick	118,919	9.4%	9.3%	9.2%	10.1%	11.0%	14.2%	20.7%	11.8%	4.3%
Buncombe	250,297	10.7%	11.0%	13.0%	13.3%	13.0%	14.1%	13.0%	7.3%	4.7%
Burke	88,807	10.2%	12.3%	12.1%	10.8%	13.8%	15.5%	12.8%	8.1%	4.4%
Cabarrus	191,929	13.8%	14.7%	11.7%	13.2%	15.5%	13.3%	9.5%	5.3%	2.9%
Caldwell	81,434	10.8%	12.4%	11.3%	10.9%	14.7%	15.2%	13.0%	7.9%	3.7%
Camden	10,286	11.1%	15.1%	9.7%	11.9%	15.4%	16.0%	11.1%	6.5%	3.2%
Carteret	68,730	9.4%	10.8%	10.9%	10.7%	12.5%	15.8%	15.6%	9.3%	4.9%
Caswell	22,956	9.8%	11.1%	11.3%	11.0%	13.1%	16.3%	14.5%	8.6%	4.2%
Catawba	154,618	12.1%	13.2%	11.8%	11.5%	14.2%	14.6%	11.9%	6.9%	3.6%
Chatham	68,609	10.8%	11.4%	8.8%	10.3%	12.9%	14.6%	15.2%	9.9%	6.1%
Cherokee	27,087	9.3%	10.4%	8.9%	9.4%	11.7%	14.7%	18.0%	12.2%	5.4%
Chowan	14,616	11.0%	12.0%	10.7%	10.3%	10.6%	15.4%	14.9%	9.4%	5.7%
Clay	10,618	9.2%	10.5%	8.5%	9.1%	11.0%	14.6%	18.5%	12.4%	6.1%
Cleveland	97,007	11.7%	13.3%	12.6%	10.6%	13.5%	14.7%	12.4%	7.4%	3.8%
Columbus	56,938	11.6%	12.9%	12.4%	11.7%	12.7%	14.3%	12.6%	7.7%	4.0%
Craven	104,350	13.3%	11.7%	18.1%	11.6%	10.1%	12.3%	11.3%	7.4%	4.3%
Cumberland	325,814	15.3%	13.2%	19.2%	13.5%	11.5%	11.8%	8.3%	4.7%	2.5%
Currituck	24,927	11.5%	13.0%	10.9%	11.4%	14.6%	17.2%	12.1%	6.5%	2.8%
Dare	35,083	10.9%	10.4%	9.9%	11.7%	13.4%	16.9%	15.3%	7.7%	3.7%
Davidson	164,067	11.8%	13.1%	11.1%	11.3%	14.6%	15.1%	11.9%	7.3%	3.7%
Davie	41,322	10.9%	13.2%	9.7%	10.3%	14.0%	15.6%	13.4%	8.1%	5.0%
Duplin	59,618	13.8%	13.5%	12.0%	11.9%	12.8%	14.0%	11.6%	6.7%	3.8%
Durham	295,323	13.3%	11.8%	16.6%	16.4%	13.1%	12.3%	9.3%	4.2%	2.8%
Edgecombe	54,898	12.8%	12.7%	12.8%	10.9%	11.9%	14.9%	12.8%	7.1%	4.1%
Forsyth	365,593	13.0%	13.8%	13.6%	12.3%	13.2%	13.9%	10.7%	5.8%	3.7%
Franklin	62,805	12.2%	13.6%	11.3%	11.7%	14.3%	15.2%	12.0%	6.4%	3.2%
Gaston	211,040	12.5%	12.9%	12.5%	12.0%	14.7%	14.3%	11.3%	6.3%	3.5%
Gates	11,550	10.9%	12.7%	11.0%	9.6%	13.5%	17.8%	12.7%	7.7%	4.0%
Graham	8,651	11.4%	11.9%	10.5%	10.3%	12.4%	14.2%	14.2%	10.0%	5.1%
Granville	58,357	10.9%	13.0%	12.1%	11.6%	15.2%	15.6%	11.8%	6.4%	3.4%

**Appendix Table 1 - 2014 N.C. Age Demographics, continued**

County	Total Population	0 to 9	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 to 79	80+
<b>North Carolina</b>	<b>9,940,387</b>	<b>12.6%</b>	<b>13.1%</b>	<b>13.8%</b>	<b>12.7%</b>	<b>13.5%</b>	<b>13.7%</b>	<b>11.0%</b>	<b>6.2%</b>	<b>3.5%</b>
Greene	21,247	11.8%	11.6%	13.1%	14.1%	13.5%	15.0%	11.3%	6.1%	3.5%
Guilford	512,959	12.4%	13.7%	14.9%	12.6%	13.5%	13.5%	10.3%	5.5%	3.5%
Halifax	53,019	11.6%	12.3%	12.4%	10.6%	12.3%	15.2%	13.1%	7.8%	4.6%
Harnett	126,865	15.5%	14.5%	14.2%	14.9%	13.1%	11.9%	8.6%	4.9%	2.3%
Haywood	59,380	9.5%	10.8%	10.6%	10.2%	12.9%	14.9%	15.0%	10.3%	5.8%
Henderson	110,939	10.6%	11.0%	9.5%	10.7%	12.4%	14.0%	14.7%	10.5%	6.6%
Hertford	24,380	10.9%	13.1%	13.2%	11.2%	11.8%	15.4%	12.4%	7.4%	4.5%
Hoke	51,644	17.5%	13.4%	15.8%	16.5%	12.2%	11.8%	7.7%	3.5%	1.6%
Hyde	5,661	9.5%	9.7%	12.0%	14.3%	13.5%	14.9%	14.1%	7.4%	4.5%
Iredell	166,822	12.1%	14.1%	11.7%	11.8%	15.1%	14.9%	10.8%	6.3%	3.2%
Jackson	40,998	9.5%	13.8%	18.6%	10.5%	10.7%	12.6%	13.1%	7.7%	3.5%
Johnston	180,959	14.1%	14.6%	11.2%	13.2%	15.7%	13.4%	10.1%	5.2%	2.4%
Jones	10,074	10.1%	10.8%	12.0%	9.8%	11.7%	16.5%	14.6%	9.4%	5.2%
Lee	59,588	14.1%	13.5%	12.7%	12.5%	12.9%	13.5%	10.8%	6.2%	3.7%
Lenoir	58,399	12.4%	12.7%	11.9%	10.8%	12.0%	15.4%	12.8%	7.6%	4.4%
Lincoln	79,880	11.1%	13.0%	11.1%	11.2%	15.4%	15.7%	12.4%	6.9%	3.1%
Macon	44,954	11.0%	11.8%	11.4%	11.4%	14.0%	15.0%	13.3%	8.0%	4.2%
Madison	33,889	10.2%	10.7%	9.9%	9.6%	10.8%	14.2%	16.6%	11.7%	6.3%
Martin	21,166	9.5%	13.5%	12.1%	10.7%	12.4%	14.6%	14.4%	8.4%	4.4%
McDowell	23,448	10.9%	11.8%	11.1%	9.4%	12.5%	15.7%	15.0%	9.0%	4.6%
Mecklenburg	1,011,928	14.0%	13.1%	15.1%	15.9%	14.6%	12.5%	8.4%	4.0%	2.4%
Mitchell	15,330	9.9%	10.7%	10.4%	10.2%	12.6%	15.3%	14.9%	10.5%	5.7%
Montgomery	27,410	12.2%	13.2%	11.3%	11.1%	12.6%	14.2%	13.3%	7.9%	4.2%
Moore	93,066	11.4%	11.7%	10.0%	11.3%	11.9%	13.3%	13.5%	10.0%	6.9%
Nash	94,249	12.0%	13.3%	12.0%	11.4%	13.3%	14.9%	12.4%	6.8%	3.9%
New Hanover	216,585	10.8%	11.8%	16.6%	13.1%	12.7%	13.0%	11.7%	6.4%	3.9%
Northampton	20,567	10.3%	10.5%	11.2%	9.2%	11.5%	16.7%	15.1%	9.6%	6.0%
Onslow	185,267	17.0%	12.2%	28.5%	13.1%	8.7%	8.6%	6.2%	3.8%	1.9%
Orange	140,160	10.4%	15.8%	19.5%	11.4%	12.8%	13.1%	10.0%	4.5%	2.5%
Pamlico	12,909	8.4%	9.9%	9.9%	9.9%	11.0%	16.1%	17.8%	11.2%	5.9%
Pasquotank	39,628	12.5%	12.4%	15.1%	12.5%	12.0%	14.1%	11.0%	6.5%	3.8%
Pender	56,086	11.8%	12.6%	10.9%	11.9%	13.8%	15.3%	12.9%	7.3%	3.6%
Perquimans	13,462	10.9%	11.2%	9.7%	10.2%	10.9%	15.3%	15.4%	11.4%	5.1%
Person	39,125	11.4%	12.6%	11.3%	10.8%	13.5%	16.0%	13.0%	7.2%	4.2%
Pitt	175,103	12.5%	14.3%	21.2%	12.4%	11.5%	11.6%	9.2%	4.6%	2.8%
Polk	20,337	8.5%	10.8%	8.7%	8.0%	12.0%	15.7%	16.7%	11.6%	8.0%
Randolph	142,617	12.2%	13.5%	11.7%	11.3%	14.4%	14.7%	11.7%	6.9%	3.6%
Richmond	45,700	12.7%	13.2%	13.2%	11.4%	13.1%	13.9%	12.0%	6.8%	3.7%
Robeson	134,732	14.5%	14.7%	14.1%	12.2%	12.7%	13.1%	10.7%	5.4%	2.7%
Rockingham	91,821	10.9%	12.2%	11.1%	10.6%	13.9%	15.9%	13.1%	7.8%	4.5%

**Appendix Table 1 - 2014 N.C. Age Demographics, continued**

County	Total Population	0 to 9	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 to 79	80+
<b>North Carolina</b>	<b>9,940,387</b>	<b>12.6%</b>	<b>13.1%</b>	<b>13.8%</b>	<b>12.7%</b>	<b>13.5%</b>	<b>13.7%</b>	<b>11.0%</b>	<b>6.2%</b>	<b>3.5%</b>
Rowan	138,648	12.1%	13.1%	12.7%	11.7%	13.3%	14.5%	11.7%	6.9%	4.0%
Rutherford	66,537	11.1%	12.3%	10.9%	10.6%	13.5%	15.0%	13.7%	8.4%	4.4%
Sampson	64,010	13.3%	13.8%	11.7%	12.0%	13.4%	13.7%	11.4%	7.0%	3.8%
Scotland	35,715	13.1%	13.1%	13.2%	11.7%	12.8%	13.7%	12.0%	6.7%	3.8%
Stanly	60,629	11.7%	12.5%	12.9%	10.9%	13.5%	14.4%	12.4%	7.7%	4.1%
Stokes	46,415	9.9%	12.4%	10.6%	10.2%	14.6%	16.3%	13.2%	8.5%	4.3%
Surry	72,980	11.4%	13.0%	10.9%	10.7%	14.0%	14.4%	12.7%	8.1%	4.8%
Swain	14,286	12.6%	12.4%	12.7%	11.0%	12.3%	14.0%	12.6%	8.2%	4.1%
Transylvania	32,991	8.6%	10.4%	10.4%	9.3%	10.6%	14.4%	16.2%	12.8%	7.3%
Tyrrell	4,118	10.5%	9.3%	13.5%	13.4%	12.5%	15.3%	12.1%	8.8%	4.6%
Union	218,337	14.0%	17.5%	10.2%	11.9%	16.8%	13.6%	8.9%	5.0%	2.1%
Vance	44,587	13.4%	13.1%	12.6%	10.8%	12.9%	14.0%	12.3%	6.9%	3.9%
Wake	999,271	13.6%	14.2%	13.9%	15.0%	15.4%	13.1%	8.5%	4.0%	2.3%
Warren	20,224	10.2%	10.7%	11.7%	10.4%	11.3%	15.9%	15.4%	9.1%	5.2%
Washington	12,558	11.7%	11.9%	10.7%	9.2%	11.7%	15.4%	15.1%	9.1%	5.2%
Watauga	52,388	7.3%	14.9%	27.5%	9.0%	9.6%	11.6%	10.8%	6.0%	3.3%
Wayne	124,502	13.7%	12.9%	15.0%	12.1%	12.2%	13.8%	10.6%	6.3%	3.5%
Wilkes	68,802	10.8%	12.4%	10.7%	10.6%	13.4%	15.2%	13.4%	8.8%	4.6%
Wilson	81,394	12.9%	13.2%	12.3%	11.7%	12.8%	14.2%	12.1%	6.9%	4.0%
Yadkin	37,798	11.3%	12.8%	11.1%	10.4%	14.5%	15.1%	12.4%	8.1%	4.4%
Yancey	17,586	9.8%	11.3%	10.0%	10.1%	13.2%	14.2%	15.6%	10.4%	5.4%

**Appendix Table 2 - 2014 N.C. Race/Ethnicity, Gender and Education Demographics**

County	Total Population	Race/Ethnicity					Gender		Education
		Non-Hispanic White	Non-Hispanic African American	Non-Hispanic American Indians	Non-Hispanic Other Races	Hispanics	Male	Female	High School Graduate or Higher
<b>North Carolina</b>	<b>9,940,387</b>	<b>64.9%</b>	<b>22.0%</b>	<b>1.2%</b>	<b>2.9%</b>	<b>9.0%</b>	<b>48.7%</b>	<b>51.3%</b>	<b>85.8%</b>
Alamance	156,357	66.4%	19.4%	0.4%	1.7%	12.1%	47.7%	52.3%	83.2%
Alexander	37,364	88.1%	6.1%	0.2%	1.1%	4.4%	50.9%	49.1%	80.7%
Alleghany	10,878	87.6%	2.0%	0.2%	0.8%	9.5%	50.0%	50.0%	80.5%
Anson	26,122	45.7%	49.1%	0.6%	1.0%	3.6%	52.5%	47.5%	79.2%
Ashe	27,101	92.9%	1.0%	0.2%	0.6%	5.3%	49.6%	50.4%	82.2%
Avery	17,726	89.9%	4.6%	0.4%	0.5%	4.7%	54.5%	45.5%	79.5%
Beaufort	47,513	66.5%	25.3%	0.3%	0.5%	7.5%	48.1%	51.9%	83.5%
Bertie	20,406	35.2%	61.9%	0.5%	0.6%	1.7%	50.9%	49.1%	75.3%
Bladen	34,542	55.2%	34.5%	2.3%	0.3%	7.7%	48.0%	52.0%	79.2%
Brunswick	118,919	82.3%	11.4%	0.7%	0.8%	4.8%	48.5%	51.5%	86.6%
Buncombe	250,297	84.8%	6.8%	0.4%	1.5%	6.5%	48.0%	52.0%	89.7%
Burke	88,807	83.3%	6.6%	0.3%	3.9%	5.9%	49.6%	50.4%	79.1%
Cabarrus	191,929	70.1%	16.8%	0.4%	2.9%	9.9%	48.8%	51.2%	88.3%
Caldwell	81,434	88.8%	5.3%	0.2%	0.7%	5.0%	49.4%	50.6%	76.7%
Camden	10,286	81.3%	13.1%	0.4%	2.5%	2.6%	49.9%	50.1%	86.3%
Carteret	68,730	87.3%	6.5%	0.5%	1.4%	4.3%	49.3%	50.7%	89.5%
Caswell	22,956	61.8%	33.9%	0.3%	0.4%	3.6%	50.6%	49.4%	76.1%
Catawba	154,618	77.6%	9.0%	0.2%	4.1%	8.9%	49.1%	50.9%	82.6%
Chatham	68,609	72.3%	12.9%	0.3%	1.9%	12.7%	47.9%	52.1%	86.5%
Cherokee	27,087	92.9%	1.9%	1.6%	0.7%	2.9%	48.6%	51.4%	82.8%
Chowan	14,616	60.8%	34.3%	0.4%	1.2%	3.3%	47.7%	52.3%	82.6%
Clay	10,618	94.8%	1.5%	0.4%	0.3%	3.1%	49.3%	50.7%	88.2%
Cleveland	97,007	74.3%	21.3%	0.2%	1.1%	3.1%	48.2%	51.8%	82.4%
Columbus	56,938	60.8%	30.5%	3.4%	0.5%	4.9%	49.3%	50.7%	79.6%
Craven	104,350	67.5%	22.0%	0.5%	2.8%	7.2%	50.7%	49.3%	87.3%
Cumberland	325,814	46.4%	37.7%	1.6%	3.3%	11.0%	48.9%	51.1%	90.0%
Currituck	24,927	88.6%	6.3%	0.5%	1.0%	3.6%	49.6%	50.4%	86.4%
Dare	35,083	88.8%	3.2%	0.3%	0.7%	6.9%	49.4%	50.6%	92.1%
Davidson	164,067	81.8%	9.5%	0.4%	1.4%	6.8%	49.0%	51.0%	81.9%
Davie	41,322	85.7%	6.8%	0.3%	0.8%	6.4%	49.0%	51.0%	85.1%
Duplin	59,618	52.4%	25.2%	0.3%	0.5%	21.6%	49.0%	51.0%	72.0%
Durham	295,323	42.9%	38.3%	0.4%	5.1%	13.4%	47.9%	52.1%	87.5%
Edgecombe	54,898	37.3%	57.7%	0.4%	0.4%	4.2%	46.3%	53.7%	76.9%
Forsyth	365,593	58.5%	26.3%	0.3%	2.4%	12.5%	47.5%	52.5%	87.3%
Franklin	62,805	64.2%	26.7%	0.5%	0.6%	7.9%	49.6%	50.4%	82.9%

**Appendix Table 2 - 2014 N.C. Race/Ethnicity, Gender and Education Demographics, continued**

County	Total Population	Race/Ethnicity					Gender		Education
		Non-Hispanic White	Non-Hispanic African American	Non-Hispanic American Indians	Non-Hispanic Other Races	Hispanics	Male	Female	High School Graduate or Higher
<b>North Carolina</b>	<b>9,940,387</b>	<b>64.9%</b>	<b>22.0%</b>	<b>1.2%</b>	<b>2.9%</b>	<b>9.0%</b>	<b>48.7%</b>	<b>51.3%</b>	<b>85.8%</b>
Gaston	211,040	75.5%	16.1%	0.4%	1.6%	6.4%	48.5%	51.5%	82.9%
Gates	11,550	63.2%	33.8%	0.6%	0.3%	2.0%	48.9%	51.1%	84.6%
Graham	8,651	88.4%	1.0%	6.9%	0.5%	3.3%	49.4%	50.6%	78.4%
Granville	58,357	59.2%	32.1%	0.4%	0.7%	7.6%	51.0%	49.0%	81.3%
Greene	21,247	47.9%	36.4%	0.5%	0.4%	14.7%	54.6%	45.4%	74.9%
Guilford	512,959	53.0%	34.0%	0.5%	4.8%	7.7%	47.5%	52.5%	88.2%
Halifax	53,019	39.3%	53.4%	3.9%	0.7%	2.8%	47.8%	52.2%	76.6%
Harnett	126,865	63.9%	21.7%	1.0%	1.5%	11.9%	49.5%	50.5%	85.6%
Haywood	59,380	93.9%	1.4%	0.5%	0.5%	3.7%	48.1%	51.9%	86.9%
Henderson	110,939	84.9%	3.6%	0.4%	1.2%	9.9%	48.3%	51.7%	88.1%
Hertford	24,380	34.5%	60.2%	1.1%	0.8%	3.3%	49.5%	50.5%	79.9%
Hoke	51,644	42.5%	34.3%	9.1%	1.8%	12.3%	49.3%	50.7%	84.9%
Hyde	5,661	61.8%	29.6%	0.4%	0.7%	7.6%	55.8%	44.2%	79.4%
Iredell	166,822	77.6%	12.3%	0.3%	2.5%	7.3%	49.3%	50.7%	87.2%
Jackson	40,998	82.1%	2.5%	9.2%	1.0%	5.3%	49.2%	50.8%	88.2%
Johnston	180,959	69.8%	15.6%	0.5%	0.8%	13.3%	49.0%	51.0%	84.0%
Jones	10,074	62.9%	31.6%	0.6%	0.5%	4.5%	48.7%	51.3%	81.9%
Lee	59,588	59.1%	19.8%	0.6%	1.1%	19.4%	49.1%	50.9%	80.7%
Lenoir	58,399	50.6%	41.0%	0.4%	0.8%	7.3%	47.7%	52.3%	79.5%
Lincoln	79,880	86.1%	5.8%	0.3%	0.7%	7.1%	49.9%	50.1%	82.9%
Macon	44,954	89.1%	4.2%	0.3%	0.8%	5.6%	50.2%	49.8%	87.1%
Madison	33,889	90.2%	1.8%	0.5%	0.7%	6.7%	48.7%	51.3%	80.7%
Martin	21,166	94.6%	2.0%	0.3%	0.6%	2.5%	49.7%	50.3%	82.6%
McDowell	23,448	52.4%	43.2%	0.3%	0.5%	3.7%	47.0%	53.0%	81.7%
Mecklenburg	1,011,928	49.6%	31.6%	0.4%	5.7%	12.6%	48.1%	51.9%	89.4%
Mitchell	15,330	93.6%	0.9%	0.3%	0.5%	4.7%	49.4%	50.6%	80.8%
Montgomery	27,410	64.3%	18.7%	0.4%	1.4%	15.2%	48.6%	51.4%	75.0%
Moore	93,066	78.2%	13.3%	0.9%	1.3%	6.3%	48.0%	52.0%	89.2%
Nash	94,249	52.2%	39.7%	0.7%	0.9%	6.6%	48.1%	51.9%	84.0%
New Hanover	216,585	77.8%	14.7%	0.4%	1.7%	5.4%	48.1%	51.9%	91.7%
Northampton	20,567	38.7%	58.6%	0.5%	0.3%	2.0%	48.5%	51.5%	76.3%
Onslow	185,267	68.6%	16.0%	0.7%	2.7%	12.0%	54.2%	45.8%	90.8%
Orange	140,160	70.9%	12.3%	0.4%	8.0%	8.4%	47.8%	52.2%	92.1%
Pamlico	12,909	74.9%	20.4%	0.6%	0.6%	3.5%	51.4%	48.6%	86.9%
Pasquotank	39,628	55.9%	37.5%	0.4%	1.6%	4.7%	49.2%	50.8%	83.8%

**Appendix Table 2 - 2014 N.C. Race/Ethnicity, Gender and Education Demographics, continued**

County	Total Population	Race/Ethnicity					Gender		Education
		Non-Hispanic White	Non-Hispanic African American	Non-Hispanic American Indians	Non-Hispanic Other Races	Hispanics	Male	Female	High School Graduate or Higher
<b>North Carolina</b>	<b>9,940,387</b>	<b>64.9%</b>	<b>22.0%</b>	<b>1.2%</b>	<b>2.9%</b>	<b>9.0%</b>	<b>48.7%</b>	<b>51.3%</b>	<b>85.8%</b>
Pender	56,086	75.4%	17.0%	0.5%	0.7%	6.3%	50.1%	49.9%	85.7%
Perquimans	13,462	72.2%	24.7%	0.3%	0.4%	2.4%	48.1%	51.9%	83.9%
Person	39,125	67.0%	27.6%	0.7%	0.5%	4.2%	48.7%	51.3%	83.0%
Pitt	175,103	56.8%	34.8%	0.3%	2.1%	5.9%	47.2%	52.8%	88.1%
Polk	20,337	88.8%	4.8%	0.3%	0.5%	5.7%	47.9%	52.1%	88.1%
Randolph	142,617	80.8%	6.3%	0.5%	1.3%	11.1%	49.4%	50.6%	79.8%
Richmond	45,700	58.4%	31.6%	2.6%	1.0%	6.4%	49.0%	51.0%	80.6%
Robeson	134,732	27.2%	24.7%	39.1%	0.8%	8.2%	48.3%	51.7%	75.1%
Rockingham	91,821	73.7%	19.3%	0.4%	0.7%	5.9%	48.3%	51.7%	80.4%
Rowan	138,648	73.7%	16.5%	0.4%	1.2%	8.1%	49.4%	50.6%	82.5%
Rutherford	66,537	84.7%	10.4%	0.3%	0.6%	4.0%	48.3%	51.7%	81.1%
Sampson	64,010	52.8%	26.4%	1.9%	0.5%	18.4%	49.3%	50.7%	75.2%
Scotland	35,715	45.4%	39.5%	11.4%	0.9%	2.9%	49.6%	50.4%	78.7%
Stanly	60,629	82.2%	11.6%	0.3%	2.0%	3.9%	49.8%	50.2%	82.8%
Stokes	46,415	92.1%	4.3%	0.3%	0.4%	2.9%	49.1%	50.9%	80.8%
Surry	72,980	85.0%	4.0%	0.2%	0.7%	10.1%	48.9%	51.1%	76.8%
Swain	14,286	65.4%	1.8%	27.5%	0.6%	4.7%	48.4%	51.6%	80.6%
Transylvania	32,991	91.4%	4.5%	0.3%	0.6%	3.2%	48.4%	51.6%	88.5%
Tyrrell	4,118	53.7%	36.9%	0.2%	2.4%	6.7%	53.8%	46.2%	69.7%
Union	218,337	74.4%	12.0%	0.4%	2.4%	10.9%	49.4%	50.6%	89.0%
Vance	44,587	41.3%	50.6%	0.3%	0.6%	7.3%	46.8%	53.2%	76.8%
Wake	999,271	61.9%	21.1%	0.3%	6.7%	10.0%	48.7%	51.3%	91.9%
Warren	20,224	38.9%	51.6%	5.2%	0.4%	3.9%	50.5%	49.5%	77.8%
Washington	12,558	45.6%	48.8%	0.2%	0.4%	5.0%	46.9%	53.1%	79.4%
Watauga	52,388	93.1%	2.1%	0.3%	1.2%	3.4%	50.1%	49.9%	89.0%
Wayne	124,502	55.2%	31.9%	0.3%	1.5%	11.0%	49.2%	50.8%	82.7%
Wilkes	68,802	88.8%	4.6%	0.2%	0.5%	5.8%	49.3%	50.7%	75.0%
Wilson	81,394	48.9%	39.6%	0.3%	1.1%	10.1%	47.5%	52.5%	79.8%
Yadkin	37,798	85.3%	3.5%	0.2%	0.3%	10.7%	49.5%	50.5%	77.5%
Yancey	17,586	93.3%	1.3%	0.3%	0.2%	4.9%	49.3%	50.7%	82.4%

\*Age, Gender, and Race/Ethnicity percentages derived from raw 2014 population totals provided by N.C. State Center for Health Statistics. High School education data obtained from U.S. Census Bureau's QuickFacts website <https://www.census.gov/quickfacts/>.

### Appendix Table 3 - The Burden of Cancer in N.C. Intervention Strategies Summary

There are many evidence-based intervention strategies to address cervical cancer. Below are just a few examples of CDC recommended evidence-based intervention strategies with suggested activities. Specific health equity activities are marked with an asterisk (\*).

**Intervention: Group education and small media to increase community demand for cancer screening services.**

Lung	Colorectal	Breast	Prostate	Melanoma	Cervical
Reach out to communities with large senior populations to offer programs on the benefits of screening for previous or current smokers. Consider partnering with cancer centers, senior centers, senior living communities and churches.	Provide educational programs with emphasis on senior populations about on the benefits of colorectal screenings.	Identify effective outreach efforts for women at elevated risk for breast cancer, particularly those who have been previously diagnosed with cancer and/or have relatives who were diagnosed with breast cancer.	*Provide education programs with emphasis on senior populations and American-Indian men about the early signs and symptoms of prostate cancer.	*Provide education programs with emphasis on senior populations about early signs of melanoma skin cancer and the importance of skin cancer screening.	Identify partners willing to incorporate cervical cancer screening education using group education and small media into their programs and materials to increase community demand for cervical cancer screening services.
Conduct messaging campaigns, (e.g., posters or placards on buses) to increase awareness of the importance of reducing tobacco use and exposure to secondhand smoke.	Conduct messaging campaigns to increase awareness of the importance of age-appropriate colorectal cancer screening.	Conduct messaging campaigns to increase awareness of the importance of age-appropriate breast cancer screening.	Conduct messaging campaigns to increase awareness of the importance of informed decision making regarding the treatment of prostate cancer.	Conduct messaging campaigns to increase awareness of the importance of skin cancer screening.	Conduct messaging campaigns to increase awareness of the importance of age-appropriate cervical cancer screening.
	*Provide educational programs on the benefits of colorectal screenings in rural Northeast counties such as Pasquotank, Hertford, Halifax, Martin, Washington and Hyde counties. These counties have high African-American populations, who disproportionately bear the burden of high incidence and/or mortality from colorectal cancer.	Re-assess breast cancer screening promotion and education efforts in bottom 20 ranked counties for distant stage diagnosis, incidence and mortality.	*Focus early detection efforts in counties in the Northeast region of the state, such as Pasquotank, Tyrell, and Hyde counties. Each of these have high African-American populations and high incidence and/or mortality from prostate cancer.	Prioritize melanoma skin cancer education efforts in the Mountain and Northwest AHEC regions of which have high incidence and mortality rates.	Encourage school programs to educate staff and students about the importance of age-appropriate human papillomavirus (HPV) vaccinations

**Appendix Table 3 - The Burden of Cancer in N.C. Intervention Strategies Summary, continued**

Intervention: Group education and small media to increase community demand for cancer screening services.

Lung	Colorectal	Breast	Prostate	Melanoma	Cervical
Address high-risk populations for lung cancer, including African-American and Native-American populations, with messages about eliminating or reducing tobacco use and exposure to secondhand smoke.	Organize cancer partners within or near counties with low colorectal cancer screening rates to work together to increase colorectal cancer screenings and make referrals to community partners with prevention-related programs.	*Enhance early detection efforts in counties with high rates of late stage diagnosis.		*Focus efforts on Area L, Southern and Northeast AHEC regions, where high concentrations of minority residents reside, to educate on early signs of melanoma skin cancer due to disparities in late-stage diagnoses.	Organize cancer partners within or near counties with low cervical cancer screening rates to work together to increase cervical cancer screenings and make referrals to community partners with prevention-related programs.
	Develop or support media campaigns in regional markets northeast of Wake County, east of Cumberland County and west of Mecklenburg County, where large clusters of counties with high colorectal cancer mortality rates are located.	Organize cancer partners within or near counties with low breast cancer screening rates to work together to increase breast cancer screenings and make referrals to community partners with prevention-related programs.			
		Identify partners to create or adopt small media campaign(s) to increase awareness about the importance of mammograms and the importance of following up with appropriate treatment, if needed.			
*Provide and/or sponsor educational opportunities and outreach efforts to reach targeted populations and communities.					
Use linguistically and culturally appropriate health education materials and interpreter services, as needed.					
Educate the public that cancer is a chronic disease and people can and do survive.					

**Appendix Table 3 - The Burden of Cancer in N.C. Intervention Strategies Summary, continued**

Intervention: Reduce barriers to increase community access to cancer screening.

Lung	Colorectal	Breast	Prostate	Melanoma	Cervical
		<p>*Develop strong partnerships with local health departments, Federally Qualified Health Centers (FQHCs) and other women's health care organizations that offer or have the potential of offering N.C. Breast and Cervical Cancer Control Program (N.C. BCCCP) services. Create a referral process for eligible women to receive low or no cost mammograms.</p>			<p>Develop strong partnerships with local health departments and other organizations that offer N.C. Breast and Cervical Cancer Control Program (N.C. BCCCP) services which include N.C. WISEWOMAN services. Create a referral process for eligible women to receive low or no cost cervical cancer screening.</p>
<p>*Explore opportunities for addressing the transportation barriers for low-income people (e.g., local transportation system providing no or low fares).</p>					
<p>Encourage government and businesses to provide health insurance coverage to all workers and to allow paid time off to get appropriate screenings.</p>					
<p>*Identify and evaluate culturally-appropriate outreach and education efforts, especially for the most vulnerable populations.</p>					
<p>*Encourage providers to use lay health advisors, native language speakers or health educators to provide education about risk factors and preventive health behaviors and addressing barriers to care.</p>					

**Appendix Table 3 - The Burden of Cancer in N.C. Intervention Strategies Summary, continued**

Intervention: Client reminders to increase community demand for cancer clinical services.

Lung	Colorectal	Breast	Prostate	Melanoma	Cervical
	Encourage providers to use patient reminders (e.g., reminder cards, email, text messages, etc.) and client incentives to encourage use of clinical services.	Encourage providers to use patient reminders (e.g., reminder cards, email, text messages, etc.) and client incentives to encourage use of clinical services.		Encourage providers to use patient reminders (e.g., reminder cards, email, text messages, etc.) and client incentives to encourage use of clinical services.	Encourage providers to use patient reminders (e.g., reminder cards, email, text messages, etc.) and client incentives to encourage use of clinical services.
	Offer assistance to providers to establish a patient reminder process, if they do not have one in place.	Offer assistance to providers to establish a patient reminder process, if they do not have one in place.		Offer assistance to providers to establish a patient reminder process, if they do not have one in place.	Offer assistance to providers to establish a patient reminder process, if they do not have one in place.
	Request appointment reminder cards from N.C. Comprehensive Cancer Control Program.	Request appointment reminder cards from N.C. Breast and Cervical Cancer Control Program.		Request appointment reminder cards from N.C. Comprehensive Cancer Control Program.	Request appointment reminder cards from N.C. Breast and Cervical Cancer Control Program.

**Appendix Table 3 - The Burden of Cancer in N.C. Intervention Strategies Summary, continued**

Intervention: Multicomponent interventions to influence health behaviors.

Lung	Colorectal	Breast	Prostate	Melanoma	Cervical
<p>*Provide and/or sponsor educational opportunities and outreach efforts to reach targeted populations and communities.</p>	<p>Encourage community partners to plan and implement colorectal education programs.</p>	<p>*Maintain and/or cultivate traditional and non-traditional partnerships with community organizations that serve African-American, Hispanic and American-Indian women to raise awareness of breast cancer screening and early detection, as well as services like N.C. BCCCP which are available to eligible women.</p>		<p>Create or expand community partnership efforts to include non-traditional partners such as local parks and recreation offices, schools and childcare centers to increase parent's knowledge about sun protective behaviors to both teach and practice with their children.</p>	<p>*Maintain and cultivate traditional and non-traditional partnerships with community organizations that serve Hispanic and African-American women to raise awareness of cervical cancer screening and early detection, as well as services available to under-and uninsured women. Emphasize medically underserved areas such as the Southern, Area L and Mountain AHEC regions and tribal organizations.</p>
<p>*Reach out to African-American and American-Indian populations with messages about eliminating or reducing tobacco use and exposure to secondhand smoke.</p>				<p>Encourage community partners to plan sun protection programs and to provide sun protection at their outdoor events.</p>	
<p>Reach out to counties with higher smoking rates, lung cancer incidence rate and mortality rate with initiatives about eliminating or reducing tobacco use and exposure to secondhand smoke.</p>					

**Appendix Table 3 - The Burden of Cancer in N.C. Intervention Strategies Summary, continued**

Intervention: Adopt organizational policies and practices to improve healthy behaviors.

Lung	Colorectal	Breast	Prostate	Melanoma	Cervical
Encourage businesses, governments, schools, community colleges and universities to adopt policies and practices that support healthy behavior, (e.g., tobacco-free policies, paid leave for annual physicals and routine screenings, healthy eating and physical activities opportunities).					
Encourage businesses to maintain a tobacco-free work place inside and outside of the buildings and to promote <i>QuitlineNC</i> to tobacco users.	*Work with public health and non-profit organization to encourage healthy lifestyle components (obesity prevention, nutrition and physical activity) in counties with high African-American populations to provide education on the increased risk of colorectal cancer among African Americans who are obese.		* Team up with public health and non-profit organizations to develop/implement programs on obesity prevention and increased physical activity in counties with high African-American populations. Emphasize the increased risk of prostate cancer among African-American men who are obese.		

**Appendix Table 3 - The Burden of Cancer in N.C. Intervention Strategies Summary, continued**

**Intervention: Develop and disseminate public education programs that empower survivors to make informed decisions. make informed decisions.**

Lung	Colorectal	Breast	Prostate	Melanoma	Cervical
<p>Team up with local health departments, hospitals, cancer centers and Federally Qualified Health Centers (FQHCs) to offer cancer survivorship educational forums and classes for patients and caregivers. (Cancer survivorship begins at diagnosis and continues through a person's life.)</p>	<p>Team up with N.C. Breast and Cervical Cancer Control Program (N.C. BCCCP), local hospitals, cancer centers and Federally Qualified Health Centers (FQHCs) to offer cancer survivorship educational forums and classes for patients and caregivers. (Cancer survivorship begins at diagnosis and continues through a person's life.)</p>	<p>Team up with local health departments, hospitals, cancer centers and Federally Qualified Health Centers (FQHCs) to offer cancer survivorship educational forums and classes for patients and caregivers. (Cancer survivorship begins at diagnosis and continues through a person's life.)</p>	<p>Team up with local health departments, hospitals, cancer centers and Federally Qualified Health Centers (FQHCs) to offer cancer survivorship educational forums and classes for patients and caregivers. (Cancer survivorship begins at diagnosis and continues through a person's life.)</p>	<p>Team up with N.C. BCCCP local hospitals, cancer centers and Federally Qualified Health Centers (FQHCs) to offer cancer survivorship educational forums and classes for patients and caregivers. (Cancer survivorship begins at diagnosis and continues through a person's life.)</p>	<p>Equip patient navigators and community health workers with educational resources to support their work to empower survivors to make informed decisions thought out their cancer care.</p>

**Appendix Table 3 - The Burden of Cancer in N.C. Intervention Strategies Summary, continued**

**Intervention: Provider assessment and feedback to increase service delivery by healthcare providers.**

Lung	Colorectal	Breast	Prostate	Melanoma	Cervical
Educate providers about how to discuss the advantages and disadvantages of screening for lung cancer using low-dose computed tomography (low-dose CT scan) with their patients.	Organize cancer partners to work with FQHCs with low colorectal cancer screening rates to increase colorectal screenings and make referrals to community partners with prevention programs.	Develop patient navigation protocol for providers to refer patients who do not qualify for N.C. BCCCP services to FQHCs.	Educate providers in high prostate cancer incidence areas about how to discuss the advantages and disadvantages of PSA tests.	Encourage all providers to discuss the advantages using sun screen and sun protection with their patients.	Develop patient navigation protocol for providers to refer patients who do not qualify for N.C. BCCCP services to FQHCs.
*Develop cultural sensitivity training for health care providers.					

**Intervention: Mass media educational campaigns to reduce tobacco use initiation.**

Lung	Colorectal	Breast	Prostate	Melanoma	Cervical
Support or develop media educational campaign to reduce tobacco use initiation and increase awareness and knowledge about the risk of cancer.					
Support messaging campaigns about cancer risk factors that include tobacco use and exposure to secondhand smoke.					

**Appendix Table 3 - The Burden of Cancer in N.C. Intervention Strategies Summary, continued**

Intervention: Implementing sun-protection policies to promote sun-protective behaviors.

Lung	Colorectal	Breast	Prostate	Melanoma	Cervical
				Encourage businesses and governments to promote and educate employees, especially those who have high sun exposure during work hours, about the importance of wearing sun protective clothing and sunscreen to reduce the incidence of skin cancer.	
				Encourage businesses and governments to provide skin protective gear (e.g., sun protective clothing, hats, sunscreen, and sunglasses) for employees with high occurrence of sun exposure during work hours.	
				Encourage organizations and governments to adopt policies to support shade areas in parks, sports and pool facilities.	

**Appendix Table 3 - The Burden of Cancer in N.C. Intervention Strategies Summary, continued**

Intervention: Increase community access to radon testing.

Lung	Colorectal	Breast	Prostate	Melanoma	Cervical
Encourage messaging about testing homes, businesses and schools for radon and mitigation, when needed.					
Partner with local home improvement stores to advertise the availability of radon test kits and the importance of radon mitigation and radon-resistant construction. Some county health departments provide radon test kits.					
Promote purchasing radon test kits from the N.C. Radon Program or home improvement stores.					
Support or develop media campaigns to encourage testing for radon and mitigation of homes, when needed.					

**Appendix Table 3 - The Burden of Cancer in N.C. Intervention Strategies Summary, continued**

**Intervention: Proven techniques to test for, prevent or reduce exposure to high radon levels.**

<b>Lung</b>	<b>Colorectal</b>	<b>Breast</b>	<b>Prostate</b>	<b>Melanoma</b>	<b>Cervical</b>
Support messaging campaigns about radon as a lung cancer risk factor.					
Provide and/or sponsor educational opportunities and outreach efforts to promote testing homes for radon and the importance of mitigating homes with high radon levels.					

**Intervention: Reduce exposure to radon in new or existing construction.**

<b>Lung</b>	<b>Colorectal</b>	<b>Breast</b>	<b>Prostate</b>	<b>Melanoma</b>	<b>Cervical</b>
Work with local builders and real estate companies to make them aware of the dangers of radon and to encourage them to build and offer radon-free buildings and homes.					

## Resources

Lung	Colorectal	Breast	Prostate	Melanoma	Cervical
Consult with the N.C. Comprehensive Cancer Control Program (N.C. CCCP) for technical assistance and resource suggestions. <a href="http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm">http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm</a>					
Use <i>A Call to Action: North Carolina Comprehensive Cancer Control Plan 2014-2020</i> for information and additional strategies. <a href="http://www.ncpublichealth.com/chronicdiseaseandinjury/cancerpreventionandcontrol/docs/ComprehensiveCancerControlPlan-2014-2020.pdf">http://www.ncpublichealth.com/chronicdiseaseandinjury/cancerpreventionandcontrol/docs/ComprehensiveCancerControlPlan-2014-2020.pdf</a>					
Partner with the N.C. Advisory Committee on Cancer Coordination and Control, its Subcommittees and Cancer Partners to develop and implement cancer prevention and control programs. <a href="http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/acccc.htm">http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/acccc.htm</a>					
Partner with N.C. Community and Clinical Connections for Prevention and Health to increase physical activity and healthy eating opportunities. <a href="http://www.communityclinicalconnections.com">http://www.communityclinicalconnections.com</a>					
Partner with N.C. CCCP and N.C. Tobacco Prevention and Control Branch (NC TPCB) for technical assistance with producing messaging campaigns on smoking, lung cancer, and the benefits of quitting. <ul style="list-style-type: none"> <li>• N.C. CCCP – <a href="http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm">http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm</a></li> <li>• N.C. TPCB – <a href="http://www.tobaccopreventionandcontrol.ncdhhs.gov/">http://www.tobaccopreventionandcontrol.ncdhhs.gov/</a></li> <li>• QuitlineNC – <a href="http://www.quitlinenc.com/">http://www.quitlinenc.com/</a></li> </ul>					
Explore The Community Guide for evidence-based recommendations about community preventive services, programs and policies to improve health. <a href="https://www.thecommunityguide.org/">https://www.thecommunityguide.org/</a>					

## Resources, continued

<b>Lung</b>	<p>Partner with N.C. Comprehensive Cancer Control Program (N.C. CCCP) and the N.C. Radon Program to develop initiatives to reduce exposure to radon.</p> <p><a href="http://www.ncradon.org">http://www.ncradon.org</a></p>
<b>Colorectal</b>	<p>Partner with the N.C. Colorectal Cancer Roundtable (N.C. CRCRT) for technical assistance on colorectal cancer, (e.g., consultation and linking partners and resources, producing or adopting messaging campaigns and educational resources).</p> <p><a href="http://www.ncpublichealth.com/chronicdiseaseandinjury/cancerpreventionandcontrol/colorectal.htm#crc">http://www.ncpublichealth.com/chronicdiseaseandinjury/cancerpreventionandcontrol/colorectal.htm#crc</a></p>
<b>Breast</b>	<p>Partner with N.C. Breast and Cervical Cancer Control Program (N.C. BCCCP) and N.C. WISEWOMAN Program for technical assistance on producing messaging campaigns and other programs.</p> <p>N.C. BCCCP – <a href="http://bcccp.ncdhhs.gov/">http://bcccp.ncdhhs.gov/</a></p> <p>N.C. WISEWOMAN – <a href="http://bcccp.ncdhhs.gov/wisewoman.htm">http://bcccp.ncdhhs.gov/wisewoman.htm</a></p>
<b>Prostate</b>	<p>Partner with the N.C. Comprehensive Cancer Control Program (N.C. CCCP), for technical assistance on prostate cancer (e.g., consultation and linking partners and resources, producing or adopting messaging campaigns and educational resources).</p> <p><a href="http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm">http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm</a></p>
<b>Melanoma</b>	<p>Partner with N.C. Comprehensive Cancer Control Program (N.C. CCCP), for technical assistance on skin cancer (e.g., consultation and linking partners and resources, producing or adopting messaging campaigns and educational resources).</p> <p><a href="http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm">http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm</a></p>
<b>Cervical</b>	<p>Partner with the N.C. Breast and Cervical Cancer Control Program (N.C. BCCCP) and N.C. WISEWOMAN Program for technical assistance on producing messaging campaigns and other programs.</p> <p>N.C. BCCCP – <a href="http://bcccp.ncdhhs.gov/">http://bcccp.ncdhhs.gov/</a></p> <p>N.C. WISEWOMAN – <a href="http://bcccp.ncdhhs.gov/wisewoman.htm">http://bcccp.ncdhhs.gov/wisewoman.htm</a></p>

This is not an all-inclusive list of cancer related resources in North Carolina. Additional cancer related resources may be found nationally, statewide and through local and community based entities.

- *A Call to Action: North Carolina Comprehensive Cancer Control Plan 2014-2020* – Learn about the six N.C. priority cancers, and additional information and strategies.  
<http://www.ncpublichealth.com/chronicdiseaseandinjury/cancerpreventionandcontrol/docs/ComprehensiveCancerControlPlan-2014-2020.pdf>
- American Cancer Society (ACS) – Partner with ACS, a community-based, voluntary health organization, for research, education, advocacy, and service to eliminate cancer as a major health problem by preventing cancer, saving lives, and diminishing suffering from cancer.  
<http://www.cancer.org/>
- American Cancer Society Cancer Action Network, Inc. (ACS CAN) – Partner with ACS CAN, a nonprofit, nonpartisan advocacy affiliate of the American Cancer Society to support evidence-based policy and legislative solutions designed to eliminate cancer as a major health problem.  
<http://www.acscan.org/>
- American Lung Association of North Carolina – Partner to find resources and join efforts to improve lung health, prevent lung disease through research, education and advocacy.  
<http://www.lung.org/>
- Cervical Cancer-Free Coalition North Carolina Connect – Identify educational resources, improving cervical cancer policies and programs.  
<http://www.cervicalcancerfreecoalition.org/partners/partner-states/north-carolina/>
- Lung Cancer Initiative of North Carolina – Partner with Lung Cancer Initiative, a non-profit organization, to provide support for those affected by lung cancer through research, awareness, education and access programs. <http://www.lungcancerinitiativenc.org/>
- N. C. Immunization Branch – Find resources and services on HPV vaccine and cervical cancer prevention. <http://www.immunize.nc.gov/>
- N.C. Advisory Committee on Cancer Coordination and Control (ACCCC), its Subcommittees and Cancer Partners – Collaborate to develop and implement cancer prevention and control programs.  
<http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/acccc.htm>
- N.C. Breast and Cervical Cancer Control Program (N.C. BCCCP) – Partner with and request technical assistance for breast and cervical cancer screenings, producing or adopting messaging campaigns and other program services. <http://bcccp.ncdhhs.gov/>
- N.C. Central Cancer Registry (CCR) – Find data on all cancer cases diagnosed among North Carolina residents to advise in the planning and evaluation of cancer control efforts.  
<http://www.schs.state.nc.us/units/ccr/>
- N.C. Colorectal Cancer Roundtable (N.C. CRCRT) – Partner for technical assistance on colorectal cancer, (e.g., consultation and linking partners and resources, producing or adopting messaging campaigns and educational resources). <http://www.ncpublichealth.com/chronicdiseaseandinjury/cancerpreventionandcontrol/colorectal.htm#crc>
- N.C. Community and Clinical Connections for Prevention and Health (N.C. CCCPH) – Partner to increase physical activity and healthy eating opportunities.  
<http://www.communityclinicalconnections.com>  
<http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm>

## Resources, continued

- N.C. Comprehensive Cancer Control Program (N.C. CCCP) – Request technical assistance and resource suggestions on the six N.C. priority cancers. (e.g., consultation and linking partners and resources, producing or adopting messaging campaigns and educational resources on cancer, smoking and the benefits of quitting) <http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm>
- N.C. Division of Health Service Regulation, Radiation Protection Section, – Learn about tanning bed regulations, trainings and information. <http://www.ncradiation.net/tanning/tanning.htm> or <http://www.ncradiation.net/NonIonizing/UVRad.htm>
- N.C. Occupational and Environmental Epidemiology Branch (N.C. OEE) – Request information on radon in ground and well water. <http://epi.publichealth.nc.gov/oeep/programs/wellwater.html>
- N.C. Radon Program – Request information or support to develop initiatives to reduce exposure to radon and guidance for testing and mitigation of radon gas. <http://www.ncradon.org>
- N.C. State Center for Health Statistics (SCHS)– Explore a comprehensive collection of N.C. health statistics. <http://www.schs.state.nc.us/aboutus.htm>
- N.C. Tobacco Prevention and Control Branch (N.C. TPCB) – Partner and request technical assistance with producing messaging campaigns on smoking, lung cancer, and the benefits of quitting. <http://www.tobaccopreventionandcontrol.ncdhhs.gov/>
- N.C. WISEWOMAN Program – Partner with and request technical assistance for cardiovascular disease testing, counseling and referral services to N.C. BCCCP enrolled women, and producing messaging campaigns. <http://bcccp.ncdhhs.gov/wisewoman.htm>
- North Carolina Alliance for Health – Identify resources and partner connections to educate the public by producing research, data, and evidence-based solutions to reduce obesity and tobacco. <http://ncallianceforhealth.org/>
- North Carolina Health Info – Find reliable, easy-to-use information on health insurance, choosing a provider or health care service and more. <http://www.nchealthinfo.org/>
- Patient Advocate Foundation – Explore resources for patients, case management and access to care services. <http://patientadvocate.org/>
- Pretty in Pink Foundation – Explore financial resources for uninsured and under-insured breast cancer patients and quality life-saving medical treatment. <http://prettyinpinkfoundation.org/>
- QuitlineNC – Provides free cessation services to any North Carolina resident who needs help quitting tobacco use. <http://www.quitlinenc.com/>
- Skin Cancer Foundation – Link to resources about Skin Cancer. <http://www.skincancer.org/>
- Susan G. Komen North Carolina Triangle to the Coast – Find breast health services, breast cancer education and outreach. <http://komentc.org/>
- The Community Guide – From the CDC, provides evidence-based recommendations about community preventive services, programs and policies to improve health. <https://www.thecommunityguide.org/>



## Cancer Information

N.C. Department of Health and Human Services  
NC Division of Public Health  
Cancer Prevention and Control Branch

5505 Six Forks Road Raleigh, NC 27609  
(Office) 919-707-5300 | (Fax) 919-870-4812

<http://publichealth.nc.gov/chronicdiseaseandinjury>



NC DEPARTMENT OF  
HEALTH AND  
HUMAN SERVICES



North Carolina Colorectal  
Cancer Roundtable



NORTH CAROLINA  
*Advisory Committee*  
on Cancer Coordination and Control

State of North Carolina  
Department of Health and Human Services  
[www.ncdhhs.gov](http://www.ncdhhs.gov)

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