



NORTH CAROLINA
**Comprehensive Cancer Control
ACTION PLAN**

2020-2025

Dedication

The North Carolina Comprehensive Cancer Control Action Plan 2020-2025 is dedicated to all North Carolinians whose lives have been affected by cancer.



Unequal Burden of Cancer among North Carolinians

Cancer is the leading cause of death in our state, but the burden of cancer is not even across all populations. North Carolinians have major differences in their health, their healthy lifestyle resources and medical care depending on their racial or ethnic background, their gender and where they live. White, Black, Asian and Hispanic North Carolinians experience different incidence rates for different cancers. Blacks are much more likely to die from cancer than whites. The NC Advisory Committee on Cancer Coordination and Control and its cancer partners strive to create a statewide environment where cancer is maximally prevented, treatment is maximally effective and where every survivor is maximally supported. Achieving cancer health equity for all North Carolinians remains a guiding principle that applies to all our activities across the cancer care continuum.

Cancer health disparities are driven by a complex interaction among social, lifestyle, environmental, biological and health system determinants of health, including a long history of implicit bias and structural racism embedded in the nation's systems of health care. Factors that influence health disparities include lack of employment, inadequate housing, food insecurity, less education and less access to health care. People in rural areas often face major challenges in access to health care providers, medications, transportation services and caregivers. The North Carolina Cancer Mortality Rates and Economically Distressed Counties 2014-2018 map in Appendix A illustrates the differences in economic resources, demographics and cancer mortality statistics across North Carolina.

There are major health equity/health disparities differences in the four most deadly North Carolina cancers (lung, colorectal, female breast and prostate) depending on racial or ethnic background. In three of the four cancers, Blacks have rates much higher than whites. For many cancers, Blacks are the most likely racial/ethnic group to have cancer diagnosed at a late stage where the cancer has spread from the original tumor to distant organs or

lymph nodes making the cancer more deadly. This speaks to the need for more prevention efforts, increased screening and treatment opportunities that are easily accessible and available in a timely manner and are delivered by properly trained health care providers without putting an unaffordable financial burden on the family.

Lung cancer is one of the few cancers in which Blacks fare better than whites in terms of incidence and mortality rates on a statewide level while Hispanics fare better than either whites or Blacks. This is likely due to differences in tobacco use. Blacks experience the greatest colorectal cancer burden among all measurable race/ethnicity categories in terms of colorectal cancer incidence and mortality. White and Black women have similar incidence rates of breast cancer but have very different mortality rates because Black women are more likely to have their cancer discovered at a distant stage. Black males shoulder the heaviest burden of prostate cancer with higher incidence and mortality rates.

The NC Advisory Committee on Cancer Coordination and Control and its cancer partners are committed to addressing differences in cancer outcomes. Cancer disparities persist despite new breakthroughs in diagnostics and therapeutics and changes in the cancer care delivery system such as passage of the Affordable Care Act. The *North Carolina Comprehensive Cancer Control Action Plan 2020-2025* is meant to guide our future activities and strategies to achieve the mission of conquering cancer for all populations. We understand that much work remains to be done, by all cancer stakeholders, to reverse this historical and current challenge, including addressing ongoing social structures responsible for cancer disparities. Our goal is to move beyond descriptive reporting of disparities, toward improving equitable access to care, addressing structural and patient-centered barriers, and increasing cancer education that moves us toward achieving cancer health equity for all. Join us in this fight against cancer and cancer health disparities!

Dear Fellow North Carolinians,

The members of the North Carolina Advisory Committee on Cancer Coordination and Control are pleased to share the *North Carolina Comprehensive Cancer Control Action Plan 2020-2025* with you. It offers goals and strategic actions designed to reduce the cancer burden in our state. Cancer has been the leading cause of death in North Carolina since 2009. We are all affected by cancer, and it has an enormous economic, physical and emotional impact on North Carolinians.

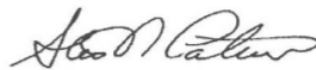
This NC Cancer Action Plan is organized into two major sections. The Action Priority Section includes cancer prevention with emphasis on risk factors like obesity, tobacco use and environmental exposures. This section also discusses the importance of early detection, access to cancer treatment and supportive care. The Priority Cancer Section emphasizes the six priority cancers which were selected because they are preventable through screening and HPV vaccination. They are lung, female breast, colorectal, prostate, cervical and melanoma and non-melanoma skin cancers. Lung, female breast, colorectal and prostate are the four most deadly North Carolina cancers. In addition, the NC Cancer Action Plan includes information on emerging issues like HPV-related cancers and new treatment procedures.

We hope that public health and healthcare agencies, community organizations and individuals across North Carolina will find this NC Cancer Action Plan useful in their efforts to make a difference in the cancer fight in North Carolina.

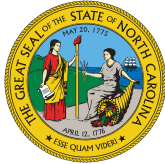
Regards,



Jan Wong, M.D., Chair



Steve Patierno, Ph.D., Co-Chair



NC DEPARTMENT OF
**HEALTH AND
HUMAN SERVICES**
Division of Public Health

ROY COOPER • Governor

MANDY COHEN, MD, MPH • Secretary

MARK T. BENTON • Assistant Secretary for Public Health

Division of Public Health

Dear North Carolinians,

Cancer has been the leading cause of death in North Carolina since 2009. The *North Carolina Comprehensive Cancer Control Action Plan 2020-2025* contains goals and strategic actions for reducing the cancer burden in our state. It emphasizes action through cancer prevention, early cancer detection, access to cancer treatment and supportive care. Risk factors like obesity, tobacco use and environmental exposures are discussed in detail. The six North Carolina priority cancers (lung, female breast, colorectal, prostate, cervical and melanoma and non-melanoma skin cancers) are highlighted in a Priority Cancer Section. These were selected because they are preventable through screening and HPV vaccination.

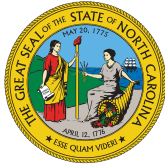
The Chronic Disease and Injury Section is pleased to share the *North Carolina Comprehensive Cancer Control Action Plan 2020-2025* with you. It was prepared by the Comprehensive Cancer Control Program in the NC Cancer Prevention and Control Branch in collaboration with the NC Breast and Cervical Cancer Control Program; NC WISEWOMAN Project; the NC State Center for Health Statistics, Central Cancer Registry and the NC Advisory Committee on Cancer Coordination and Control. The Chronic Disease and Injury Section works to reduce death and disabilities related to chronic disease and injury. Our goal is to help North Carolinians develop healthy and safe communities with health systems to prevent and control chronic disease and injury and to eliminate health inequities.

Please join us in using the *North Carolina Comprehensive Cancer Control Action Plan 2020-2025* as a blueprint to reduce the cancer burden experienced by our citizens.

Sincerely,

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

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



NC DEPARTMENT OF
**HEALTH AND
HUMAN SERVICES**
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ROY COOPER • Governor

MANDY COHEN, MD, MPH • Secretary

MARK T. BENTON • Assistant Secretary for Public Health

Division of Public Health

Dear North Carolinians,

The NC Cancer Prevention and Control Branch is delighted to share the 2020-2025 North Carolina Comprehensive Cancer Action Plan with you. This NC Cancer Action Plan is a framework for action to reduce the burden of cancer in North Carolina. It identifies cancer challenges and issues that affect North Carolinians. It offers goals, strategic actions supported by evidence-based interventions and current cancer information. The unique nature of North Carolina is reflected in the goals and strategic actions throughout the plan.

The NC Cancer Action Plan has two major sections. The Action Section emphasizes strategic actions in cancer prevention, early cancer detection, access to cancer treatment and supportive care. The Priority Cancer Section highlights the six North Carolina priority cancers (lung, female breast, colorectal, prostate, cervical and melanoma and non-melanoma skin cancers). This NC Cancer Action Plan is designed to build on A Call to Action: North Carolina Comprehensive Cancer Control Action Plan 2014-2020. A Call to Action emphasized cancer risk factors and what preventive actions individuals and organizations could take to reduce cancer in North Carolina. In addition, it provided details about the North Carolina priority cancers. Both cancer plans are supported by Reducing the Burden of Cancer in North Carolina which provides data on the priority cancers, which groups are most affected by them and what state and local partners can do in their communities to address these cancers.

Reducing cancer incidence and mortality rates in North Carolina continues to be a challenge. Please join the NC Cancer Prevention and Control Branch, other NC Chronic Disease Section programs, the NC Advisory Committee on Cancer Coordination and Control and cancer partners in working to reducing these rates. For more information, please contact the Cancer Branch at (919) 707-5300 or visit <https://ncpublichealth.info/cccp/>

Sincerely,

A handwritten signature in blue ink, appearing to read 'Debi Nelson'.

Debi Nelson, MAEd
Branch Head
NC Division of Public Health, Cancer Prevention and Control Branch
NC Department of Health and Human Services

ACKNOWLEDGEMENTS

The *North Carolina Comprehensive Cancer Control Action Plan 2020-2025* was created by the North Carolina Comprehensive Cancer Control Program in collaboration with the North Carolina State Center for Health Statistics, Central Cancer Registry; North Carolina Breast and Cervical Cancer Control Program; North Carolina WISEWOMAN Project and the North Carolina Advisory Committee on Cancer Coordination and Control.

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Executive Summary

Everyone has a part in the fight against cancer. Cancer is the leading cause of death in North Carolina.¹ The *North Carolina Comprehensive Cancer Control Action Plan 2020-2025* (NC Cancer Action Plan) is a statewide blueprint for everyone who is working to reduce North Carolinians' cancer burden. It identifies cancer challenges and issues that affect North Carolinians and offers current cancer information and cancer fighting goals and strategic actions. *The Call to Action: Doing Your Part* grid describes ways that individuals, schools, community organizations, healthcare professionals and policymakers can help prevent, detect and treat cancer.

The overarching purpose of the NC Cancer Action Plan is to reduce cancer morbidity and mortality in our state. **The goals are:**

- **Reduce** cancer risks by supporting health behavior change in North Carolinians.
- **Increase** cancer screening and early detection of cancer.
- **Improve** access to cancer care, enhanced care coordination and quality treatment.
- **Improve** the knowledge and understanding of cancer, cancer care and the relationship between cancer and other chronic diseases among health-care professionals and the general public.

The NC Cancer Action Plan was developed through the combined efforts of the NC Comprehensive Cancer Control Program, Cancer Prevention and Control Branch staff in partnership with the North Carolina Advisory Committee on Cancer Coordination and Control,

the Advisory Committee Subcommittees and the NC Cancer Leadership Team. It builds on successes from the previous cancer plan. The NC Cancer Action Plan is organized into two major sections. The Action Priority Section has information on cancer risk factors and healthy behaviors, policies and environmental changes that can reduce North Carolinians' cancer risk. It includes cancer prevention, early detection, cancer treatment and supportive care information. The Priority Cancers Section emphasizes six priority cancers which were selected because they are preventable through screening and HPV vaccination. They are lung, female breast, colorectal, prostate, cervical and melanoma and non-melanoma skin cancers. Lung, female breast, colorectal and prostate cancers are the four most deadly cancers in North Carolina.¹ Each cancer section looks at risk factors, prevention, early detection, treatment and strategic actions to reduce mortality and incidence rates.

North Carolinians have major differences in their health, their healthy lifestyle resources and medical care depending on where they live. People in rural areas often face challenges such as access to health care providers, medications, transportation services and caregivers unlike people in urban areas. The unique nature of North Carolina is reflected in the recommended strategic actions which are based on the Center for Disease Control and Prevention's recommended evidence-based interventions. Ways to address disparities in cancer among populations experiencing a disproportionate burden of disease, disability and death are included in the strategic actions.

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Introduction

Cancer is a family of diseases with many different signs and symptoms. Some cancers are preventable while others may be successfully treated, even cured if detected early enough. Reducing risk factors like tobacco use, obesity and physical inactivity and encouraging appropriate cancer screenings are important for preventing cancer.

According to the North Carolina Central Cancer Registry (CCR), approximately 160 people in North Carolina are newly diagnosed with cancer every day. Another 53 North Carolinians lose their lives daily to this disease. The good news is that the overall North Carolina cancer mortality rate for all cancers went down 24.5% from 1999 through 2018.¹

As discussed earlier in the Unequal Burden of Cancer among North Carolinians, there are major differences in North Carolinians' opportunities for good health depending on where they live. Half of North Carolinians live in only 13 of the state's 100 counties. The remaining North Carolinians are spread across 87 counties.² The North Carolina Cancer Mortality Rates and Economically Distressed Counties 2014-2018 map in Appendix A illustrates the differences in economic resources, demographics and cancer mortality statistics across North Carolina.

Cancer Surveillance and Evaluation

Reducing the cancer burden in North Carolina depends on having timely, high quality and complete data. This includes cancer-related data – measuring incidence, morbidity and mortality for individuals with cancer. Data can help identify possible cancer causes, target prevention efforts and identify effective strategies.

Statewide cancer data enable health researchers and policymakers to analyze the factors that influence cancer risk, early detection and effective treatment. Progress and challenges from A Call to Action: North Carolina

Comprehensive Cancer Control Plan 2014-2020 are listed in Appendix D. Most North Carolina-specific cancer data are provided by the CCR.

The most recent cancer incidence data are from 2017 while cancer mortality data are available for 2018. Behavioral Risk Factor Surveillance System (BRFSS) data from the State Center for Health Statistics (SCHS) are also available. BRFSS collects data on risk factors and preventive health practices through telephone interviews. Demographic data are from the U.S. Census FactFinder.⁴

History

The North Carolina General Assembly passed legislation in 1993 creating the North Carolina Advisory Committee on Cancer Coordination and Control (Advisory Committee) and the North Carolina Comprehensive Cancer Control Program (NC CCCP). This program is part of the NC Cancer Prevention and Control Branch (Cancer Branch), Chronic Disease and Injury Section, Division of Public Health, North Carolina Department of Health and Human Services. (See Appendix B for the Advisory Committee's membership and Appendix C for North Carolina Cancer Prevention and Control Branch information.)

Cancer Branch staff focuses on cancer prevention, early detection, treatment and supportive care, as well as education. They emphasize the importance of evidence-based measures to ensure that effective programs and policies are carried out. NC CCCP staff provides leadership, coordination and support to the Advisory Committee and the subcommittees.

The 34-member Advisory Committee serves as a statewide advisory board for cancer-related legislation, policies, regulations and standards. Their mission is to support cancer reduction efforts in North Carolina, enhance

statewide access to quality treatment and supportive services, and maximize quality of life for cancer patients, survivors and their families. The Advisory Committee works with government officials, policymakers, public and private organizations and the public.

The Advisory Committee has five subcommittees. Each subcommittee has representatives from the Advisory Committee, the Cancer Branch and partnering organizations.

The **Prevention Subcommittee** provides guidance to impact healthy behaviors through promotion, education, policies and environmental changes that can reduce North Carolinians' cancer risk. The members and their organizations provide education and promote policy system change using evidence-based interventions to reduce cancer risk factors.

The **Early Detection Subcommittee** promotes cancer screenings based on guidelines and recommendations of the Advisory Committee. The members work to educate providers and the community on recommended cancer screenings. They encourage the use of health equity strategies and initiatives to improve access to health screenings and follow-up in underserved areas.

The **Care and Treatment Subcommittee** provides guidance on ways to improve access to care, enhance care coordination and assure quality treatment for all cancer patients and their families. The members promote increased access to care and quality treatment which includes supportive care, survivorship services and end of life comfort care.

The **Legislative Subcommittee** supports policies and legislation that promotes and/or funds cancer prevention, screening and control.

The **Evaluation and Surveillance Subcommittee** provides data, monitoring, surveillance and research for the Advisory Committee and subcommittees.

Health Disparities/ Health Equity/Health Inequity

The National Cancer Institute defines health disparities as differences in the incidence, prevalence, mortality and survival of a disease and the related adverse health conditions that exist among specific population groups. Health equity occurs when every person has the opportunity to attain his or her full health capability and no one is blocked from achieving this capability because of his or her social position or circumstances. Health inequities are the unfair differences that prevent everyone from the opportunity to have good health. Health disparities and health inequities exist across all chronic health conditions. As discussed earlier in the Unequal Burden of Cancer among North Carolinians, cancer is not different. The goal is to achieve the highest level of health possible for all.

Health Equity Recommendations

Recommendations to reduce health disparities.

- Build community empowerment to address health disparities at the local level.
- Identify/build strategic partnerships with community organizations in a variety of settings to address social determinants of health such as employment, transportation, housing and public policy initiatives.
- Encourage alternative ways of thinking about public health practice, such as dialogues on the impact of structural racism on health.
- Advocate, encouraging and supporting diversity within the workforce at all levels and positions.
- Increase funding for the development of initiatives to address health disparities and create health equity.

Cancer Health Disparity Recommendations

The following recommendations are designed to specifically reduce cancer disparities.

- Improve early detection through routine screenings.
- Implement evidence-based community interventions designed to improve the health of minority populations.
- Use a variety of culturally competent media to market cancer information to diverse populations in a variety of settings.
- Educate about the benefits of increased access to care for the underserved.
- Develop research projects to study the differences in participation in, and results from, cancer prevention and care clinical trials among minority/ethnic and other population groups.
- Increase funding for preventive cancer screening programs.
- Increase access to nutrient dense foods through the elimination of food deserts.

NC Cancer Action Plan

State comprehensive cancer control plans identify how a state is going to address the burden of cancer in that state. These plans are based on state data with action plans built on strategies that have worked in the past for that state.

The *North Carolina Comprehensive Cancer Control Action Plan 2020-2025* (NC Cancer Action Plan) was developed through the combined efforts of NC CCCP staff in partnership with the Advisory Committee, the Advisory Committee Subcommittees and the NC Cancer Leadership Team. The NC Cancer Leadership Team includes representatives from the Cancer Branch programs and Central Cancer Registry, North Carolina State Center for Health Statistics.



The overarching goal of the NC Cancer Action Plan is to reduce the cancer burden across North Carolina. See Table 1 for the *North Carolina Comprehensive Cancer Control Action Plan 2020-2025* Goals. The NC Cancer Action Plan identifies cancer challenges and issues that affect North Carolinians. It offers a set of goals and strategic actions in addition to current cancer information and a framework for action. The unique nature of North Carolina is reflected in the recommended strategic actions which are based on the Centers for Disease Control and Prevention's (CDC's) recommended evidence-based interventions.³

The NC Cancer Action Plan builds on successes from *A Call to Action: North Carolina Comprehensive Cancer Control Action Plan 2014-2020*. During 2014-2020, the lung cancer mortality rate and the lung and colorectal cancer incidence rates improved. Progress was made in improving the percent of men who talked to their health care provider about the PSA test and the percent of women who had pap tests. There are still challenges in reducing the breast, cervical, colorectal, prostate and melanoma skin cancer mortality rates. These challenges are addressed in the NC Cancer Action Plan.

The companion resource to both cancer plans is the *Reducing the Burden*

of Cancer in North Carolina. It provides detailed data on the priority cancers, which groups are most affected by them and what state and local partners can do in their communities to address these cancers.

The NC Cancer Action Plan is organized into two major sections. The Action Priority Section includes cancer prevention, early detection and treatment and supportive care. The Priority Cancers Section emphasizes six priority cancers which were selected because they are preventable through screening and HPV vaccination. They are lung, female breast, colorectal, prostate, cervical and melanoma and non-melanoma skin cancers. Lung,

female breast, colorectal and prostate cancers are the four most deadly cancers in North Carolina.¹

The NC Cancer Action Plan and Reducing the Burden of Cancer in North Carolina are available on the North Carolina Division of Public Health, Chronic Disease and Injury Section web site located at <https://nccancer.dph.ncdhhs.gov/>. Accompanying information and brochures are available on this site.

(See Appendix H for additional information on terminology used throughout this NC Cancer Action Plan.)

Table 1. North Carolina Comprehensive Cancer Control Action Plan 2020-2025 Goals*

North Carolina Goal 1	REDUCE cancer risks by supporting health behavior change in North Carolinians
North Carolina Goal 2	INCREASE cancer screening and early detection of cancer.
North Carolina Goal 3	IMPROVE access to cancer care, enhance care coordination and quality treatment.
North Carolina Goal 4	IMPROVE the knowledge and understanding of cancer, cancer care and the relationship between cancer and other chronic diseases among health-care professionals and the general public.

*Measurable objectives are listed under the priority cancers.

Both the Healthy People 2030 Cancer Goal and the Healthy North Carolina 2030 Goals support these North Carolina Goals. For more information visit <https://www.healthypeople.gov/2020/topics-objectives/topic/cancer> and <http://nciom.org/healthy-north-carolina-2030>.

Emerging Areas in Cancer Treatment and Supportive Care

Cancer treatment in the United States is undergoing a rapid transformation with new medical treatments, new scientific discoveries and developments in health care.⁵ Research efforts are exploring how to improve the accuracy of cancer screening tests, how they are used and how to expand access to tests. Other efforts being explored are the study of proteins, how to identify very early lesions and how to increase the number of people who get cancer screenings. Advancements in research are reflected in declining cancer death rates. Another emerging concern in cancer treatment and supportive care is the cost of care which can cause financial hardship for patients and their families. (See Appendix E for additional sources of scientific information.)

Financial Toxicity

Financial toxicity or financial distress refers to the impact of health care costs, both direct and indirect, that can lead to significant financial burden for patients and their caregivers. Direct costs refer to out-of-pocket costs like copayments, deductibles, outpatient services or tests, prescription drugs and medical appointments that are not covered by health insurance. Indirect costs include reduction in work hours or job loss, travel expenses, child care, etc. Reduction or loss of a job can cause a loss in health insurance and other benefits that are job related.

Cancer treatment is expensive. It can include multiple types of treatment like surgery, radiation therapy, targeted drug therapy, chemotherapy and immunotherapy. Drugs prescribed for cancer patients and survivors are often high priced. The increasing cost of cancer treatment can cause financial hardships, even in patients who have health insurance. Cancer patients may use their savings to cover their expenses or they may sell assets. Some cancer survivors report spending more than 20% of their annual income on medical care.⁶



An American Cancer Society study shows that many adults have little knowledge and/or understanding of their health insurance coverage and the cost of their cancer treatment. This may prevent them from using their health insurance benefits fully and lead to unnecessary medical spending by the patient. The study suggests that more understandable financial and health insurance information and guidance and easier-to-read medical bills will help patients have a better understanding of their health insurance coverage and medical costs.⁷

Financial toxicity is influenced by the type of cancer and treatment, whether the patient is low-income, uninsured, a minority or is in an insecure work situation. There are also other factors that contribute to financial toxicity.

- Is the cancer patient the primary financial support for the household?
- Are there others who can make up the loss of wages if the cancer patient cannot work?
- How much debt does the patient and/or the household have?

Cancer patients need access to services in a timely manner that are easy to access and are delivered by properly trained health care providers. The challenge is to deliver the services needed without financial toxicity.

Financial toxicity has serious consequences for the health and well-being of patients. Some patients delay their care, do not take their drugs correctly and skip medical appointments and treatments. Cancer survivors may have financial problems many years after they are diagnosed. They may be paying for ongoing care or they may have additional costs because of the late effects of their treatment. Several studies show that cancer patients and survivors are more likely to have financial toxicity than are people without cancer.

Screening Advancement

A promising screening advancement is the use of biomarkers to diagnose cancer at the earliest stages. Cancer tissues may produce biomarkers or other cells may produce them in response to the cancer. These biomarkers can be a sign of an underlying disease if they are abnormal. Biomarkers can be found in blood, stool, urine, tumor tissue or other tissues or bodily fluids. They are not limited to cancer. There are biomarkers for heart disease, multiple sclerosis and many other diseases.

Chemoprevention can be used to prevent cancer, to prevent a pre-cancerous lesion from developing into cancer or to prevent the development of new cancers. Immunotherapy is used to treat cancer by boosting the body's natural defenses.

Chemoprevention and Immunotherapy

According to OncoLink, chemoprevention is the use of a medication, vitamin or supplement to stop cancer development.¹⁰ Chemoprevention can be used to prevent cancer, to prevent a pre-cancerous lesion from developing into cancer or to prevent the development of new cancers. There are several different cancers (breast, prostate, colon and cervical)

where chemoprevention is used. Generally, this is used for people who are at high risk of developing cancer because of family history or have an abnormal gene. For example, several drugs are currently available to reduce the risk of female breast cancer in women at high risk of developing the disease.

Immunotherapy works to boost the body's natural defenses to fight cancer. A growing number of people with cancer have benefited in recent years from immunotherapy. These treatments strengthen the ability of the immune system to detect and destroy cancer. Cervical and oropharyngeal cancers are good examples where immunotherapy is effective. Both can be mostly prevented by the HPV (human papilloma virus) vaccine.

Genetics

Genetics and genomics are often used interchangeably but they are different. Genetics is the study of heredity while genomics is the study of the genes or genomes.

One of the emerging issues in cancer prevention and control is the relationship between genetics and cancer risk. While some cancers have direct genetic causes, most cancers are caused by an interaction between lifestyles and genes. Inherited cancers are caused by an abnormal gene that is passed down from parents to their children. This gene mutation can cause cells to grow out of control, which can lead to cancer.

Not everyone who inherits an abnormal gene will develop cancer, but patients and health care providers should be aware of the possibility and consider genetic testing and counseling. According to the CDC, only 10% of all cancers are associated with an inherited abnormal gene.¹¹ As research continues, the number of cancers linked to abnormal genes is likely to increase.

Genomics

Genomics focuses on changes in DNA that control the way cells function, especially how they grow and divide. Genomic testing is designed to help

identify DNA changes that may be causing the growth of a specific tumor. This information may help identify treatments designed to target that cancer. Targeted cancer therapies offer a promising opportunity to tailor cancer treatment based on an individual patient's genetic profile.

The increasing knowledge of the molecular make up of tumors has changed cancer treatment in recent years. Cancer used to be classified and treated based on the body part where the tumor occurred. The new approach is to characterize cancer based upon the molecular changes in the malignant cells which can serve as targets for cancer drugs and not on the body part.

Health Histories

A health history is a record of your health information. It should include immunizations, doctor contact information, important numbers like blood pressure and blood sugar readings and diseases and/or health conditions. It is important to keep this up to date.

This information can be the basis for a family health history which can provide clues to medical conditions like some chronic diseases that may run in a family. Knowing that a disease runs in the family allows a person to take steps to reduce his or her risk like eating a healthier diet, getting regular exercise and quitting tobacco use.

Family health histories are a low-cost and effective method to identify patients with a higher-than-usual chance of developing cancer. This information can help the patient and health care provider decide if additional tests are needed and what tests to order.

A personal health history, the family health history, genetic counseling and genetic testing all together can give an individual and the health care provider detailed information about his or her health and health care options. This is increasingly important as more is known about the relationship between genetics and cancer risk.

Explore this CDC website for more information on how to do a family health history. <https://www.cdc.gov/genomics/famhistory/index.htm>.

“People with underlying health conditions like cancer are at an even greater risk of getting an infection and/or having more severe outcomes during a pandemic.”

Pandemics

A pandemic is a rapidly spreading infectious disease that may pose a global threat. Most people may be at risk of developing the infection because they lack the natural immunity to fight it off. People with underlying health conditions like cancer are at an even greater risk of getting an infection and/or having more severe outcomes during a pandemic. Often, cancer patients are older, have underlying medical conditions other than cancer and have suppressed immune systems because of the cancer or its treatment or both. These risk factors are especially concerning for cancer patients during the ongoing COVID-19 Pandemic. The challenges imposed by COVID-19 impact every aspect of life including cancer care, starting with diagnosis all the way to end-of-life care. Some of the challenges include:

- disruption in health care delivery including routine treatments,
- inability of caregivers to accompany patients for medical visits and treatments,
- risk of exposure to the virus during medical visits and treatments and
- potential risks of overloading the medical care systems.

Cancer patients and their caregivers also face challenges like job loss or furloughs, difficulties in getting groceries and supplies, isolation and depression. Medical providers, cancer patients and caregivers are implementing creative ways to continue medical visits and treatments. Many use telephone or virtual consultations like telehealth while some routine therapies, tests and procedures may be postponed.

Call to Action: Doing Your Part

YOU are vital in the fight against cancer whether you are a cancer survivor, caregiver, policymaker, employer, school staff or student, community leader or public health or healthcare professional. Your contribution and participation are vital in the fight against cancer.

INDIVIDUALS

PREVENTION	EARLY DETECTION	CARE/SURVIVORSHIP	POLICY/SYSTEMS CHANGE
<p>PERSONALLY</p> <ul style="list-style-type: none"> • Stop smoking or vaping or never start. Avoid secondhand smoke. • Plan and fix healthy meals and snacks. • Eat more healthy foods. • Maintain a healthy weight. • Be more active. • Protect skin and eyes from sun/UV radiation. • Stay up to date on vaccines - especially the HPV vaccine for children and youth. • Test your home for radon. Eliminate high levels. <p>COMMUNITY</p> <ul style="list-style-type: none"> • Support healthy food and drink standards for schools and community buildings. • Sponsor tobacco prevention and cessation programs. • Support public recreation programs. 	<p>PERSONALLY</p> <ul style="list-style-type: none"> • Get recommended screenings. • Discuss your family health history with other family members and your health care providers. <p>COMMUNITY</p> <ul style="list-style-type: none"> • Encourage family, friends and coworkers to get recommended screenings. • Support screening programs in your community. 	<p>PERSONALLY</p> <ul style="list-style-type: none"> • Support individual cancer survivors and caregivers in your community with transportation, meals, and child-care. • Encourage cancer patients to explore clinical trials. <p>COMMUNITY</p> <ul style="list-style-type: none"> • Volunteer with and/or support agencies and organizations that help cancer survivors. 	<p>PERSONALLY</p> <ul style="list-style-type: none"> • Urge grocery stores, bodegas, corner stores, etc. to include healthy food options. <p>COMMUNITY</p> <ul style="list-style-type: none"> • Educate legislators and/or policymakers about community cancer needs. • Be an advocate for funding needed for cancer prevention, screening, treatment and research. • Educate staff of local governments and agencies about the need for healthy lifestyle programs and expanded clean air initiatives in schools, communities, work places and places of worship.

Call to Action: Doing Your Part

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COMMUNITY ORGANIZATIONS

PREVENTION	EARLY DETECTION	CARE/SURVIVORSHIP	POLICY/SYSTEMS CHANGE
<p>ORGANIZATIONS</p> <ul style="list-style-type: none"> • Adopt a smoke-, tobacco- and vape-free policy inside and outside of buildings. • Provide healthy food at events, meals and in vending machines. • Encourage employees and volunteers to take time during the day for physical activity. • Provide safe spaces for physical activity. • Provide sun protection to employees and volunteers who work outside <p>PARTNERSHIP</p> <ul style="list-style-type: none"> • Start tobacco cessation programs. • Encourage physical activity through walking clubs or other organized activities. • Encourage sun-safe behaviors and sun-protected physical environments. • Educate others about the need for radon testing and mitigation in homes, schools, workplaces and public buildings. 	<p>ORGANIZATIONS</p> <ul style="list-style-type: none"> • Provide health screening events. • Encourage employees and volunteers to get regular health screenings. <p>PARTNERSHIP</p> <ul style="list-style-type: none"> • Partner with others in the community to sponsor health screening events. 	<p>ORGANIZATIONS</p> <ul style="list-style-type: none"> • Provide support for employees and volunteers during cancer treatment. • Provide survivorship information and services to employees and volunteers. <p>PARTNERSHIP</p> <ul style="list-style-type: none"> • Promote patient navigation and community health worker programs. • Provide community services like support groups and counseling. • Set up programs to help individual cancer survivors, e.g., provide transportation to treatment, meals, respite care for care givers, childcare, etc. 	<p>ORGANIZATIONS</p> <ul style="list-style-type: none"> • Adopt policies that: <ul style="list-style-type: none"> • make all facilities smoke-, tobacco- and vape-free; • encourage healthy eating; • encourage physical activity; • provide safe spaces for physical activity; and • provide sun protection. • Provide health insurance coverage and access to care, if possible. <p>PARTNERSHIP</p> <ul style="list-style-type: none"> • Educate legislators/ policymakers about the need for cancer prevention, screening, treatment and research. • Encourage local government agencies to develop healthy living programs and clean-air policies. • Establish programs to provide cancer prevention, education, screening/follow-up and support for cancer patients.

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SCHOOLS

PREVENTION	EARLY DETECTION	CARE/SURVIVORSHIP	POLICY/SYSTEMS CHANGE
<p>CLASSROOM</p> <ul style="list-style-type: none"> • Provide healthy foods and drinks. • Provide daily recess and incorporate physical activity into regular classroom lessons. • Encourage sun-safe behaviors. • Incorporate healthy living messages in classes. <p>SCHOOL WIDE</p> <ul style="list-style-type: none"> • Maintain smoke-, tobacco- and vape-free campuses. • Adopt a campus-wide policy promoting healthy foods and drinks. • Increase physical education requirements and physical activity opportunities. • Offer sun-protected play areas for children. • Educate students and parents about the HPV vaccine. • Provide educational opportunities for parents to learn about the importance of healthy food and physical activity for their family. • Test buildings for radon. 	<p>CLASSROOM</p> <ul style="list-style-type: none"> • Educate students about the importance of age-appropriate cancer screenings. <p>SCHOOL WIDE</p> <ul style="list-style-type: none"> • Provide educational opportunities for parents to learn about the HPV vaccine to prevent cervical cancer. 	<p>CLASSROOM</p> <ul style="list-style-type: none"> • Work with students on how to ease a student’s return to school after cancer treatment. <p>SCHOOL WIDE</p> <ul style="list-style-type: none"> • Educate staff and faculty about patients’ rights in the <i>Americans with Disabilities Act</i>. • Educate school personnel about cancer treatment and survivorship issues. • Educate school personnel on how to ease a student or staff member’s return to school after cancer treatment. • Provide counseling services for students whose parents are going through cancer treatment. 	<p>SCHOOL WIDE</p> <ul style="list-style-type: none"> • Adopt policies that: <ul style="list-style-type: none"> • make all facilities smoke-, tobacco- and vape-free; • encourage healthy eating; • encourage physical activity; • provide safe spaces for physical activity; and • provide sun protection. • Provide health insurance coverage and access to care, if possible. <p>PARTNERSHIPS</p> <ul style="list-style-type: none"> • Educate policymakers about the need for healthy lifestyle programs on campus. • Educate legislators and/or policymakers about the funding needed for cancer prevention, screening, treatment and research.

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BUSINESSES

PREVENTION	EARLY DETECTION	CARE/SURVIVORSHIP	POLICY/SYSTEMS CHANGE
<p>BUSINESSES</p> <ul style="list-style-type: none"> • Adopt a smoke-, tobacco- and vape-free policy inside and outside of buildings. • Encourage employees to adopt a healthy lifestyle including healthy meals and physical activity. • Provide healthy food at events, meals and in vending machines. • Provide safe spaces for physical activity. • Provide sun-protective clothing and sunscreen for outside workers. • Educate employees about home radon testing. <p>PARTNERSHIP</p> <ul style="list-style-type: none"> • Team up with other businesses to start tobacco cessation programs. • Encourage physical activity through walking clubs or other activities. • Encourage sun-safe behaviors and sun-protected physical environments. 	<p>BUSINESSES</p> <ul style="list-style-type: none"> • Provide full financial coverage for recommended cancer screenings. • Allow paid time off for cancer screenings. • Promote QuitlineNC to tobacco users. <p>PARTNERSHIP</p> <ul style="list-style-type: none"> • Partner with others in the community to support outreach education and health screening events. 	<p>BUSINESSES</p> <ul style="list-style-type: none"> • Educate employees about patients' rights in the <i>Americans with Disabilities Act</i>. • Carry or offer short-and long-term disability insurance. • Educate employees on how to help a coworker return to work after cancer treatment. <p>PARTNERSHIP</p> <ul style="list-style-type: none"> • Participate with partners in community events that sponsor cancer screening opportunities and support cancer survivors. 	<p>BUSINESSES</p> <ul style="list-style-type: none"> • Adopt policies that support healthy behaviors. • Adopt a smoke-, tobacco- and vape-free policy inside and outside of buildings. • Provide health insurance coverage to all employees. <p>PARTNERSHIP</p> <ul style="list-style-type: none"> • Educate legislators and/or policymakers about the funding needed for cancer prevention, screening, treatment and research. • Ensure all evidence-based treatment is provided by insurance with no cost to the patient.

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HEALTH CARE PROFESSIONALS

PREVENTION	EARLY DETECTION	CARE/SURVIVORSHIP	POLICY/SYSTEMS CHANGE
<p>CLINICAL</p> <ul style="list-style-type: none"> Encourage patients and staff to adopt a healthy lifestyle: <ul style="list-style-type: none"> avoid tobacco use, secondhand smoke and vaping; eat healthy foods; be physically active; and use sun protection. Maintain a smoke-, tobacco- and vape-free environment inside and outside facilities. Offer employees cancer screenings or health insurance for cancer screenings. Administer appropriate vaccines. <p>COMMUNITY</p> <ul style="list-style-type: none"> Team up with others in the community to: <ul style="list-style-type: none"> start tobacco cessation programs; sponsor walking clubs or other physical opportunities; and sponsor educational opportunities on healthy lifestyles and sun-safety. 	<p>CLINICAL</p> <ul style="list-style-type: none"> Recommend and/or provide appropriate cancer screenings. Allow time off work for cancer screenings. Provide insurance coverage for cancer screenings. <p>COMMUNITY</p> <ul style="list-style-type: none"> Partner with others in the community to support outreach education and health screening events. 	<p>CLINICAL</p> <ul style="list-style-type: none"> Provide appropriate medical care, information and referral for survivors. Use patient navigators and community health workers, when appropriate. Provide interpreter services or bilingual providers. Encourage participation in clinical trials as a treatment option. Provide tobacco treatment or referrals to cancer survivors who smoke or use tobacco products. <p>COMMUNITY</p> <ul style="list-style-type: none"> Offer survivorship educational forums for patients and caregivers. 	<p>CLINICAL</p> <ul style="list-style-type: none"> Integrate tobacco treatment clinical practice guidelines into clinical protocols. <p>COMMUNITY</p> <ul style="list-style-type: none"> Work for policy changes to support healthy behaviors. Establish programs to provide cancer prevention, education, screening/ follow-up and support for cancer patients. Educate legislators/ policymakers to ensure the availability and support for cancer prevention, screening and treatment.

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COMMUNITY PARTNERS NETWORK

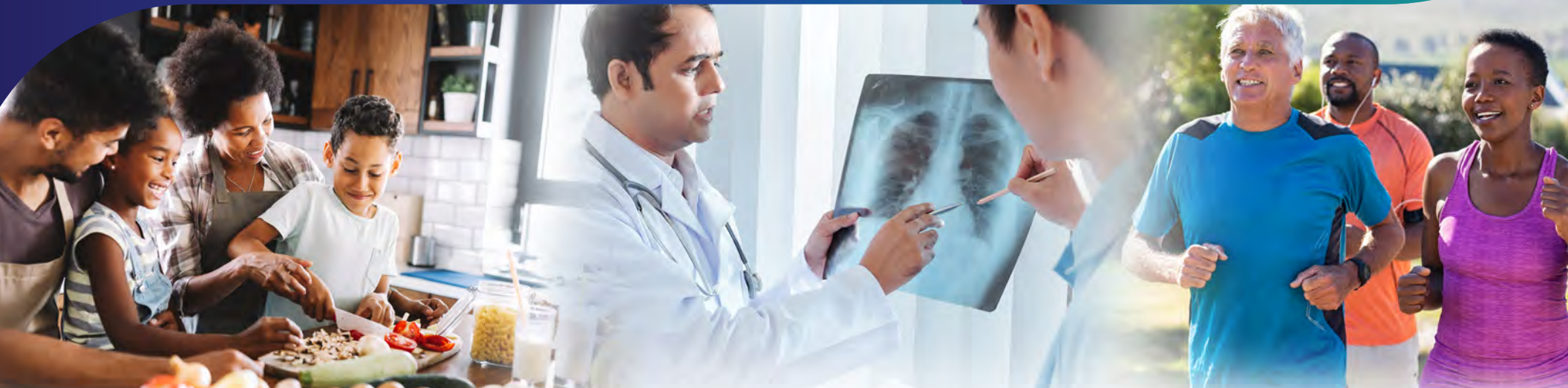
PREVENTION	EARLY DETECTION	CARE/SURVIVORSHIP	POLICY/SYSTEMS CHANGE
<p>PARTNER NETWORKS</p> <ul style="list-style-type: none"> • Partner with traditional and non-traditional partners within communities to connect resources and services to encourage healthy behaviors and address community barriers and needs. • Start and/or support cancer prevention activities such as: <ul style="list-style-type: none"> • tobacco cessation programs, • physical activity opportunities, • sun-safety promotions, and • ways to avoid environmental risks. 	<p>PARTNER NETWORKS</p> <ul style="list-style-type: none"> • Promote system and funding changes that will increase access to cancer screenings, medications and care. • Partner with traditional and non-traditional community partners to sponsor health screening events. 	<p>PARTNER NETWORKS</p> <ul style="list-style-type: none"> • Promote community health worker services. • Provide community services like support groups and counseling • Set up programs to help individual cancer survivors, e.g., provide transportation to treatment, meals, respite care for care givers, childcare, etc. • Support legislation that funds cancer treatment, research and palliative care. 	<p>PARTNER NETWORKS</p> <ul style="list-style-type: none"> • Encourage local government agencies to develop healthy living programs and clean air policies. • Establish programs to provide cancer prevention, education, screening/ follow-up and patient support. • Educate legislators/ policymakers about the need for cancer prevention, screening, treatment and research.

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POLICY MAKERS

PREVENTION	EARLY DETECTION	CARE/SURVIVORSHIP	POLICY/SYSTEMS CHANGE
<ul style="list-style-type: none"> • Sponsor or support policies and/or legislation that provides funding for cancer prevention and control. • Support evidence-based intervention policies and programs that lead to environmental and behavioral changes and support healthy lifestyles. 	<ul style="list-style-type: none"> • Support proven early cancer detection methods and programs. • Promote system and funding changes that will increase access to cancer screenings, medications and care. 	<ul style="list-style-type: none"> • Support legislation that funds cancer treatment and research including palliative care. 	<ul style="list-style-type: none"> • Adopt the recommendations of the North Carolina Advisory Committee on Cancer Coordination and Control. • Promote systematic approaches that address issues related to health equity and social determinants of health, i.e., food insecurity, inadequate access to health care, transportation. • Ensure the availability and support for cancer prevention, screening and treatment programs. • Support access to affordable health insurance. • Ensure that tobacco settlement and tobacco tax funds are used for tobacco and cancer control.

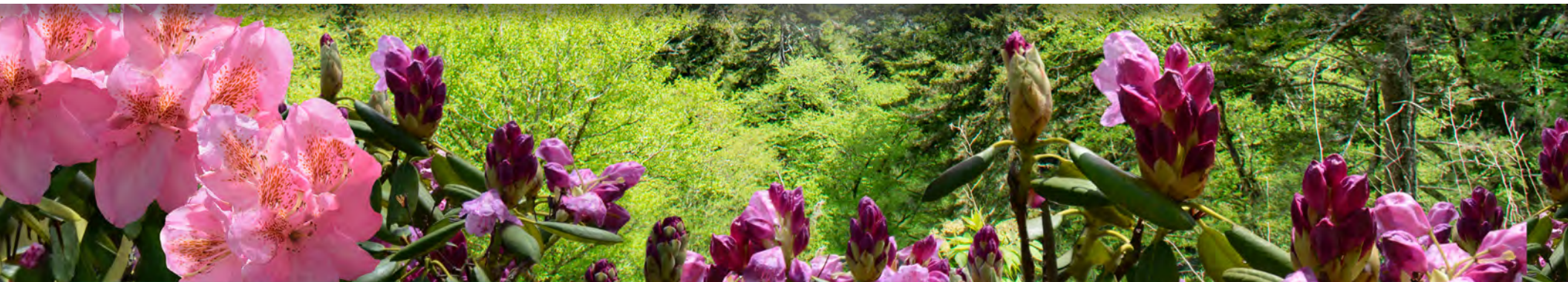


Action Priorities

NC CANCER ACTION PLAN

Strategic actions in this plan build on the statewide implementation efforts of *A Call to Action: North Carolina Comprehensive Cancer Control Plan 2014-2020*. The strategic actions consider policy and environmental change, rural and urban health care access differences, health equity and demographic and health data. Information on risk factors and prevention actions, early detection and health care and treatment are discussed in detail. Information on other factors that influence the health of a person such as heredity; safe places to live,

pray, play and work; economic stability and community services like access to fresh food, transportation and employment are included. North Carolinians experience major differences in their health, their healthy lifestyle resources and medical care depending on where they live. Unlike residents in the urban areas, residents in rural areas face challenges such as access to health care providers, medications, transportation services and caregivers. The unique nature of North Carolina is reflected in the recommended strategic actions in this plan.



Cancer Prevention

Action Priority

Cancer prevention focuses on changing health behaviors, policies, environments or other systems to reduce North Carolinians' cancer risk. This is important since cancer is the leading cause of death in North Carolina.

In North Carolina in 2018, 19,693 people died from cancer.¹ At least 42% of newly diagnosed cancers in the U.S. might have been prevented by avoiding tobacco, maintaining a healthy weight, being physically active, using alcohol in moderation and eating a healthy diet. For example, approximately 80% of lung cancer deaths in the US are caused by cigarette smoking.¹²

Excess weight is associated with increased mortality from several cancers including breast cancer, prostate cancer, endometrial cancer and colon cancers. Other factors that influence a person's chance of developing cancer are family history, age, race, ethnicity, gender, sexual orientation, geographic location and socioeconomic status. Age, race, ethnicity and gender cannot be controlled but lifestyle changes may make a difference in a person's cancer risk.

This Cancer Prevention Section will look at tobacco use, nutrition, physical activity, overweight, obesity, alcohol and environmental exposures. Information on risk factors and preventive actions that a person and/or community can follow are included along with strategic actions on how to make a difference in cancer in North Carolina. This information is especially important for both cancer patients and survivors to encourage them to adopt a healthy lifestyle as much as possible.



**Tobacco
Use**



**Nutrition,
Physical
Activity,
Overweight
and Obesity**



**Environmental
Exposures**



**Cancer
Prevention
Strategic
Actions**



RISK FACTORS

Tobacco use is the number one preventable cause of death and disease in the nation. Cigarette smoking is the leading cause of lung cancer in the US.¹² According to a CDC study, almost 18% of North Carolinians were cigarette smokers in 2016.¹³ Tobacco use also increases the risk for heart disease and stroke.

Lung cancer deaths in North Carolina have continued to decline after peaking during the 1996-2000 period at a rate of 61.9 cases per 100,000. The latest available one-year mortality data for 2018 indicates a continued decline in the lung cancer mortality rate, reaching a rate of 39.6 per 100,000.¹

Smokeless tobacco and other tobacco products like e-cigarettes contain cancer-causing chemicals. Young people often start their nicotine addiction by using these products because they feel they are safer than cigarettes. People who use smokeless tobacco may have gum disease, tooth decay and white or gray patches inside their mouths. These patches can lead to oral cancer.

Tobacco products like e-cigarettes, vape pens, e-hookah and similar devices are dangerous. Deaths have been reported from these products. Chemicals in these products may increase cancer risk. Nicotine can cause brain damage in young people and can prime the brain for nicotine addiction.

Nonsmokers are at risk for lung cancer if they are exposed to secondhand smoke. In addition to nicotine, the smoke and aerosols may contain other cancer-causing chemicals and ultrafine particles.



PREVENTIVE ACTIONS

Adopt and/or implement smoke-, tobacco- and vape-free laws and regulations. Create more smoke-, tobacco- and vape-free spaces where people live, work, play, pray and learn.

Individuals

- Stop smoking or using other tobacco products.
 - Utilize support groups.
 - Call QuitlineNC (1-800-QuitNow or 1-800-784-8669).
 - Check out www.QuitlineNC.com.
- If you don't smoke or use tobacco products, don't start.
- Support someone trying to stop smoking or vaping.
- Avoid exposure to secondhand smoke and vape pen aerosols.

Communities

- Enforce smoke, tobacco and vape-free laws and regulations for restaurants, bars and other regulated locations.
- Implement or enforce smoke-, tobacco- and vape-free laws and regulations for hospitals, schools, colleges and universities.
- Urge worksites to adopt and implement smoke-, tobacco- and vape-free policies and regulations.
- Start or continue to support groups to help people quit smoking.
- Promote the QuitlineNC (1-800-QuitNow or 1-800-784-8669). www.QuitlineNC.com
- Support the use of treatment methods for tobacco dependence. This includes counseling along with prescription medicines or nicotine replacement therapy.

There is no known safe form of tobacco use including e-cigarettes, vape pens, cigars and hookah.

Cigarette smoking increases cancer risk.¹²
 lung • stomach • liver • colorectal
 kidney • esophagus • larynx • bladder
 cervical • pancreas • oral cavity •
 myeloid leukemia



RISK FACTORS

Overweight and obesity increases the risk of developing many cancers and decreases survival rates.

One study estimated that 18% of cancer cases were attributable to the combined effects of excess body weight, physical inactivity and unhealthy diet including excess alcohol.¹²

The number of overweight and obese children and adults in North Carolina has increased markedly over the past decades. The obesity rate for adults age 18 and older in North Carolina in 2018 was 33.0%. North Carolina ranked 19th in the nation. Obesity in women (33.9%) was slightly higher than men (32.1%). It was higher among African Americans (42.7%) than Hispanics (30.0%) or non-Hispanic whites (29.9%).¹⁴ Overweight and obesity causes a decrease in life expectancy, productivity and quality of life.

Physical inactivity and poor diet are cancer risks in addition to contributing to overweight and obesity. Making unhealthy food choices at home, work and school significantly increases cancer risk. Foods high in fat and sugar and low in fiber increase cancer risk. Excessive use of alcohol adds to the risk. Physically active people have a lower risk of colon cancer and physically active women have a lower risk of breast cancer. Evidence suggests that exercise can improve cancer-related health outcomes like fatigue, anxiety, depression and general quality of life.



PREVENTIVE ACTIONS

Adopt a healthy lifestyle. Adults who have a healthy lifestyle are 10-20% less likely to be diagnosed with cancer.¹²

Individuals

- Make healthy food choices to reduce cancer risks:
 - maintain a healthy body weight,
 - eat more fruits and vegetables especially red, orange, yellow and dark-green vegetables,
 - eat less junk, fast food, red and processed meats like bacon, sausage, lunchmeats and hot dogs,
 - cut back on calorie-rich foods like cakes, cookies, donuts, cheeseburgers, fried chicken and French fries and
 - choose water – drink less sugar-sweetened beverages.
- Move more. Choose heart pumping and strength-building activities. Reduce television and screen time.
- Promote breastfeeding for the health of infants and to decrease the childhood obesity risk.
- Limit alcoholic beverages to two drinks per day for men and one drink a day for women.¹⁵
- Get enough sleep and manage stress.

Communities

- Assure access to affordable, healthy food.
- Encourage worksites and schools to offer healthy food.
- Provide safe, accessible walking and biking spaces and other recreational activity areas in the community.
- Educate legislators and/or policymakers on emerging issues in cancer prevention and the need for support.

Overweight and obesity increases the cancer risk.¹²
female breast • stomach • **colorectal**
 • liver • esophageal • pancreas • kidney • thyroid • uterine • gallbladder
 • brain multiple myeloma



RISK FACTORS

Exposure to some environmental substances like radon, ultraviolet rays and asbestos can cause cancer.

While people can reduce their exposure to the sun, other hazards may be harder to avoid. They are in the air, drinking water, food or materials at work. Many factors, like the amount and length of exposure and a person's background, influence whether a person develops cancer.

- Radon is a naturally occurring gas that can only be detected by testing. It is found in all North Carolina counties. According to the National Cancer Institute, long-term radon exposure is the second leading cause of lung cancer in the United States. It is the leading cause of lung cancer in non-smokers.¹⁶
- Ultraviolet rays can cause early aging of the skin and some skin cancers. Ultraviolet rays come from the sun and from artificial exposures like tanning beds and sun lamps. There are three types of skin cancer: melanoma, basal cell and squamous cell. Melanoma is the most serious form of skin cancer. It accounts for about one percent of all skin cancers but causes the most skin cancer deaths.¹²
- Arsenic is a naturally occurring element which is odorless and tasteless. It can be found in smoking tobacco and contaminated water. Long-term exposure can cause bladder, skin, lung, liver, kidney and other types of cancers.
- Cancer from benzene, beryllium, asbestos and vinyl chloride may occur from industrial exposures. Benzene is also found in cigarette smoke.



PREVENTIVE ACTIONS

Minimizing exposure to environmental risk factors will reduce cancer risk.

Individuals

- Test homes, worksites and schools for high levels of radon. Mitigate, if necessary.
- Avoid exposure to pesticides and other chemicals at home.
- Reduce exposure to cancer-causing substances at work.
- Use sunscreen and protective clothing when outdoors.
- Protect children from sunburns as early sunburns may increase the risk of skin cancer in adulthood.

Communities

- Urge employers, school administrators and business leaders to test buildings for high levels of radon. Mitigate, if necessary.
- Follow health and safety rules to avoid exposures to cancer-causing substances.
- Urge employers to survey their worksites to determine the workers' exposure to chemical hazards. Correct those exposures, as necessary.
- Urge employers to provide sun protection clothing for employees who work outside.
- Provide shaded areas for recreation and work.
- Use signage to encourage sunscreen use and sun protection.

Environmental exposures increase cancer risk.¹²
 lung • skin • bladder • liver • kidney

Cancer Prevention Strategic Actions

NC GOALS	CANCER PREVENTION STRATEGIC ACTIONS	EVIDENCE-BASED INTERVENTIONS ³
<p>NC Goal 1 Reduce cancer risks by supporting health behavior change in North Carolinians.</p>	<ul style="list-style-type: none"> • Promote behavior change, policies, environments or other systems to reduce cancer risk. <ul style="list-style-type: none"> • Provide education on evidence-based practices, policies, systems and environmental change approaches that focus on reducing obesity, overweight, tobacco use and health disparities. • Provide education on evidence-based practices, policies, systems and environmental change approaches that focus on increasing physical activity and healthy eating. • Support education and policy approaches that reduce occupational and environmental exposures to carcinogens. • Support the development and enforcement of state and local policies to prevent and minimize tobacco, smoking and vaping use, eliminate secondhand smoke and promote quitting. • Promote radon and other environmental toxins testing and mitigation in homes, schools, day cares, workplaces and other community settings. • Promote HPV vaccination according to the latest guidelines. • Promote cancer screening tests that may prevent future cancers. • Build community partnerships that will increase cancer screening with a focus on minority populations. 	<ul style="list-style-type: none"> • Use education to increase awareness of policy, systems and environmental approaches that address cancer prevention and control. • Develop and disseminate public education programs that empower survivors to make informed decisions. • Use linguistically and culturally appropriate health education materials to promote health equity. • Use interpreter services or bilingual providers to promote health equity. • Use small media to increase community demand for cancer screening services. • Sponsor and support group education to increase community demand for cancer screening services.

Early Cancer Detection

Action Priority

Early cancer detection is critical in increasing the chances for prevention and successful cancer treatment. Screening tests can help find certain cancers before there are any signs or symptoms. Screening can detect cancer at an early stage, when treatment may be more successful and less expensive. Screening tests are available to identify female breast, cervical, colorectal, skin and lung cancers early when treatment might be most successful.

The key component to early detection of cancer is education to promote screening and early diagnosis. Education helps people understand the need for cancer screening and encourages them to schedule their screenings. It also helps people recognize the warning signs of cancer and encourages them to take quick action to seek an early diagnosis.

Some cancers have few or no warning signs. Common warning signs of cancer are:

- a change in bowel/bladder habits,
- a sore that does not heal,
- unusual bleeding or discharge,
- thickening or lump in the breast or elsewhere,
- indigestion or difficulty in swallowing,
- obvious change in a wart or mole and
- nagging cough or hoarseness.



There are many reasons why people do not get screened for cancer. Some relate to education, race and ethnicity. Others relate to income and insurance coverage. In the 2018 BRFSS Survey, 14.5% of North Carolinians reported that they did not have health insurance. Among Hispanic individuals, 62% reported being uninsured.¹⁷ **(Table 1)** People without health insurance are less likely to go for recommended cancer screenings like mammograms, colonoscopies and cervical cancer screenings.

Table 1 2018 BRFSS Survey Results: North Carolina
Do you have any kind of health care coverage?¹⁷

	TOTAL	YES		NO	
		NUMBER	PERCENT	NUMBER	PERCENT
TOTAL	4,719	4,088	85.5	631	14.5
GENDER					
MALE	2,195	1,863	84.3	332	15.7
FEMALE	2,524	2,225	86.6	299	13.4
RACE/ETHNICITY					
NON-HISPANIC WHITE	3,140	2,904	91.6	236	8.4
NON-HISPANIC BLACK	879	749	84.1	130	15.9
NON-HISPANIC AM INDIAN	94	83	86.8	11	13.2
NON-HISPANIC OTHER	161	143	89.6	18	10.4
HISPANIC	381	156	38.1	225	61.9

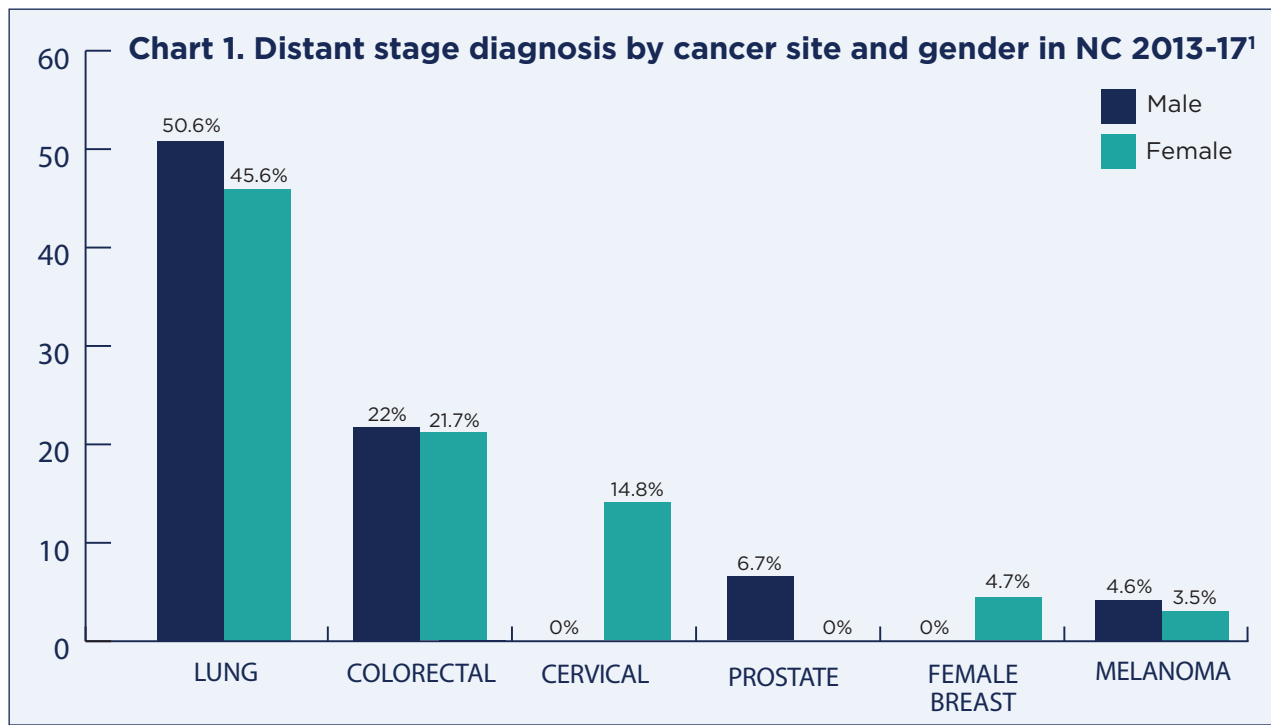
Many people are reluctant to be screened for a variety of reasons other than lack of health insurance. Women may avoid mammograms because of cultural issues, language barriers, fear of pain or of finding something abnormal. Colorectal cancer screenings may be avoided because of fear of having the colonoscopy test, test preparation and lack of awareness of noninvasive screening methods.

Lack of childcare, transportation and access to a screening facility with appointments at convenient times are also chief reasons people do not get health screenings.

Recommended screenings vary depending on the type of cancer and on the latest research. New methods and recommendations are released frequently, and older methods are reviewed regularly. Routine screenings

are recommended by the U.S. Preventive Services Task Force, Centers for Disease Control, American Cancer Society and cancer-specific organizations like the Lung Cancer Initiative. (See Appendix E for additional sources of scientific information.)

Chart 1 shows the distant stage diagnosis (cancer from the original cancer site has spread to distant parts of the body) by priority cancer and gender. This chart shows the need for early detection so cancer can be treated before it has a chance to spread to other parts of the body. Screening for colorectal, lung and female breast cancer have been shown to reduce deaths from these cancers.¹ Colonoscopy can prevent colorectal cancer by finding and removing precancerous polyps before they develop into cancer. Testing for lung cancer is new and is based on the number of pack years of smoking and age.



Early Detection of Cancer Strategic Actions

NC GOALS	EARLY DETECTION STRATEGIC ACTIONS	EVIDENCE-BASED INTERVENTIONS ³
<p>NC Goal 1 Reduce cancer risks by supporting health behavior change in North Carolinians.</p>	<ul style="list-style-type: none"> • Conduct messaging campaigns and group education to provide education about risk factors like obesity, overweight and tobacco use and preventive health behaviors like increasing physical activity and healthy eating. • Urge providers to use lay health advisors, native language speakers and/or health educators to provide education about risk factors and preventive health behaviors. • Educate health care providers and consumers about the importance of a detailed family health history. • Urge consumers to share their personal and family health history with other family members and their health care providers. 	<ul style="list-style-type: none"> • Sponsor and support group education to increase community demand for cancer screening services. • Develop and disseminate public education programs that empower survivors to make informed decisions. • Use linguistically and culturally appropriate health education materials to promote health equity.
<p>NC Goal 2 Increase cancer screening and early detection of cancer.</p>	<ul style="list-style-type: none"> • Partner with health agencies, health care providers, the public and community leaders to: <ul style="list-style-type: none"> • increase awareness that cancer screening saves lives, • educate providers and the community on recommended cancer screening guidelines, • work with local communities on ways to sponsor and promote cancer screenings, • promote cancer screenings based on current cancer screening guidelines, • use health equity strategies to increase cancer screening access for underserved and high-risk populations and • promote continued screening opportunities for cancer survivors. 	<ul style="list-style-type: none"> • Use small media to increase community demand for cancer screening services. • Reduce barriers to increase community access to cancer screening services. • Sponsor group education to increase community demand for cancer screening services. • Use interpreter services or bilingual providers to promote health equity. • Use patient navigation to facilitate access to screening.

Cancer Treatment And Supportive Care

Action Priority

Cancer is a complex disease requiring a variety of treatments and supportive care depending on the type of cancer and its severity. Many people with cancer have successful treatment and can continue with their lives, either living with cancer or living cancer free. The overall cancer mortality rate in North Carolina for all cancers has gone down 24.5% since 1999. **Chart 2** shows the percent of patients that are still alive five years after being diagnosed with one of the six priority cancers.¹

In 2016, there were an estimated 15.5 million cancer survivors in the United States. The number of cancer survivors is expected to increase to 20.3 million by 2026. This number is projected to grow rapidly because cancer is a disease primarily of older adults and the number of Americans over age 65 is predicted to double between the years 2000 and 2030.¹⁸

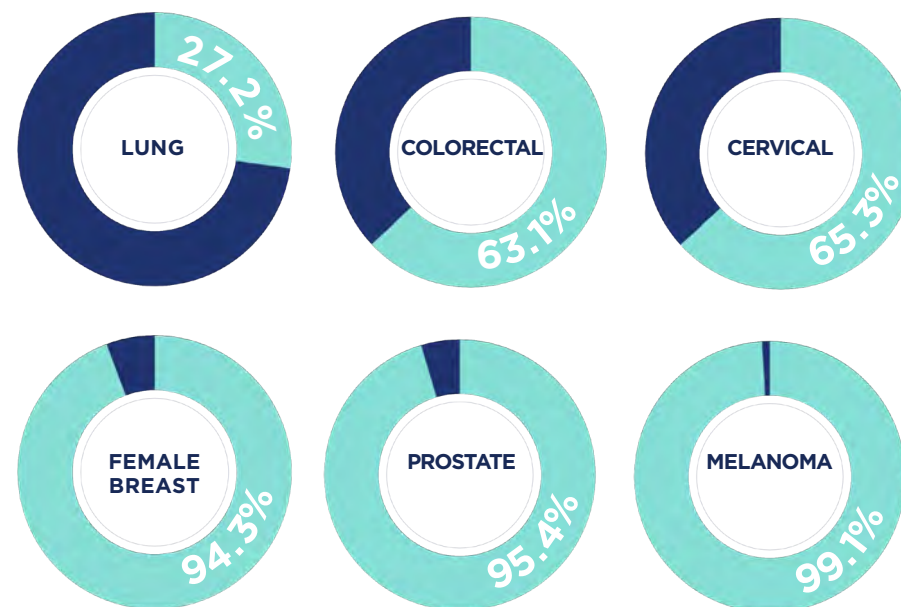
The increase in the number of years people are either living with cancer or living cancer-free brings about challenges for supportive care during survivorship and end-of-life care. Many cancer survivors experience long-term physical, emotional, psychosocial, spiritual and financial challenges that require both supportive and clinical care. The quality of this care is affected by available health care and supportive services, health insurance, financial barriers and family and community resources.

These challenges may be more difficult for North Carolinians who live in more rural counties with limited health care providers and limited community resources. (See Appendix F for North Carolina Cancer Treatment Programs.)

Information on NC Community Cancer Networks is available at <https://nccancer.dph.ncdhhs.gov/>



CHART 2 - NC Cumulative Relative 5-Year Survival Rate By Cancer from 2013-2017 Survival Rate is in teal¹



SURVIVORSHIP

People are living longer after being diagnosed with cancer, so there is an increasing number of people who are either living with cancer or are cancer free. Depending on their situation, some survivors may need a lot of services while others may not.

The North Carolina Comprehensive Cancer Control Program surveyed participants at the 2018 Cancer Survivorship Summit to determine the services survivors used. Almost 75% of the 97 survivors reported that they used nutrition support, in-person support groups and religious or spiritual support. Services like assistance with insurance, disability or social security, art and writing therapy and educational opportunities like camps, retreats, etc. generally were not available.¹⁹

The goal of supportive cancer care is to prevent or treat as early as possible the symptoms of cancer, the side effects caused by the treatment and the psychological, social and spiritual problems related to it and its treatment.

SUPPORTIVE CARE SERVICES

Supportive care services are defined by the National Cancer Institute as care given to improve the quality of life of patients who have a serious or life-threatening disease. These services are important as the patient moves from diagnosis to treatment to survivorship and end-of-life care.

The goal of supportive care is to prevent or treat as early as possible the symptoms of the disease, treatment side effects and psychological, social and spiritual problems. It is important for patients to understand the long-term and late effects of their cancer and their treatment.

A cancer diagnosis involves more than just the patient. Supportive care is also important for caregivers and family members. Cancer and its treatment can be as stressful for them as it is for patients. Caregivers and family members need support and resources to help them manage their own stress in order to give the best support to the patient.

TREATMENT OR CARE PLAN

An important resource for patients and their caregivers is a treatment or care plan which usually contains a summary of the medical treatments and follow-up care. Survivor's treatment or care plans may include a treatment summary, information on follow-up treatments, potential lingering treatment effects and the possibility of returning and/or new cancers. Both of these plans can help patients and their caregivers cope with their cancer and with the challenges of identifying supportive services and resources.

Cancer patients and survivors need to see their primary care provider for routine care including regular health screenings and treatment for other chronic diseases like diabetes and heart disease. They should share their treatment or care plans with their primary care provider so the provider can understand their treatment and the lingering effects of the treatment.



PAIN MANAGEMENT

Cancer pain can be the result of the disease, its treatment or a combination of the two. Pain management becomes an ever-increasing concern as more and more people are living with cancer. The increased focus on opioid use has presented some unique challenges for helping cancer patients manage their pain. Some patients are reluctant to take opioid medications for fear of addiction or they may have less access to opioid medications. Sometimes, a caregiver is concerned about addiction and may reduce or withhold medicine. These factors are playing an important part in renewed interest in nonaddictive pain medications as well as non-drug approaches for managing chronic pain like acupuncture, hypnosis, exercise, massage therapy, meditation and physical and occupational therapy.

END-OF-LIFE CARE

Individuals with cancer who no longer have choices for treatment that may cure or slow the progression of their disease need services that focus on improving their quality of life. This is called palliative care. It offers extra clinical support to improve a patient's quality of life by treating pain, stress, fear, anxiety and other symptoms. Some patients may continue their palliative care at home, or they may go for end-of-life care at a facility like hospice. Hospice care, either at home or in a facility, offers comprehensive and coordinated care to allow for death with dignity.

PATIENT NAVIGATION

Patient navigation often starts with diagnosis and continues through the patient's treatment to survivorship and end of life. Patient navigation staff can help patients navigate fragmented health care systems and overcome barriers. They are the link between the health care team, patient, family and caregivers and community resources. They offer care coordination, problem solving and education to help reduce or eliminate barriers that patients may face.

Patient navigator staff are essential members of the health care team. Both professional and lay-trained patient navigation staff can help work through issues that happen during cancer treatment and survivorship. Patient navigation staff may be called case managers, patient advocates, patient navigators, community health workers, health educators, social workers or lay health advisors.

Staff members who do patient navigation may work in a variety of settings. Professionally trained patient navigators generally work in a health care facility like a hospital or clinic. They offer counseling, care coordination, health education and serve as a link with the health care team. Lay-trained patient navigators generally work in communities where they have knowledge of the local resources and facilities.

The North Carolina Advisory Committee on Cancer Coordination and Control, Care and Treatment Subcommittee surveyed patient navigation staff across the state about their patient navigation services. According to the *Patient Navigation Services Inventory Survey*, 76% of the respondents who provided patient navigation services were nurses with Bachelor of Science in Nursing degrees. Only 32% of the respondents had oncology nurse certification. Most of the respondents (67%) were in the North Carolina Piedmont area where the three National Cancer Institute Designated Comprehensive Cancer Programs are located. It is likely that the percentage of certified navigators would be smaller in the eastern and western parts of the state because of their rural nature.²⁰



Cancer Treatment and Supportive Services Strategic Actions

NC GOALS	CANCER TREATMENT AND SUPPORTIVE SERVICES STRATEGIC ACTIONS	EVIDENCE-BASED INTERVENTIONS ³
<p>NC Goal 3 Improve access to cancer care, enhance care coordination and assure quality treatment.</p>	<ul style="list-style-type: none"> • Offer educational opportunities to patient navigators and community health workers that better equip them to provide quality care to their patients. • Support educational opportunities that increase public knowledge about comprehensive, team-based cancer care, supportive and palliative care and end-of-life services. • Support survivor’s quality of life through training and outreach for both health care providers and cancer survivors and their caregivers. • Encourage health care providers to have bilingual services available. 	<ul style="list-style-type: none"> • Expand educational opportunities to equip patient navigators/community health workers with strategies to reduce the unequal burden of cancer. • Develop and disseminate public education programs that empower survivors to make informed decisions. • Provide information to cancer survivors, health care providers and the public about cancer survivorship and meeting their needs. • Use interpreter services or bilingual providers to promote health equity.
<p>NC Goal 4 Improve the knowledge and understanding of cancer, cancer care and the relationship between cancer and other chronic diseases among health care professionals and the general public.</p>	<ul style="list-style-type: none"> • Publish information regularly that lists educational webinars, national cancer organization links, cancer care resources, patient navigation ideas and cancer survivorship educational opportunities. • Support educational opportunities that: <ul style="list-style-type: none"> • promote the involvement of primary care physicians in cancer care, • promote a statewide patient navigation model to increase the number of staff working as patient navigators, • increase access to cancer clinical trials and • promote adherence to national guidelines for cancer diagnosis and treatment. 	<ul style="list-style-type: none"> • Provide information to cancer survivors, health care providers and the public about cancer survivorship and meeting their needs. • Develop and disseminate public education programs that empower survivors to make informed decisions. • Educate the public that cancer is a chronic disease that people can and do survive. • Use recommendations from The Guide to Community Preventive Services (The Community Guide) https://www.thecommunityguide.org/. • Implement evidence-based cancer plans that include all stages of cancer survivorship.



Priority Cancers

NC CANCER ACTION PLAN

Cancer is the leading cause of death in North Carolina.¹ The priority cancers addressed in this NC Cancer Action Plan were chosen because of the opportunity for prevention and early detection. They include the four leading causes of cancer deaths in North Carolina (lung, colorectal, female breast and prostate).²¹ Cervical is a priority cancer because it can mostly be prevented through screening and HPV vaccination. Melanoma and non-melanoma skin cancers are included because they

are the most common cancers and can be mostly prevented by using sun protection.

Each cancer section looks at risk factors, prevention, early detection, treatment and strategic actions to reduce mortality and incidence rates. The risk of cancer varies by age, gender and race. Age is a major risk factor for all priority cancers. As the population ages, the incidence of cancer will increase.



Lung Cancer

Priority Cancer

Lung cancer was the leading cause of cancer deaths in North Carolina in 2018 (5,193 deaths). It is estimated that 9,375 people will be diagnosed with lung cancer and 6,062 people will die from lung cancer in 2020.¹ (See Appendix G for North Carolina Priority Cancer Incidence and Mortality Maps.)

Lung cancer includes two main types: small cell lung cancer and non-small cell lung cancer. Small cell and non-small cell lung cancers grow, spread and are treated in different ways.



RISK FACTORS

Smoking is a major risk factor for both types of lung cancer. Approximately 80% of all lung cancer is caused by cigarette smoking.¹² Other risk factors include cigar and pipe smoking, vaping and exposure to environmental hazards such as secondhand smoke, radon, asbestos and other substances. 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.

PREVENTION AND EARLY DETECTION

Lung cancer is mostly preventable by not smoking and by reducing exposure to secondhand smoke, radon and other environmental hazards.

Screening with low-dose spiral computed tomography (LDCT) can reduce lung cancer deaths by about 20% compared to standard chest x-ray among current or former heavy smokers. This screening is generally recommended for older adults who are current or former heavy smokers.²²

TREATMENT

Treatment is usually most successful when cancer is detected early. Lung cancer treatment options include surgery, chemotherapy, radiation and targeted cancer therapies. Small cell and non-small cell lung cancers are treated in different ways.

For additional information, visit the NC Cancer Prevention and Control Branch web site at <https://nccancer.dph.ncdhhs.gov/>.

Reducing the Burden of Cancer in North Carolina: A Data and Resource Guide for Communities to Fight Cancer provides additional data information on lung cancer. It can be found at <https://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/docs/ReducingtheBurdenofCancerResourceGuide.pdf>.

North Carolina Lung Cancer Objective

Reduce North Carolina lung cancer incidence and mortality rates.

NC LUNG CANCER STRATEGIC ACTIONS	EVIDENCE-BASED INTERVENTIONS ³
<ul style="list-style-type: none"> • Support state and local policies that reduce occupational and environmental exposures to lung carcinogens with an emphasis on reducing tobacco use, vaping, secondhand smoke and radon exposure in schools, community and workplaces. • Educate policymakers about the need for increased funding for programs, coalitions and action groups that address or reduce the risk factors of lung cancer. • Support messaging campaigns about lung cancer risk factors which include radon and secondhand smoke exposure, tobacco and vaping use and the need for early detection. • Promote awareness of low-dose computed tomography screening recommendations to healthcare providers for adults who meet specific age and smoking history criteria. • Encourage the building of radon-resistant new construction and radon testing of all buildings. 	<ul style="list-style-type: none"> • Develop and disseminate public education programs that empower survivors to make informed decisions. • Sponsor group education and small media to increase community demand for cancer screening services. • Reduce barriers to increase community access to cancer screening services. • Use interpreter services or bilingual providers to promote health equity. • Educate the public that cancer is a chronic disease that people can and do survive. • Use recommendations from The Guide to Community Preventive Services (The Community Guide) https://www.thecommunityguide.org/.

2020-2025 NC Lung Cancer Measures

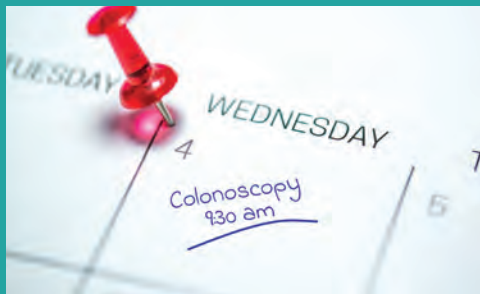
NC LUNG CANCER MEASURES	NC BASELINE	NC 2025 TARGET
Lung cancer incidence rate ²³	62.9/100,000	54.8/100,000
Lung cancer mortality rate ²¹	39.6/100,000	31.0/100,000

²⁷ The **target rate** was determined by calculating the percent change from year-to-year from 2008 forward, to the latest available incidence data (2017) and mortality data (2018). An annual average percent change was calculated from those percentages (for the years 2008-2017) for incidence and (2008-2018) for mortality. The targets were set for 2025 based on the projected rates from 2018 through 2025.

Colorectal Cancer

Priority Cancer

Colorectal cancer was the second leading cause of cancer deaths in North Carolina in 2018 (1,579 deaths). It is estimated that 4,837 people will be diagnosed with colorectal cancer and 1,744 people will die from colorectal cancer in 2020.¹ This disease affects both men and women and people of all races and ethnicities. Deaths are higher among men and African Americans. (See *Appendix G for North Carolina Priority Cancer Incidence and Mortality Maps.*)



RISK FACTORS

Risk factors for colorectal cancer include obesity, physical inactivity, smoking, heavy alcohol use and a diet high in processed meats, low in fruits, vegetables and whole grain fiber. Diabetes also increases the risk of developing colorectal cancer.

PREVENTION AND EARLY DETECTION

Colorectal cancer is mostly preventable through early detection and lifestyle choices. Screening can prevent colorectal cancer by detecting and removing precancerous growths. Also, it can detect cancer at an early stage, when treatment may be more successful and less expensive. A colonoscopy, one type of colorectal cancer screening, can find polyps which can be removed before they become cancer.

Other screening tests include fecal blood tests – Fecal Immunochemical Test (FIT) and Fecal Occult Blood Test (FOBT) and sigmoidoscopy. Individuals should ask their health care provider which test would be best for them. Periodic colon cancer screening is recommended for individuals starting by age 45. Individuals at higher risk due to family or personal medical history should consider periodic screening beginning at an earlier age or more frequently. Results from the 2018 BRFSS Survey show that 71.7% of North Carolina adults over age 45 reported that they have had one or more of the recommended colorectal cancer screening tests within the suggested time interval.¹⁷ (See *Appendix E for additional sources of scientific information.*)

TREATMENT

Treatment is usually most successful when cancer is detected early. Colorectal cancer treatment options include surgery, chemotherapy and radiation therapy.

For additional information, visit the NC Cancer Prevention and Control Branch web site <https://nccancer.dph.ncdhhs.gov/>.

Reducing the Burden of Cancer in North Carolina: A Data and Resource Guide for Communities to Fight Cancer provides additional data information on colorectal cancer. It can be found at <https://publichealth.nc.gov/chronicdiseaseandinjury/cancerprevention-andcontrol/docs/ReducingtheBurdenofCancerResourceGuide.pdf>.



North Carolina Colorectal Cancer Objective

Reduce North Carolina colorectal cancer incidence and mortality rates.

NC COLORECTAL CANCER STRATEGIC ACTIONS	EVIDENCE-BASED INTERVENTIONS ³
<ul style="list-style-type: none"> • Promote awareness of screening methods and recommendations for adults who meet specific age criteria. • Conduct targeted outreach using evidence-based strategies to decrease disparities in colorectal cancer mortality. These efforts should focus on population groups who experience high mortality rates from colorectal cancer. • Support Federally Qualified Health Centers with low colorectal cancer screening rates to increase screening and referrals. • Educate policymakers about the need for increased funding for programs, coalitions and action groups to support additional screening opportunities in communities. 	<ul style="list-style-type: none"> • Sponsor group education to increase community demand for cancer screening services. • Reduce barriers to increase community access to cancer screening services. • Develop and disseminate public education programs that empower survivors to make informed decisions. • Use interpreter services or bilingual providers to promote health equity. • Educate the public that cancer is a chronic disease that people can and do survive. • Use recommendations from The Guide to Community Preventive Services (The Community Guide) https://www.thecommunityguide.org/.

Note: The North Carolina Colorectal Cancer Roundtable (NC CRCRT) is a good example of an organization that uses these strategies to support colorectal cancer reduction efforts in North Carolina by enhancing statewide access to screening, quality treatment and supportive services and maximizing quality of life for cancer patients, survivors and their families. The NC CRCRT serves as a statewide advisory board and works with government officials, policymakers, public and private organizations and the public.

2020-2025 NC Colorectal Cancer Measures

NC COLORECTAL CANCER MEASURES	NC BASELINE	NC 2025 TARGET
Colorectal cancer incidence rate²³	35.2/100,000	29.6/100,000
Colorectal cancer mortality rate²¹	12.6/100,000	11.0/100,000

²⁷The **target rate** was determined by calculating the percent change from year-to-year from 2008 forward, to the latest available incidence data (2017) and mortality data (2018). An annual average percent change was calculated from those percentages (for the years 2008-2017) for incidence and (2008-2018) for mortality. The targets were set for 2025 based on the projected rates from 2018 through 2025.

Female Breast Cancer

Priority Cancer

Female breast cancer was the third leading cause of cancer deaths in North Carolina women in 2018 (1,406 deaths). It is estimated that 9,352 females in North Carolina will be diagnosed with female breast cancer and 1,519 women will die from female breast cancer in 2020.¹ While breast cancer occurs mostly in women, men also can develop it. (See *Appendix G for North Carolina Priority Cancer Incidence and Mortality Maps.*)

Doctors estimate that 5% to 10% of female breast cancers are linked to gene mutations passed through generations of a family.²⁴ The most well-known inherited mutated genes are female breast cancer gene 1 (BRCA1) and breast cancer gene 2 (BRCA2), both of which significantly increase the risk of breast and ovarian cancer.



RISK FACTORS

The risk factors for female breast cancer, other than being female, are increasing age, a family history of female breast cancer, early puberty, late menopause, obesity, smoking and alcohol use. Health care providers may suggest chemo-prevention and preventive surgery to reduce a person's risk if the person has a family history that suggests a high risk for female breast cancer. In chemoprevention, estrogen-blocking medications are given to reduce the cancer risk. Preventive surgery, where healthy breasts are surgically removed, is another option. Some women choose to have both their healthy breasts and ovaries removed to reduce the risk of both breast and ovarian cancer.

PREVENTION AND EARLY DETECTION

Mammograms are the most effective method to detect female breast cancer early before it causes symptoms or can be detected by touch. According to the 2018 BRFSS Survey, 67.7 percent of North Carolina women of all ages reported, "ever having had a mammogram."¹⁷ Early detection makes a difference. The survival rate for female breast cancer cases diagnosed at an early stage was 99% during the 2009-2015 period.¹² (See *Appendix E for additional sources of scientific information.*)

TREATMENT

Treatment is usually most successful when cancer is detected early. Breast cancer treatments may involve surgery, radiation therapy, chemotherapy and other therapies.

For additional information, visit the NC Cancer Prevention and Control Branch web site at <https://nccancer.dph.ncdhhs.gov/>.

Reducing the Burden of Cancer in North Carolina: A Data and Resource Guide for Communities to Fight Cancer provides additional data information on breast cancer. It can be found at <https://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionand-control/docs/ReducingtheBurdenofCancerResourceGuide.pdf>



North Carolina Female Breast Cancer Objective

Reduce female breast cancer incidence and mortality rates in North Carolina.

NC FEMALE BREAST CANCER STRATEGIC ACTIONS	EVIDENCE-BASED INTERVENTIONS ³
<ul style="list-style-type: none"> • Conduct targeted outreach using evidence-based strategies to decrease disparities in female breast cancer mortality. These efforts should focus on population groups who experience high mortality rates from breast cancer. • Promote awareness of screening methods and recommendations for women who meet specific age criteria. • Partner with NC Breast and Cervical Cancer Control Program (NC BCCCP) and WISEWOMAN providers and other agencies to improve data sharing and patient referral and tracking to assure that eligible patients get appropriate screening and treatment services. • Educate policymakers about the need for increased funding for programs, coalitions and action groups to support additional screening opportunities in communities. 	<ul style="list-style-type: none"> • Sponsor group education to increase community demand for cancer screening services. • Reduce barriers to increase community access to cancer screening services. • Develop and disseminate public education programs that empower survivors to make informed decisions. • Use interpreter services or bilingual providers to promote health equity. • Educate the public that cancer is a chronic disease that people can and do survive. • Use recommendations from The Guide to Community Preventive Services (The Community Guide) https://www.thecommunityguide.org/.

2020-2025 NC Female Breast Cancer Measures

NC FEMALE BREAST CANCER MEASURES	NC BASELINE	NC 2025 TARGET
Female Breast cancer incidence rate²³	162.3/100,000	152.8/100,000
Female Breast cancer mortality rate²¹	20.3/100,000	18.8/100,000

²⁷The **target rate** was determined by calculating the percent change from year-to-year from 2008 forward, to the latest available incidence data (2017) and mortality data (2018). An annual average percent change was calculated from those percentages (for the years 2008-2017) for incidence and (2008-2018) for mortality. The targets were set for 2025 based on the projected rates from 2018 through 2025.

Prostate Cancer

Priority Cancer

Prostate cancer was the fifth leading cause of cancer deaths in North Carolina in 2018 (1,003 deaths) and is the most common cancer in men. It is estimated that 7,739 men in North Carolina will be diagnosed with prostate cancer and 1,065 men will die from prostate cancer in 2020.¹ According to the American Cancer Society, roughly 200,000 men in the United State are diagnosed with prostate cancer annually.¹² Prostate cancer tends to grow slowly when compared to other cancers. Most men with prostate cancer will die of other causes rather than prostate cancer. (See *Appendix G for North Carolina Priority Cancer Incidence and Mortality Maps.*)



RISK FACTORS

Risk factors for prostate cancer, other than being male, are increasing age, African American or American Indian ancestry, and a family history of prostate cancer. Smoking and obesity increase the risk of fatal prostate cancer. The older a man is, the greater his risk for getting prostate cancer. About 60% of prostate cancer cases are in men over 65 years of age.²⁵ Prostate cancer is more common in Black men than in men of other racial backgrounds. Black men are more often diagnosed with prostate cancer when it is in advanced stages. In addition to racial backgrounds, any man with a father, brother or son who has had prostate cancer is two to three times more likely to develop the disease.

PREVENTION AND EARLY DETECTION

Because there is no known cause of prostate cancer, it is difficult to determine how best to prevent it. Dietary practices such as eating red meats, dairy products and fatty foods and cooking meats at high temperatures appear to increase the risk of prostate cancer. Obesity appears to increase the risk of aggressive prostate cancer. There is some evidence that certain occupational exposures increase the risk.

Researchers and health care providers recommend an informed decision-making process where men are counseled by their health care provider about the potential benefits and harms associated with prostate cancer screening. The American Cancer Society recommends that men age 50 and older who have at least a 10-year life expectancy should have an opportunity to make an informed decision regarding screening. For men with an elevated risk (Black, family history), the discussion of screening should occur at age 45.¹² (See *Appendix E for additional sources of scientific information.*)

TREATMENT

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, radiation, chemotherapy and/or hormone therapy.

For additional information, visit the NC Cancer Prevention and Control Branch web site at <https://nccancer.dph.ncdhhs.gov/>.

Reducing the Burden of Cancer in North Carolina: A Data and Resource Guide for Communities to Fight Cancer provides additional data information on prostate cancer. It can be found at <https://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/docs/ReducingtheBurdenofCancerResourceGuide.pdf>.



North Carolina Prostate Cancer Objective

Reduce prostate cancer incidence and mortality rate in North Carolina.

NC PROSTATE CANCER STRATEGIC ACTIONS	EVIDENCE-BASED INTERVENTIONS ³
<ul style="list-style-type: none"> • Conduct messaging campaigns to increase awareness of the importance of informed decision making regarding prostate cancer. • Conduct targeted outreach using evidence-based strategies to decrease disparities in prostate cancer mortality. These efforts should focus on population groups who experience high mortality rates from prostate cancer. • Educate providers in high prostate cancer incidence areas about how to discuss the advantages and disadvantages of PSA tests and prostate treatments. • Promote awareness of screening methods and recommendations for men who meet specific age criteria. 	<ul style="list-style-type: none"> • Develop and disseminate public education programs that empower survivors to make informed decisions. • Use interpreter services or bilingual providers to promote health equity. • Educate the public that cancer is a chronic disease that people can and do survive. • Use recommendations from The Guide to Community Preventive Services (The Community Guide) https://www.thecommunityguide.org/.

2020-2025 NC Prostate Cancer Measures

NC PROSTATE CANCER MEASURES	NC BASELINE	NC 2025 TARGET
Prostate cancer incidence rate ²³	120.7/100,000	100.6/100,000
Prostate cancer mortality rate ²¹	19.7/100,000	16.6/100,000

²⁷The **target rate** was determined by calculating the percent change from year-to-year from 2008 forward, to the latest available incidence data (2017) and mortality data (2018). An annual average percent change was calculated from those percentages (for the years 2008-2017) for incidence and (2008-2018) for mortality. The targets were set for 2025 based on the projected rates from 2018 through 2025.

Cervical Cancer

Priority Cancer

Cervical cancer is a priority cancer because it is mostly preventable.

It can be prevented with the Human Papillomavirus (HPV) vaccine and Pap tests. In 2018, 132 North Carolina women died of cervical cancer. It is estimated that 406 women will be diagnosed with cervical cancer and 129 women will die from cervical cancer in North Carolina in 2020.¹



RISK FACTORS

The primary risk factor for cervical cancer, other than being a woman, is having an HPV infection. Other risk factors are smoking, a high number of child births, long-term use of oral contraceptives and having sex with a partner who is infected with HPV.

PREVENTION AND EARLY DETECTION

Cervical cancer is easily detected and can mostly be prevented through the use of the HPV vaccine. CDC recommends vaccinating all boys and girls starting at age 9. The number of adolescents who are up-to-date on HPV vaccination – meaning they started and completed the HPV vaccine series – increased five percentage points from 2016 to 2017, according to results from a national survey published in CDC’s Morbidity and Mortality Weekly Report (MMWR).²⁶ Women can prevent cervical cancer by being vaccinated with the HPV vaccine as a child and having regular Pap tests starting at age 21.

Two tests can help prevent cervical cancer. The Pap test (or Pap smear) looks for precancers, which are cell changes on the cervix that may become cervical cancer if they are not treated appropriately. The other test is the human papillomavirus (HPV) test. This test looks for the virus that can cause the cell changes. (See Appendix E, Scientific Information Resources for more screening information.)

TREATMENT

Treatment is usually most successful when the cancer is detected early. Treatment options for cervical cancer include surgery, chemotherapy and/or radiation therapy.

HPV RELATED CANCER

The rates of oropharyngeal cancer have trended steadily upward for the last decade. Oropharyngeal cancer occurs in the tonsils, the base of the tongue, soft palate and pharyngeal walls. It does not include the oral cavity. According to the Morbidity and Mortality Weekly Report released in 2018, oropharyngeal cancer is the most common HPV-associated cancer in the United States. Between 1999 and 2015, rates of oropharyngeal cancer increased in both men and women, but more in men. People who develop oropharyngeal cancer are more likely to be young, white, higher socioeconomic status, non-smokers and non-drinkers. Sexual history is strongly associated with HPV-positive cancers.⁸

HPV-positive head and neck cancers typically develop in the throat at the back of the tongue and near the tonsils, which makes them difficult to detect. HPV vaccinations for males and females ages 9 to 26 could prevent 90% of these cancers in the United States each year.⁹

For additional information, visit the NC Cancer Prevention and Control Branch web site at <https://nccancer.dph.ncdhhs.gov/>.

Reducing the Burden of Cancer in North Carolina: A Data and Resource Guide for Communities to Fight Cancer provides additional data information on cervical cancer. It can be found at <https://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/docs/ReducingtheBurdenofCancerResourceGuide.pdf>.

North Carolina Cervical Cancer Objectives

Reduce cervical cancer incidence and mortality rates in North Carolina.

Increase HPV complete series vaccination rate for males and females ages 9 to 26 in North Carolina.

NC CERVICAL CANCER STRATEGIC ACTIONS	EVIDENCE-BASED INTERVENTIONS ³
<ul style="list-style-type: none"> • Coordinate with stakeholders to develop a messaging campaign to increase the awareness of the public of the importance of recommended HPV vaccines. • Conduct targeted outreach using evidence-based strategies to increase cervical cancer screening among groups of women who experience high mortality rates from cervical cancer. • Partner with NC Breast and Cervical Cancer Control Program and WISEWOMAN providers and other agencies to improve data sharing and patient referral and tracking to assure that eligible patients get appropriate screening and treatment services for cervical cancer. • Educate policymakers about the need for increased funding for programs, coalitions and action groups to support additional screening opportunities in communities. 	<ul style="list-style-type: none"> • Sponsor group education to increase community demand for cancer screening services. • Reduce barriers to increase community access to cancer screening services. • Develop and disseminate public education programs that empower survivors to make informed decisions. • Use interpreter services or bilingual providers to promote health equity. • Educate the public that cancer is a chronic disease that people can and do survive. • Use recommendations from The Guide to Community Preventive Services (The Community Guide) https://www.thecommunityguide.org/.

2020-2025 NC Cervical Cancer Measures

NC CERVICAL CANCER MEASURES	NC BASELINE		NC 2025 TARGET	
Cervical cancer incidence rate²³	6.5/100,000		6.24/100,000	
Cervical cancer mortality rate²¹	2.1/100,000		2.0/100,000	
Percent of adolescents aged 13-15 who had received the ADIC-recommended doses of human papillomavirus (HPV) vaccine based on their age at initiation of HPV vaccination.*	Males*	Females*	Males*	Females*
	36.4%	45.1%	80.0%	80.0%

* Data from the Immunization Branch, Division of Public Health, NC Department of Health and Human Services. 2020.

²⁷The **target rate** was determined by calculating the percent change from year-to-year from 2008 forward, to the latest available incidence data (2017) and mortality data (2018). An annual average percent change was calculated from those percentages (for the years 2008-2017) for incidence and (2008-2018) for mortality. The targets were set for 2025 based on the projected rates from 2018 through 2025.

Melanoma and Non-melanoma Skin Cancer

Priority Cancer

Melanoma skin cancer incidence rates have shown a slow decrease over the past five years. Skin cancer mortality rates also showed a steady decline from 2013-2017. Melanoma is the most serious form of skin cancer and causes most skin cancer deaths. In 2018 there were 2,695 new cases of melanoma skin cancer identified and 243 deaths in North Carolina.¹ Left untreated, it can spread to other organs and is difficult to control. Non-melanoma skin cancers, basal and squamous cell, are less serious types of skin cancer. They make up most of all skin cancers and are not tracked by the CCR.



RISK FACTORS

Risk factors vary for different types of skin cancer. For melanoma skin cancer, the major risk factors include a personal or family history of melanoma skin cancer and the presence of large, irregularly shaped or numerous moles. The primary risk factor for other forms of skin cancers is exposure to ultraviolet radiation from the sun and other sources such as tanning beds and sun lamps. Other risk factors for all types of skin cancers include sun sensitivity such as sun burning easily, a history of excessive unprotected sun exposure, tanning booth use, 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, skin cancer is not limited to people with fair skin.

PREVENTION AND EARLY DETECTION

Research shows that there is a correlation between sunburns acquired during childhood and increased risk of some skin cancers later in adulthood. Prevention and education strategies should be stressed for all ages but especially for children. Protection from UV radiation is important all year round, not just during the summer or at the beach.

Any changes in a skin growth (size, shape or color) should be checked by a health care provider.

TREATMENT

Melanoma skin cancer treatment options include surgery, chemotherapy, radiation therapy and/or immunotherapy. 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.

For additional information, visit the NC Cancer Prevention and Control Branch web site at <https://nccancer.dph.ncdhhs.gov/>.

Reducing the Burden of Cancer in North Carolina: A Data and Resource Guide for Communities to Fight Cancer provides additional information on melanoma and non-melanoma skin cancers. It can be found at <https://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionand-control/docs/ReducingtheBurdenofCancerResourceGuide.pdf>.



North Carolina Melanoma Skin Cancer Objective

Reduce melanoma skin cancer incidence and mortality rates in North Carolina.

NC MELANOMA SKIN CANCER STRATEGIC ACTIONS	EVIDENCE-BASED INTERVENTIONS ³
<ul style="list-style-type: none"> • Promote education and policies in schools, recreational and tourism settings that can improve sun safety behaviors. These could include limiting unprotected exposure to ultraviolet light or providing shaded recreational areas. • Support policy changes that require parental approval for adolescents to use artificial sun tanning facilities and other sources of ultraviolet light. • Urge employers to provide sun protective clothing and gear to employees who work outside. • Educate policymakers about the need for increased funding for programs, coalitions and action groups to support skin cancer education outreach. 	<ul style="list-style-type: none"> • Develop and disseminate public education programs that empower survivors to make informed decisions. • Use interpreter services or bilingual providers to promote health equity. • Educate the public that cancer is a chronic disease that people can and do survive. • Use recommendations from The Guide to Community Preventive Services (The Community Guide) https://www.thecommunityguide.org/.

2020-2025 NC Melanoma Skin Cancer Measures

NC MELANOMA SKIN CANCER MEASURES	NC BASELINE	NC 2025 TARGET
Melanoma skin cancer incidence rate²³	25.5/100,000	21.7/100,000
Melanoma skin cancer mortality rate²¹	2.0/100,000	1.5/100,000

²⁷ The **target rate** was determined by calculating the percent change from year-to-year from 2008 forward, to the latest available incidence data (2017) and mortality data (2018). An annual average percent change was calculated from those percentages (for the years 2008-2017) for incidence and (2008-2018) for mortality. The targets were set for 2025 based on the projected rates from 2018 through 2025.

References

- ¹ **State Center for Health Statistics**, North Carolina Department of Health and Human Services, Central Cancer Registry. <https://schs.dph.ncdhhs.gov/units/ccr>
- ² **North Carolina Institute of Medicine (NCIOM)**, North Carolina Rural Health Action Plan: A Report of the NCIOM Task Force on Rural Health. Morrisville, NC: NCIOM; 2014. <http://nciom.org/north-carolina-rural-health-action-plan-a-report-of-the-nciom-task-force-on-rural-health>
- ³ **National Comprehensive Cancer Control Program Library of Indicators and Data Sources: Primary Prevention Indicators and Evidence-Based Strategies**. <https://www.cdc.gov/cancer/ncccp/index.htm>
- ⁴ **United States Census Bureau**. <https://data.census.gov/cedsci/>
- ⁵ **National Cancer Institute, Cancer Treatment Research**. <https://www.cancer.gov/research/areas/treatment>
- ⁶ **National Cancer Institute**, Financial Toxicity (Financial Distress) and Cancer Treatment (PDQ®)—Patient Version, September 20, 2019. <https://www.cancer.gov/about-cancer/managing-care/track-care-costs/financial-toxicity-pdq>
- ⁷ **American Cancer Society**, *Financial hardship in cancer: The role of health insurance literacy*. JNCI Cancer Spectrum (2019). <https://academic.oup.com/jncics/article/3/4/pkz061/5586974>
- ⁸ **Centers for Disease Control**, *Trends in Human Papillomavirus–Associated Cancers — United States, 1999–2015* August 24, 2018 / 67(33):918–924. https://www.cdc.gov/mmwr/volumes/67/wr/mm6733a2.htm?s_cid=mm6733a2
- ⁹ **American Head & Neck Society**, *Cancer of the Oropharynx: Risk Factors, Diagnosis, Treatment, and Outcomes*. January 21, 2016. <https://www.ahns.info/oropharyngeal-carcinoma-overview/>
- ¹⁰ **OncoLink**, *What is Chemoprevention?* 2018. <https://www.oncolink.org/risk-and-prevention/prevention-screening/what-is-chemoprevention>
- ¹¹ **Centers for Disease Control**, CDC’s Cancer Genomics Program. <https://www.cdc.gov/cancer/dcpc/about/genomics/index.htm>
- ¹² **American Cancer Society**, *Cancer Facts & Figures 2020*. <https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2020/cancer-facts-and-figures-2020.pdf>
- ¹³ **Centers for Disease Control**, *State-Specific Patterns of Cigarette Smoking, Smokeless Tobacco Use, and E-Cigarette Use Among Adults – United States, 2016*. https://www.cdc.gov/pcd/issues/2019/18_0362.htm
- ¹⁴ **Robert Wood Johnson**, *State of Obesity*, October 2019. <https://media.stateofobesity.org/wp-content/uploads/2019/11/18171114/SoCo-Report-WEB-111819.pdf>
- ¹⁵ **Dietary Guideline for Americans, 2015-2020**. <https://health.gov/dietaryguidelines/2015/guidelines>
- ¹⁶ **National Cancer Institute**, *Radon and Cancer*. <https://www.cancer.gov/about-cancer/causes-prevention/risk/substances/radon/radon-fact-sheet>
- ¹⁷ **State Center for Health Statistics**, North Carolina Department of Health and Human Services, *Behavioral Risk Factor Surveillance System (BRFSS)*, 2018. <https://schs.dph.ncdhhs.gov/data/brfss/2018/>
- ¹⁸ **National Cancer Institute**, *Cancer Statistics*. <https://www.cancer.gov/about-cancer/understanding/statistics>
- ¹⁹ **North Carolina Comprehensive Cancer Control Program**, *2018 Cancer Survivorship Summit Survey*, April 28, 2018.
- ²⁰ **NC Advisory Committee on Cancer Coordination and Control, Care and Treatment Subcommittee, Care & Treatment Subcommittee** *Patient Navigation Services Inventory Survey: Summary Evaluation report*. 2015-2016.

Front Line Heroes

²¹ **State Center for Health Statistics**, North Carolina Department of Health and Human Services, Central Cancer Registry, Cancer Mortality Rates. https://schs.dph.ncdhhs.gov/data/cancer/mortality_rates.htm

²² **National Cancer Institute**, *Lung Cancer Screening Saves Lives: The National Lung Cancer Screening Trial*. July 13, 2014. <https://www.cancer.gov/research/progress/discovery/nlst>

²³ **State Center for Health Statistics**, North Carolina Department of Health and Human Services, Central Cancer Registry, Cancer Incidence Rates. https://schs.dph.ncdhhs.gov/data/cancer/incidence_rates.htm

²⁴ **BreastCancer.org**, *Genetics*. <https://www.breastcancer.org/risk/factors/genetics>

²⁵ **Cancer Net**, *Prostate Cancer*. <https://www.cancer.net/cancer-types/prostate-cancer/statistics>

²⁶ **Centers for Disease Control**, *National, Regional, State, and Selected Local Area Vaccination Coverage Among Adolescents Aged 13-17 Years — United States, 2017*, August 24, 2018 / 67 (33);909-917. https://www.cdc.gov/mmwr/volumes/67/wr/mm6733a1.htm?s_cid=mm6733a1

²⁷ **Target rates** were calculated using the following steps:

Step 1 - The percent change was calculated from year to year from 2008 to the latest available data (which is 2017 for cancer incidence and 2018 for cancer mortality). For ex: (current year's rate-previous year's rate)/previous year's rate)*100= Individual years percent change

Step 2- All the individual years percent change were aggregated and an annual average percent change was calculated.

Step 3- Projected rates were calculated by this formula (1- annual average percent change)* previous year's rate for each year up to 2025.

*For ex: Projected incidence rate for 2018= (1- annual average percent change)*2017 and so on.*

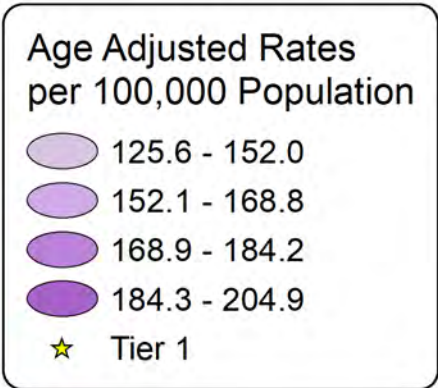
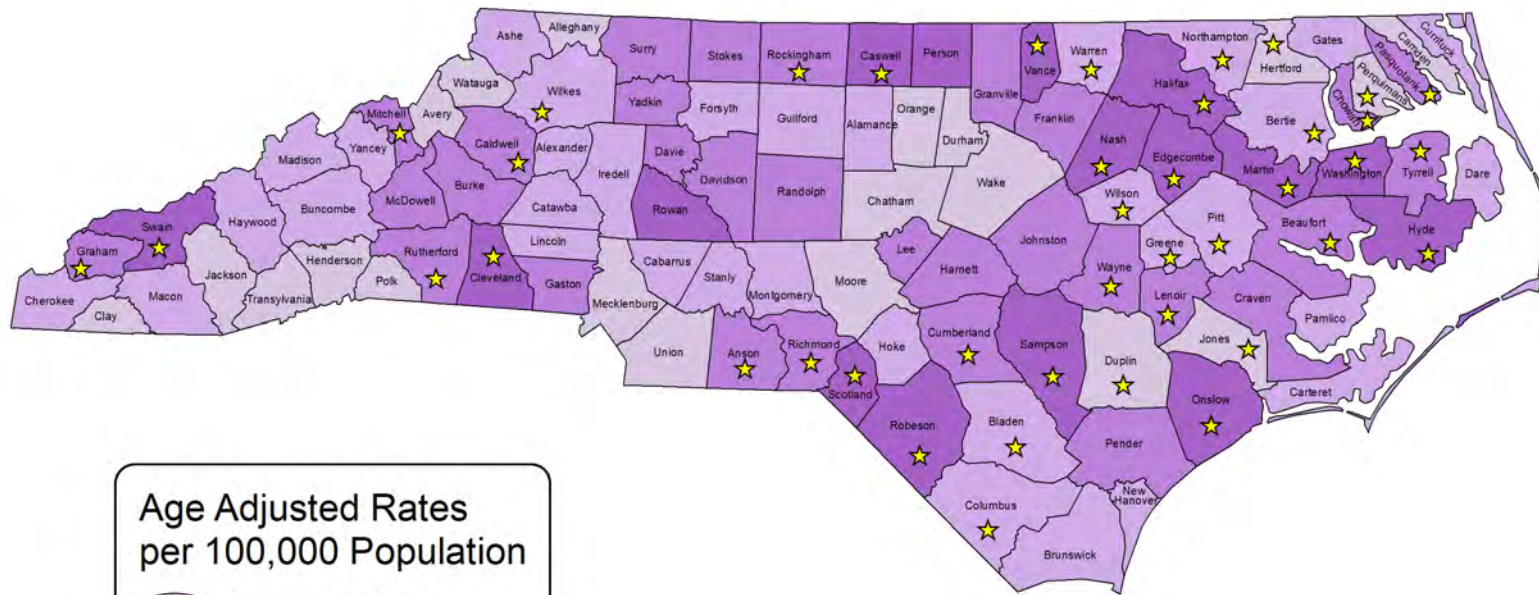




Appendices

Appendix A- Differences in North Carolina Economic Resources, Demographics and Cancer Mortality

North Carolina Cancer Mortality Rates, 2014 - 2018 and Economically Distressed Counties



Source: NC Department of Commerce,
2020 North Carolina Development Tier Designation

★ Tier 1 Counties are the 40 most economically-distressed counties in North Carolina as ranked by the North Carolina Department of Commerce annually to encourage economic activity in the less prosperous areas of the state.

Appendix B- North Carolina Advisory Committee on Cancer Coordination and Control

American Cancer Society

Black, Molly

American College of Surgeons

Eisenhauer, Dr. Thomas

Association of NC Cancer Registrars

Foote, Kathleen

Bowman Gray School of Medicine/NCI

Winkfield, Dr. Karen

Cancer Survivor

Moser, Emily Smith

Cancer Survivor

Jollie, William

Cancer Survivor

Upchurch, Elizabeth

Cancer Survivor

Vacant

Duke University School of Medicine/NCI

Patierno, Dr. Steven R.

ECU School of Medicine

Vohra, Dr. Nasreen

Medical Directors of NC

Wu, Dr. Lawrence

Member at Large

Abrams, Margaret

Member at Large

Carrizosa, Dr. Daniel R.

Member at Large

Powell, Dr. Frankie D.

Member at Large

Wong, Dr. Jan

NC Community Colleges

Byrd, Lori

NC Department of Environmental Quality

Hernandez-Pelletier,
Carmen Mercedes

NC Department of Health and Human Services

Kansagra, Dr. Susan

NC Department of Public Instruction

Essick, Ellen

NC Healthcare Association

Hickey, Todd

NC House of Representatives

Barnes, Lisa

NC House of Representatives

Dobson, Josh

NC House of Representatives

White, Donna

NC Local Health Directors Association

Edwards, Helene

NC Medical Society

Melin, Dr. Susan A.

NC Nurses Association

Smith, JoAnn

NC Oncology Society

Sutton, Dr. Linda

NC Senate

Alexander, Ted

NC Senate

Sanderson, Norman

NC Senate

Sawyer, Vickie

Old North State Medical Society

Awomolo, Dr. Adesola

Primary Care Physician

Fowler, Dr. Vickie

UNC School of Medicine/NCI

Nielsen, Dr. Matthew E.

Ex-Officio Cohen, Dr. Mandy

Appendix C – North Carolina Cancer Prevention and Control Branch

The North Carolina Cancer Prevention and Control Branch (Cancer Branch) is part of the Chronic Disease and Injury Section, Division of Public Health, North Carolina Department of Health and Human Services. It strives to reduce the overall cancer burden in North Carolina by:

- planning, directing and supporting cancer control efforts through collaborations with state partners and federal health agencies, academic institutions and national, voluntary and private organizations,
- providing breast and cervical cancer and cardiovascular disease screening and follow-up services for low-income uninsured and under-insured women,
- identifying problems, needs and opportunities related to changing behavior and other cancer risk factors, and
- recommending priorities for health promotion and education and cancer risk reduction activities for professionals and the public.

There are several programs within the Cancer Branch that work to ensure a comprehensive and collaborative approach in addressing the state's cancer burden. For information, call: 919-707-5300 or <https://nccancer.dph.ncdhhs.gov/>.

North Carolina Comprehensive Cancer Control Program

The North Carolina Comprehensive Cancer Control Program (NC CCCP) assesses the burden of cancer; determines health promotion and education priorities; develops and facilitates the implementation of the state cancer plan; serves as a resource to help local communities and organizations promote healthy lifestyles and recommended cancer screenings and staffs the North Carolina Advisory Committee on Cancer Coordination and Control. For more information call 919-707-5300 or visit <https://ncpublichealth.info/cccp/>

North Carolina Breast and Cervical Cancer Control Program

The North Carolina Breast and Cervical Cancer Control Program (NC BCCCP) provides free or low-cost breast and cervical cancer screening and follow-up to eligible women across the state. NC BCCCP services are offered at most local health departments as well as some local health centers and hospitals. For more information call 919-707-5300 or visit <https://bcccp.ncdhhs.gov/breastcancer.htm>.

Well-Integrated Screening and Evaluation for Women Across the Nation Project

The Well-Integrated Screening and Evaluation for Women Across the Nation Project (WISEWOMAN) provides cardiovascular disease screening, intervention, counseling and referral services to NC BCCCP enrolled women. WISEWOMAN services are offered in conjunction with NC BCCCP services at 34 local health departments and local health centers across the state. For more information call 919-707-5300 or visit <https://bcccp.ncdhhs.gov/wisewoman.htm>.

The North Carolina Partnerships to Increase Colorectal Cancer Screening Program

The North Carolina Partnerships to Increase Colorectal Cancer Screening Program (NC PICCS) works with Federally Qualified Health Systems to increase NC colorectal cancer screening rates among target populations age 50-75 years through improved screening delivery systems and implementation of evidence-based interventions.

The Cancer Branch in coordination with the America Cancer Society and the UNC Lineberger Comprehensive Cancer Center will assist Federally Qualified Health Systems to implement Evidence Based Interventions and supporting strategies such as patient navigation, improve data quality and improve access to follow-up care as needed. For more information call 919-707-5300.

North Carolina Central Cancer Registry

The North Carolina Central Cancer Registry (NC CCR) is part of the North Carolina State Center for Health Statistics. It collects, processes and analyzes data on all cancer cases diagnosed among North Carolina residents to support the planning and evaluation of cancer control efforts. For cancer data requests, call 919-733-4728 or visit <https://schs.dph.ncdhhs.gov/units/ccr/>.

Appendix D – 2014-2020 North Carolina Cancer Plan Progress and Challenges

Measures	Baseline 2012		2014-2020 NC Cancer Plan Target		2020 VALUE	
Exceeded Target						
Melanoma skin cancer mortality rate	2.7/100,000		2.2/100,000		2.0/100,000	
Data only available for % of population ages 13-17 vaccinated with HPV	Female 35.5%	Male 8.6%	Female 57.7%	Male 17.7%	Female 72.2%	Male 65.2%
Improved						
Breast cancer mortality rate	21.4/100,000		16.8/100,000		20.3/100,000	
Cervical cancer incidence rate	7.3/100,000		6.1/100,000		6.5/100,000	
Colorectal cancer mortality rate	14.3/100,000		10.1/100,000		12.6/100,000	
Colorectal cancer incidence rate	37.8/100,000		26.4/100,000		35.2/100,000	
Lung cancer mortality rate	49.9/100,000		38.5/100,000		39.6/100,000	
Lung cancer incidence rate	68.5/100,000		60.7/100,000		62.9/100,000	
Prostate cancer mortality rate	21.0/100,000		13.0/100,000		19.7/100,000	
% adults who had sigmoidoscopy or colonoscopy colorectal screening	70.6%		81.4%		73.1%	
% women over age 50 who had mammograms within the past two years	79.4%		TBD*		79.8%	
% Women who had pap tests age 21-65	86.5%		TBD*		89.9%	
Challenges						
Cervical cancer mortality rate	2.0/100,000		1.3/100,000		2.1/100,000	
Melanoma skin cancer incidence rate	21.5/100,000		27.9/100,000		25.5/100,000	
% men who have talked to health care provider about advantages and disadvantages of PSA test.	31.6%		34.7%		29.1%	

* Unable to set 2020 targets because BRFSS recommendations changed during the time range.

Appendix E – Scientific Information Resources

General Cancer Information

- American Association for Cancer Research. <https://www.cancerprogressreport.org>
- American Cancer Society. <https://www.cancer.org>
- Centers for Disease Control and Prevention (CDC). <http://www.cdc.gov>
- GW Cancer Center, George Washington University. <https://cancercenter.gwu.edu/>
- NACDD Action on Cancer, National Association of Chronic Disease Directors. <https://www.chronicdisease.org/page/CancerPrograms>
- National Cancer Institute, National Institutes of Health. <http://www.cancer.gov>
- NC Cancer Prevention and Control Branch. <https://nccancer.dph.ncdhhs.gov/>
- World Health Organization. Social Determinants of Health <http://www.who.int>

Evidence-Based Intervention Strategies

- Cancer Control P.L.A.N.E.T. (data resources). <https://cancercontrolplanet.cancer.gov/planet>
- CDC, The Community Guide. <https://www.thecommunityguide.org>
- CDC, Nutrition. <https://www.cdc.gov/nutrition/index.html>
- CDC, Office of Smoking and Health. <https://www.cdc.gov/tobacco/about/osh/index.htm>
- Eat Smart Move More NC. <http://www.EatSmartMoveMoreNC.com>
- GW Cancer Center, George Washington University. <https://cancercenter.gwu.edu/>
- Healthy People 2030. <https://www.healthypeople.gov/sites/default/files/ObjectivesPublicComment508.pdf>
- Moving from Research to Programs for People. <https://rtips.cancer.gov/rtips/index.do>
- National Comprehensive Cancer Control Program Library of Indicators and Data Sources: Primary Prevention Indicators and Evidence-Based Strategies. <https://www.cdc.gov/cancer/ncccp/index.htm>
- NC Community and Clinical Connections for Prevention and Health Branch. <https://www.communityclinicalconnections.com>
- NC Institute of Medicine. <http://nciom.org/>
- NC Radon Program. <http://www.ncradon.org/Home.html>
- NC Tobacco Free Schools Initiative. <http://www.NCTobaccoFreeSchools.org>

- NC Tobacco Prevention and Control Branch. <https://www.tobaccopreventionandcontrol.ncdhhs.gov>
- QuitLineNC.com. <http://www.quitlineNC.com>
- Research-Tested Interventions Programs (RTIPS). <https://rtips.cancer.gov/rtips/index.do>
- U.S. Department of Health and Human Services. 2018 Physical Activity Guidelines for Americans. https://health.gov/paguidelines/second-edition/pdf/Physical_Activity_Guidelines_2nd_edition.pdf
- U.S. Department of Health and Human Services. Surgeon General’s Report, The Health Consequence of Smoking – 50 years of Progress. <http://www.surgeongeneral.gov/library>
- U.S. Preventive Services Task Force (USPSTF). <https://www.uspreventiveservicestaskforce.org/>

Screening Guidelines

- American Cancer Society. <https://www.cancer.org>
- Centers for Disease Control and Prevention (CDC). <http://www.cdc.gov>
- U.S. Preventive Services Task Force (USPSTF). <https://www.uspreventiveservicestaskforce.org>

Cancer Data and Surveillance

- NC State Center for Health Statistics, Cancer. <https://schs.dph.ncdhhs.gov/data/cancer.cfm>
- Cancer Control P.L.A.N.E.T. <https://cancercontrolplanet.cancer.gov/planet>
- Cancer Prevalence and Cost of Care Projections, NIH. <http://costprojections.cancer.gov>
- CDC Wonder, United States Cancer Statistics Data. <http://wonder.cdc.gov/cancer.html>
- County Health Rankings and Roadmaps. <http://www.countyhealthrankings.org>
- Dartmouth Atlas of Health Care. <https://www.dartmouthatlas.org>
- National Program of Cancer Registries (NPCR). <https://www.cdc.gov/cancer/npcr/index.htm>

- North American Association of Central Cancer Registries.
<http://www.naaccr.org>
- SEER (Surveillance, Epidemiology, and End Results Program).
<http://seer.cancer.gov>

Clinical Trials in North Carolina

- CenterWatch – Clinical Trials Listing Service. <http://www.centerwatch.com>
- ClinicalTrials.Gov Research Information. <https://clinicaltrials.gov/>
- Coalition of Cancer Cooperative Groups. www.cancertrialshelp.org
- Duke Health. <http://www.dukehealth.org/clinicaltrials>
- Levine Cancer Institute. <https://atriumhealth.org/research-clinical-trials/levine-cancer-institute-research>
- The Carolina Center for Clinical Trials. <https://ci-cr.com>
- UNC Lineberger Comprehensive Cancer Center.
<https://unclineberger.org/patientcare/clinical-trials/>
- Vidant Health. <https://www.vidanthealth.com/Programs-Support/Cancer/Clinical-Trials#>
- Wake Forest Comprehensive Cancer Center. <http://www1.wakehealth.edu/BeInvolved>

Appendix F – North Carolina Cancer Treatment Programs

<https://www.facs.org/search/cancer-programs?state=NC>

The National Cancer Institute (NCI) recognizes centers around the country that meet rigorous standards for transdisciplinary, state-of-the-art research focused on developing new and better approaches to preventing, diagnosing and treating cancer. North Carolina has three NCI Designated Comprehensive Cancer Programs.

Commission on Cancer Accredited Programs

The Commission on Cancer (CoC) Accreditation Program encourages hospitals, treatment centers and other facilities to improve their quality of patient care through various cancer-related programs. These programs focus on prevention, early diagnosis, pretreatment evaluation, staging, optimal treatment and rehabilitation, surveillance for recurrent disease, support services and end-of-life care. North Carolina has 39 Commission on Cancer accredited cancer programs.

CoC-accreditation by a cancer program ensures its patients will have access to the full scope of services. For the patient and community, the quality standards established by the CoC for cancer programs ensure:

- quality care close to home,
- comprehensive care that includes a complete range of state-of-the-art services and equipment,
- a multidisciplinary team approach to coordinate the best available treatment options,
- access to cancer-related information and education,
- information about ongoing cancer clinical trials and new treatment options,
- a cancer registry that offers lifelong patient follow-up and
- ongoing monitoring and improvements in cancer care.

Each CoC-accredited facility is assigned to a cancer program category based on the type of facility or organization, services provided and case load. Accredited programs have different requirements for specific standards based on their category.

NOTE: The *North Carolina Hospital Treating Cancer* map shows not only the 39 cancer programs listed below but the hospitals within their systems. This map gives a clearer picture of the access to cancer care across North Carolina.

NCI Designated Comprehensive Cancer Programs

Duke University Hospital

Duke Cancer Institute

2424 Erwin Road, Suite 6073
Box 2735 - DUMC, Durham, NC 27705
Phone: (888) 275-3853
<http://www.dukecancerinstitute.org/>

University of North Carolina Hospitals

Lineberger Comprehensive Cancer Center

101 Manning Drive
Chapel Hill, NC 27514
Phone: (919) 966-4131
<https://unclineberger.org/>

Wake Forest University Baptist Medical Center Comprehensive Cancer Center

Medical Center Boulevard
Winston-Salem, NC 27157
Phone: (336) 716-2011
www.wakehealth.edu/Locations/Facilities/Comprehensive-Cancer-Center

CoC Designated Academic Comprehensive Cancer Programs

NEW HANOVER REGIONAL MEDICAL CENTER ZIMMER CANCER CENTER

2131 South 17th Street, Wilmington, NC 28402
Phone: (910) 667-7402
www.nhrmc.org

VIDANT MEDICAL CENTER VIDANT CANCER CARE

2100 Stantonsburg Road, Greenville, NC 27834
Phone: (252) 847-7867
<http://vidanthealth.com>

CoC Designated Integrated Network Cancer Programs

ATRIUM HEALTH

LEVINE CANCER INSTITUTE

1021 Morehead Medical Drive, Charlotte, NC 28204

Phone: (980) 442-2000

www.carolinashealthcare.org

FORSYTH MEDICAL CENTER

3333 Silas Creek Parkway

Winston-Salem, NC 27103

Phone: (336) 718-7000

www.novanthealth.org/forsyth-medical-center.aspx

NOVANT HEALTH CANCER INSTITUTE

DERRICK L. DAVIS CANCER CENTER

3333 Silas Creek Parkway, Winston-Salem, NC 27103

Phone: (866) 611-3722

<https://www.novanthealth.org/forsyth-medical-center.aspx>

PRESBYTERIAN HOSPITAL HUNTERSVILLE

10030 Gilead Road, Huntersville, NC 28078

Phone: (704) 384-4000

<https://www.novanthealth.org/huntersville-medical-center.aspx>

PRESBYTERIAN HOSPITAL MATTHEWS

1500 Matthews Township Parkway, Matthews, NC 28105

Phone: (704) 384-6500

<https://www.novanthealth.org/matthews-medical-center.aspx>

SENTARA ALBEMARLE MEDICAL CENTER

1144 North Road Street, Elizabeth City, NC 27906

Phone: (252) 335-0531

<https://www.sentara.com/albemarle-north-carolina/hospitalslocations/locations/new-sentara-albemarle-medical-center.aspx>

CoC Designated Comprehensive Cancer Programs

ADVENTHEALTH HENDERSONVILLE

100 Hospital Drive, Hendersonville, NC 28792

Phone: (828) 684-8501

www.adventhealth.com

CAPE FEAR VALLEY HEALTH SYSTEM

1638 Owen Drive, Fayetteville, NC 28304

Phone: (910) 615-4000

www.capefearvalley.com

CAROLINAS EAST MEDICAL CENTER

2000 Neuse Boulevard, New Bern, NC 28560

Phone: (252) 633-8111

www.carolinaeasthealth.com

CAROMONT REGIONAL MEDICAL CENTER

2525 Court Drive, Gastonia, NC 28054

Phone: (704) 834-2000

www.caromonthhealth.org

CATAWBA VALLEY MEDICAL CENTER

810 Fairgrove Church Road SE, Hickory, NC 28602

Phone: (828) 326-3000

www.catawbavalleymc.org

DUKE RALEIGH HOSPITAL

3400 Wake Forest Road, Raleigh, NC 27609

Phone: (888) 275-3833

www.dukeraleighhospital.org

FIRSTHEALTH MOORE REGIONAL HOSPITAL

155 Memorial Drive, Pinehurst, NC 28374

Phone: (910) 715-1000

www.firsthealth.org

MARGARET R. PARDEE MEMORIAL HOSPITAL

800 North Justice Street, Hendersonville, NC 28791

Phone: (828) 696-1000

www.pardeehospital.org

MISSION HOSPITAL

21 Hospital Drive, Asheville, NC 28801

Phone: (828) 213-2331

www.missionhealth.org

NASH HEALTH CARE SYSTEMS

2460 Curtis Ellis Drive, Rocky Mount, NC 27804

Phone: (252) 962-8000

www.nhcs.org

REX HEALTHCARE

UNC Rex Cancer Care

4420 Lake Boone Trail, Raleigh, NC 27607

Phone: (919) 784-3441

www.rexhealth.com

CoC Designated Community Cancer Programs

BLUE RIDGE HEALTHCARE SYSTEM

2201 S. Sterling Street, Morganton, NC 28655

Phone (828) 580-5000

www.blueridgehealth.org

CARTERET HEALTH CARE

3500 Arendell Street, Morehead City, NC 28557

Phone (252) 499-6000

www.CarteretHealth.org

DLP MARIA PARHAM MEDICAL CENTER

566 Ruin Creek Road, Henderson, NC 27536

Phone (252) 438-4143

www.mphosp.com

DLP RUTHERFORD REGIONAL HEALTH SYSTEM, LLC

288 South Ridgecrest Avenue, Rutherfordton, NC 28139

Phone (828) 286-5000

www.myrutherfordregional.com

FRYE REGIONAL MEDICAL CENTER

420 North Center Street, Hickory, NC 28601

Phone (828) 315-5000

www.fryemedctr.com

HAYWOOD REGIONAL MEDICAL CENTER

262 Leroy George Drive, Clyde, NC 28721

Phone (828) 456-7311

www.myhaywoodregional.com/

IREDELL MEMORIAL HOSPITAL

557 Brookdale Drive, Statesville, NC 28677

Phone (704) 873-5661

www.iredellhealth.org

JOHNSTON HEALTH

509 North Bright Leaf Boulevard, Smithfield, NC 27577

Phone (919) 989-2192

www.johnstonhealth.org

LENOIR MEMORIAL HOSPITAL

100 Airport Road, Kinston, NC 28501

Phone (252) 522-7000

www.unclenoir.org

ONSLow MEMORIAL HOSPITAL

317 Western Boulevard, Jacksonville, NC 28540

Phone (910) 577-2345

www.onslow.org

SCOTLAND HEALTH CARE SYSTEM

500 Lauchwood Drive, Laurinburg, NC 28352

Phone (910) 291-7000

www.scotlandhealth.org

SOUTHEASTERN REGIONAL MEDICAL CENTER

300 West 27th Street, Lumberton, NC 28358

Phone (910) 671-5000

www.srmc.org

THE OUTER BANKS HOSPITAL

4800 South Croatan Highway, Nags Head, NC 27959

Phone (252) 449-4500

www.theouterbankshospital.com

VIDANT BEAUFORT ONCOLOGY

Marion L. Shepard Cancer Center

1209 Brown Street, Washington, NC 27889

Phone (252) 975-4308

www.vidanthealth.com/Locations/Facilities/Marion-L-Shepard-Cancer-Center

VIDANT EDGECOMBE HOSPITAL

111 Hospital Drive, Tarboro, NC 27886

Phone (252) 641-7714

www.vidanthealth.com/edgecombe

WATAUGA MEDICAL CENTER

336 Deerfield Road, Boone, NC 28607-2600

Phone (828) 262-4332

www.apprhs.org

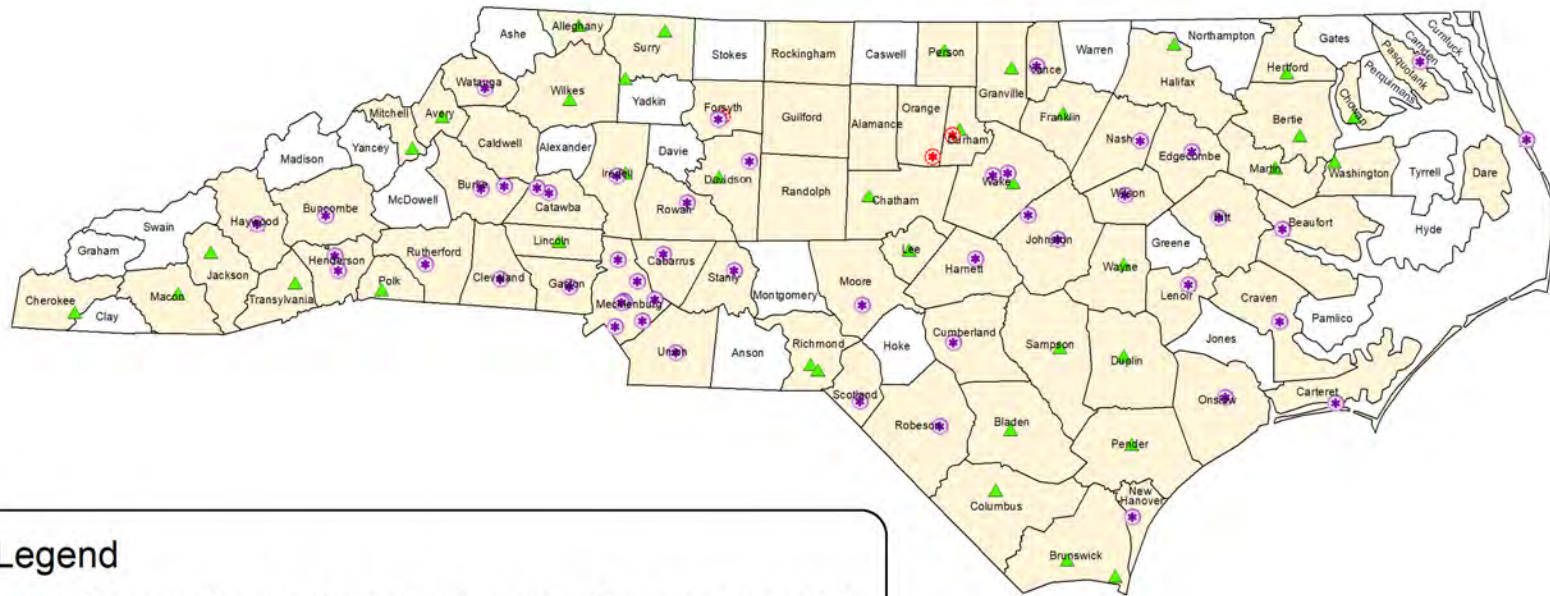
WILSON MEDICAL CENTER

1705 Tarboro Street, Southwest, Wilson, NC 27893

Phone (252) 399-8040

www.wilsonmedical.com

North Carolina Hospitals Treating Cancer

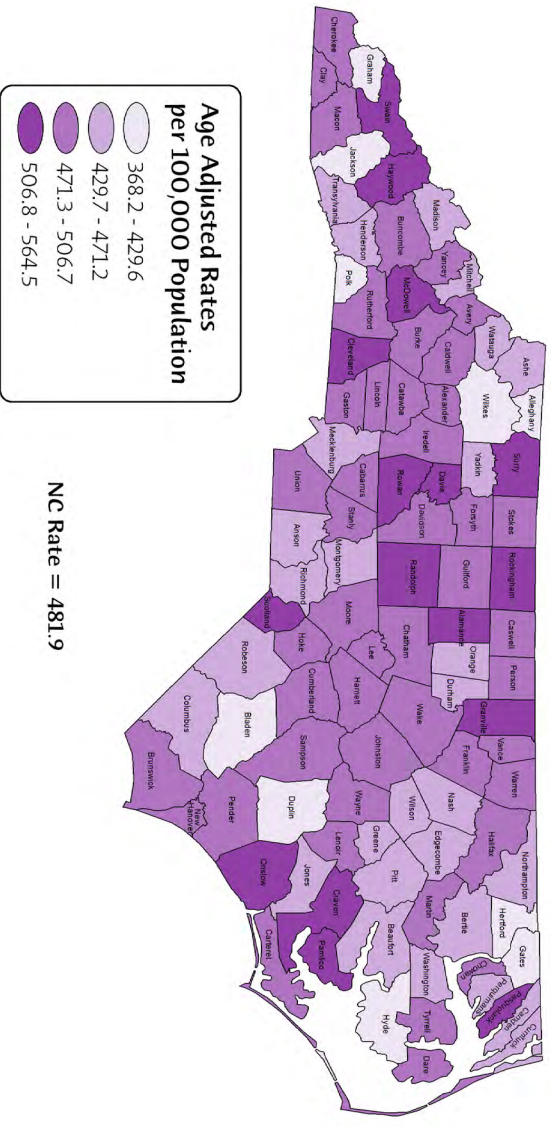


Legend

-  Commission on Cancer Accredited Program Hospitals
-  NCI Designated Comprehensive Cancer Program
-  All Other Hospitals Treating Cancer*
-  County with No Hospital with Cancer Treatment
-  County

*Hospitals Reporting to the North Carolina Central Cancer Registry

North Carolina All Cancer Incidence Rates 2013-2017

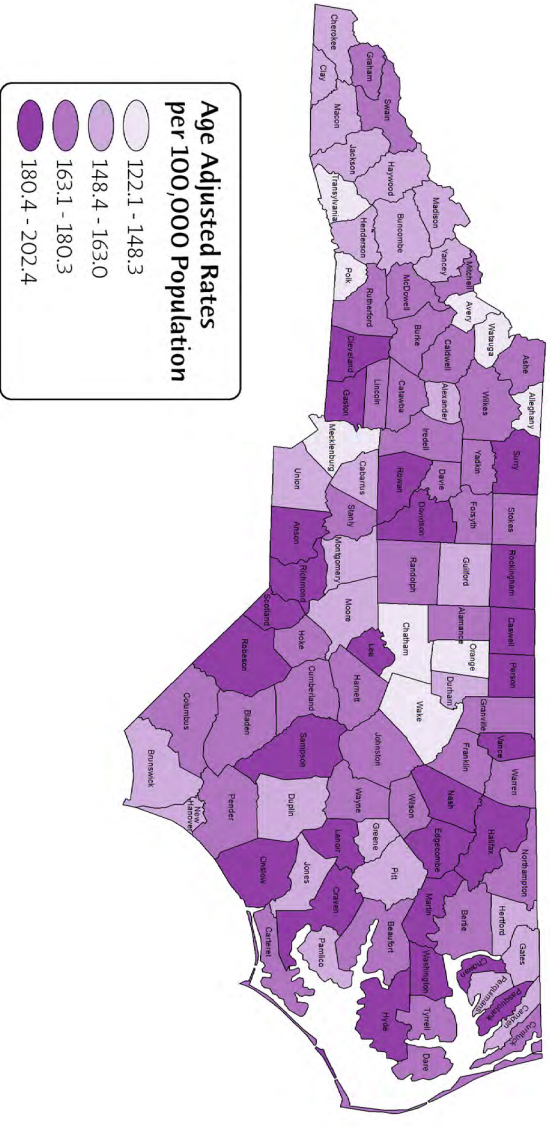


State Center for Health Statistics

Note: Information is subject to change as files are updated.
May 2020



North Carolina All Cancer Mortality Rates 2013-2017

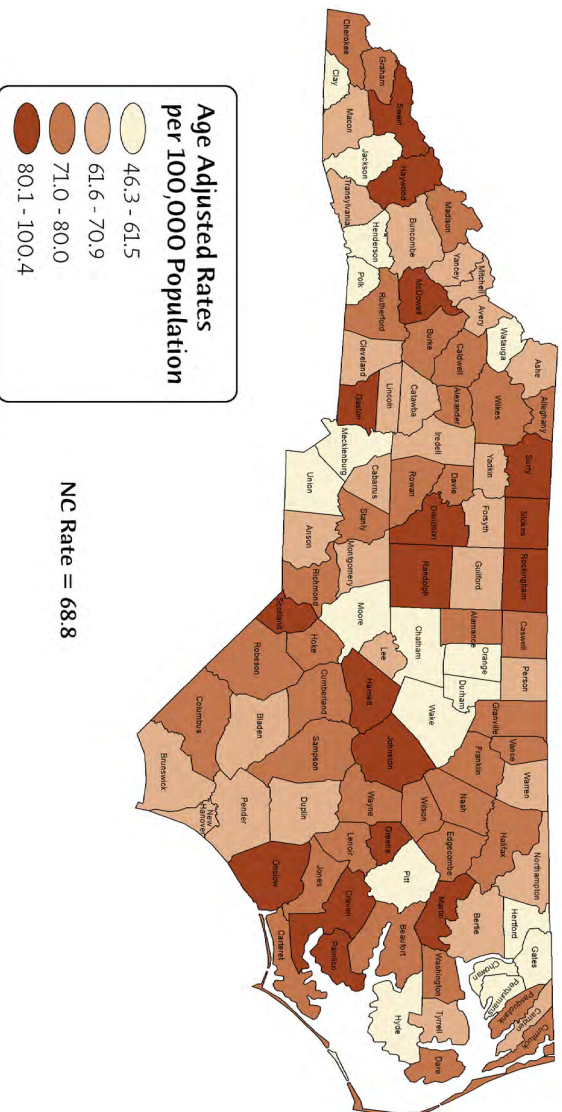


State Center for Health Statistics

Note: Information is subject to change as files are updated.
May 2020



North Carolina Lung and Bronchus Cancer Incidence Rates 2013-2017

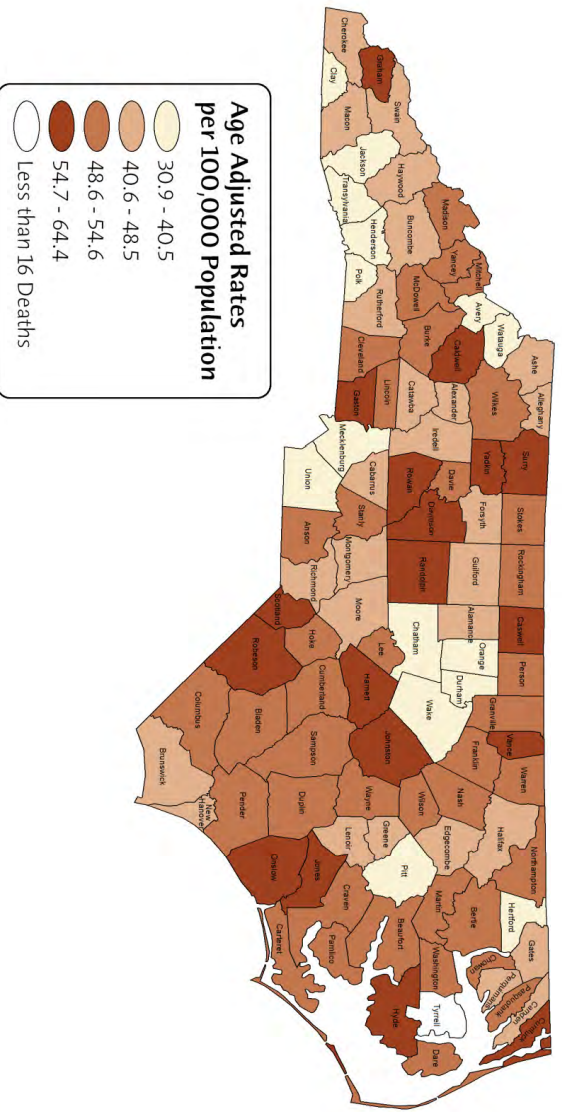


State Center for Health Statistics

Note: Information is subject to change as files are updated.
May 2020



North Carolina Lung and Bronchus Cancer Mortality Rates 2013-2017

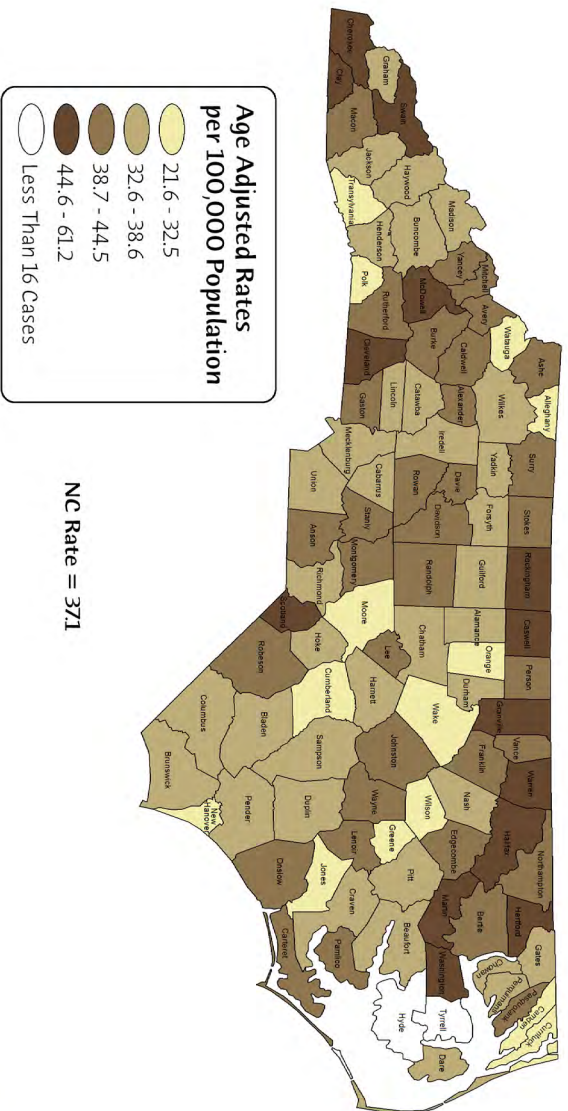


State Center for Health Statistics

Note: Rates based on less than 16 are suppressed.
Information is subject to change as files are updated.
May 2020



North Carolina Colon and Rectum Cancer Incidence Rates 2013-2017



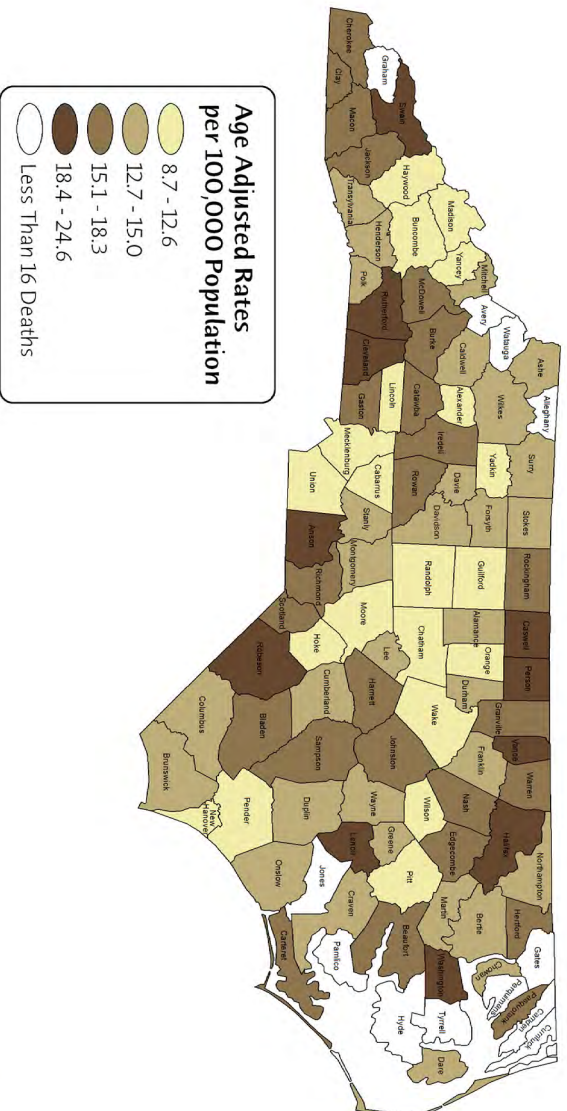
State Center for Health Statistics

Note: Rates based on less than 16 are suppressed.
Information is subject to change as files are updated.

May 2020



North Carolina Colon and Rectum Cancer Mortality Rates 2013-2017



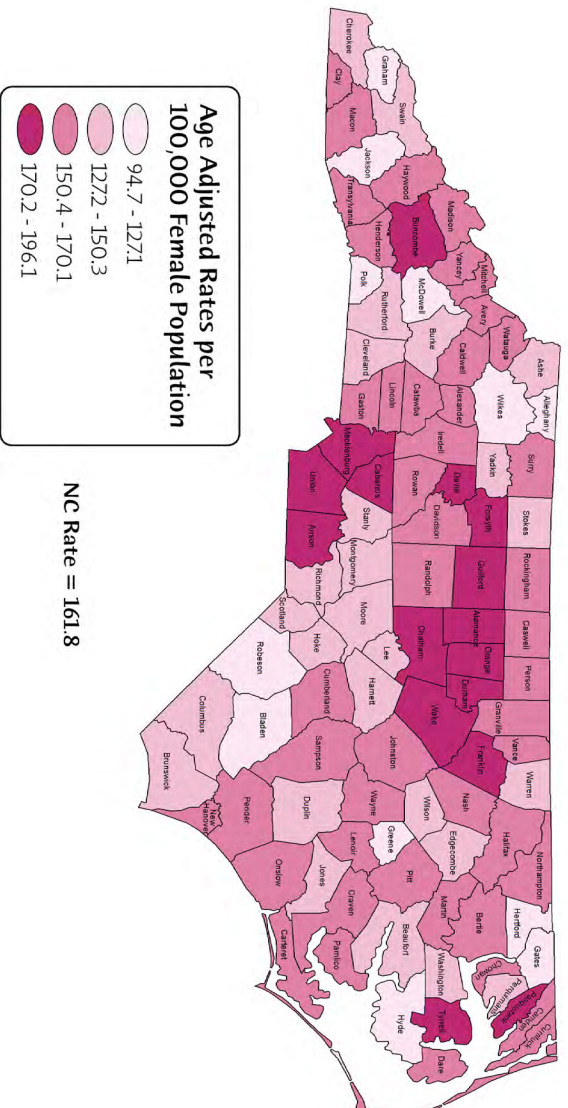
State Center for Health Statistics

Note: Rates based on less than 16 are suppressed.
Information is subject to change as files are updated.

May 2020



North Carolina Female Breast Cancer Incidence Rates 2013-2017



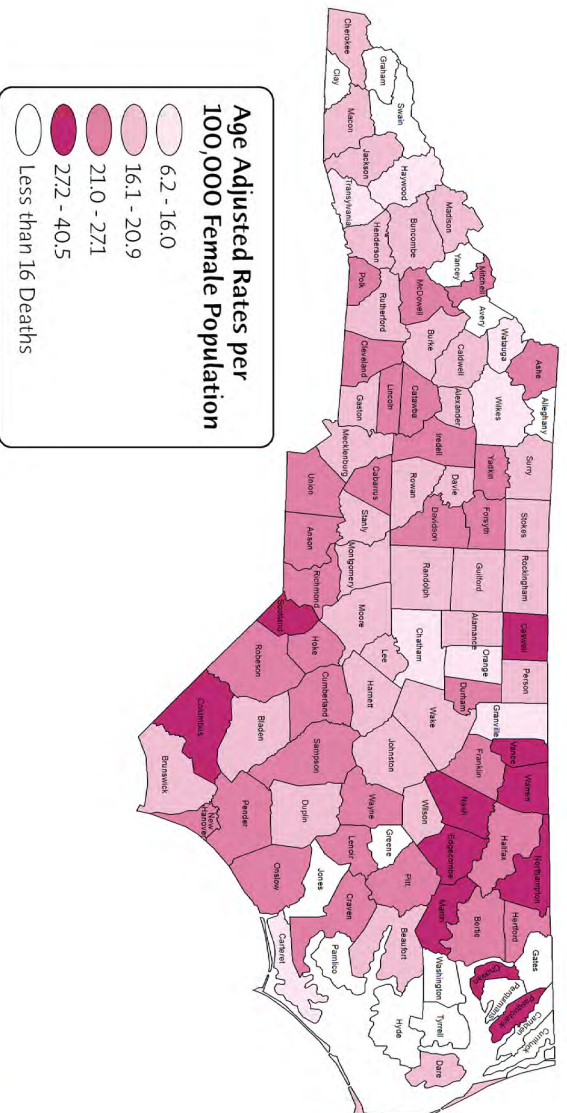
State Center for Health Statistics

Note: Information is subject to change as files are updated.

May 2020



North Carolina Female Breast Cancer Mortality Rates 2013-2017



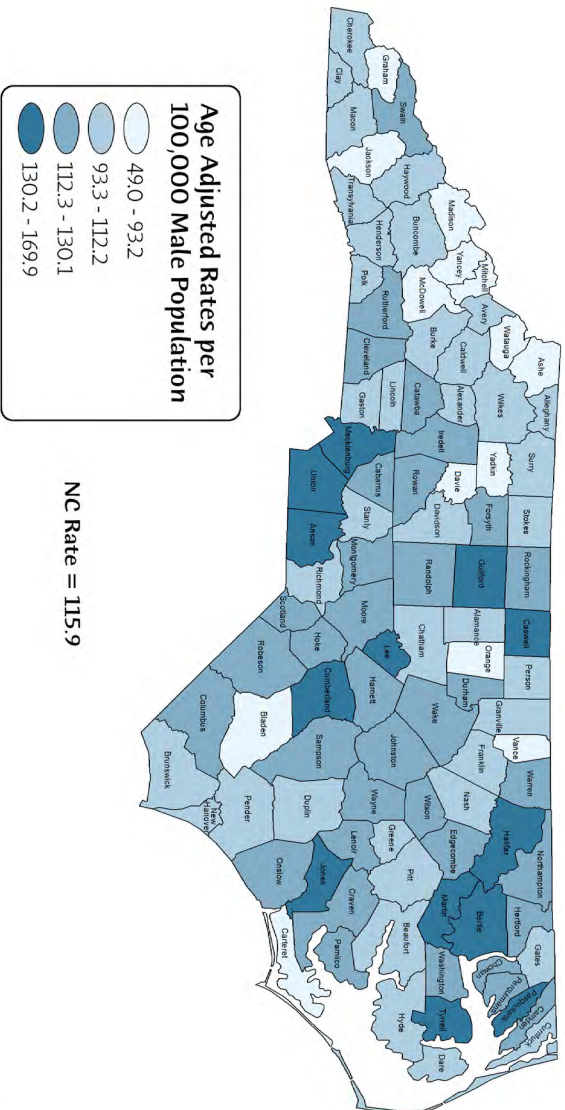
State Center for Health Statistics

Note: Rates based on less than 16 are suppressed.
Information is subject to change as files are updated.

May 2020



North Carolina Prostate Cancer Incidence Rates 2013-2017

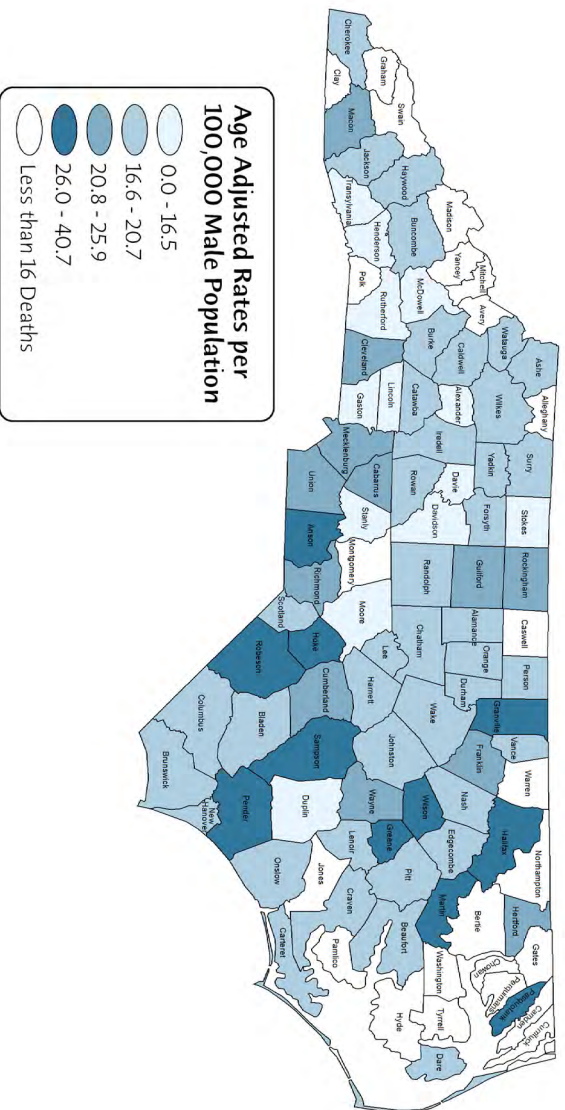


State Center for Health Statistics

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May 2020



North Carolina Prostate Cancer Mortality Rates 2013-2017

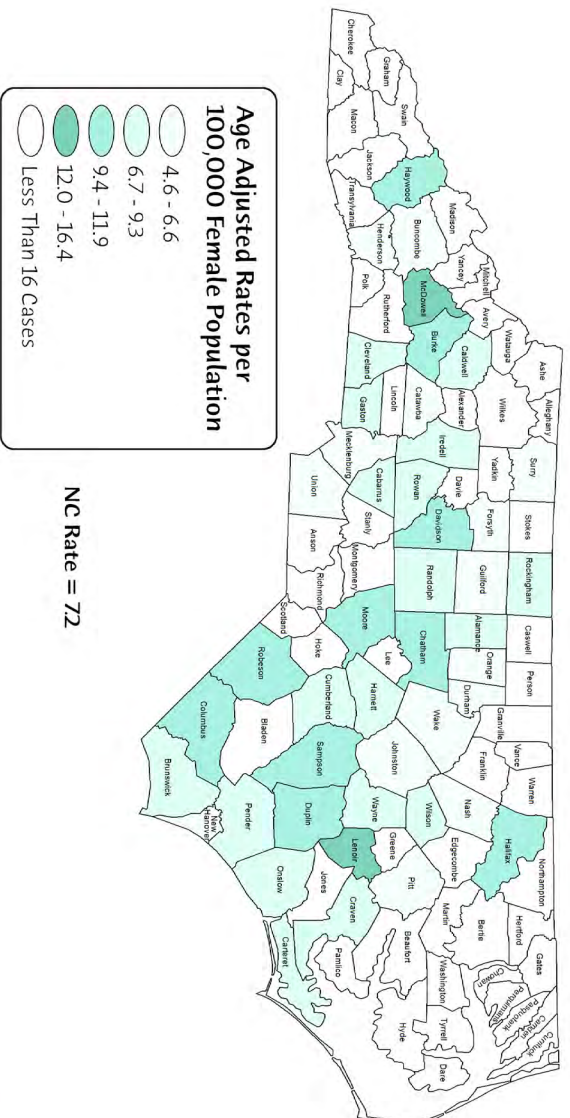


State Center for Health Statistics

Note: Rates based on less than 16 are suppressed.
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May 2020



North Carolina Cervical Cancer Incidence Rates 2013-2017



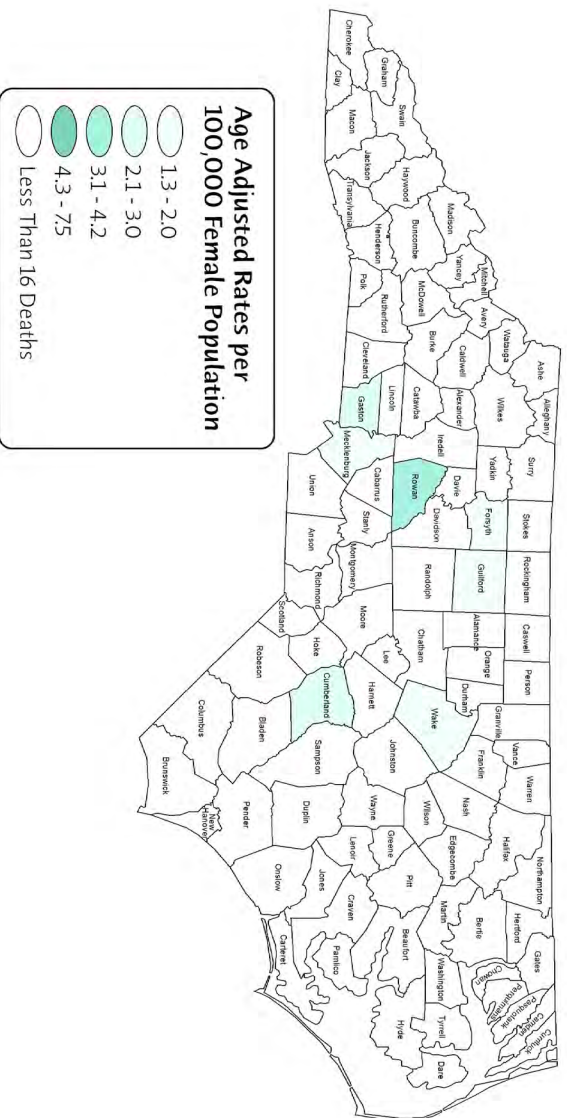
State Center for Health Statistics

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May 2020



North Carolina Cervical Cancer Mortality Rates 2013-2017



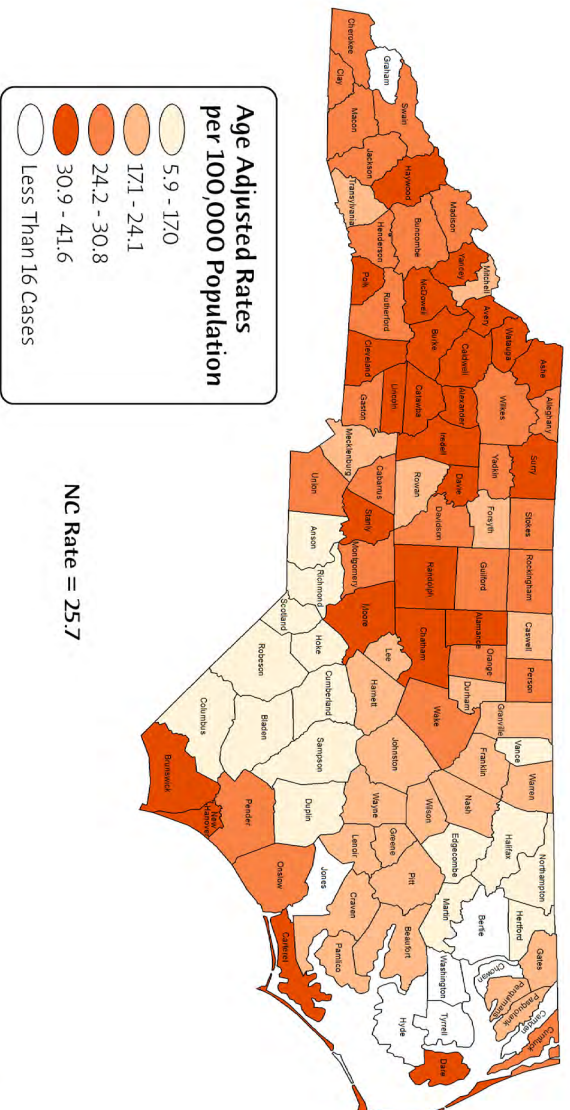
State Center for Health Statistics

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May 2020



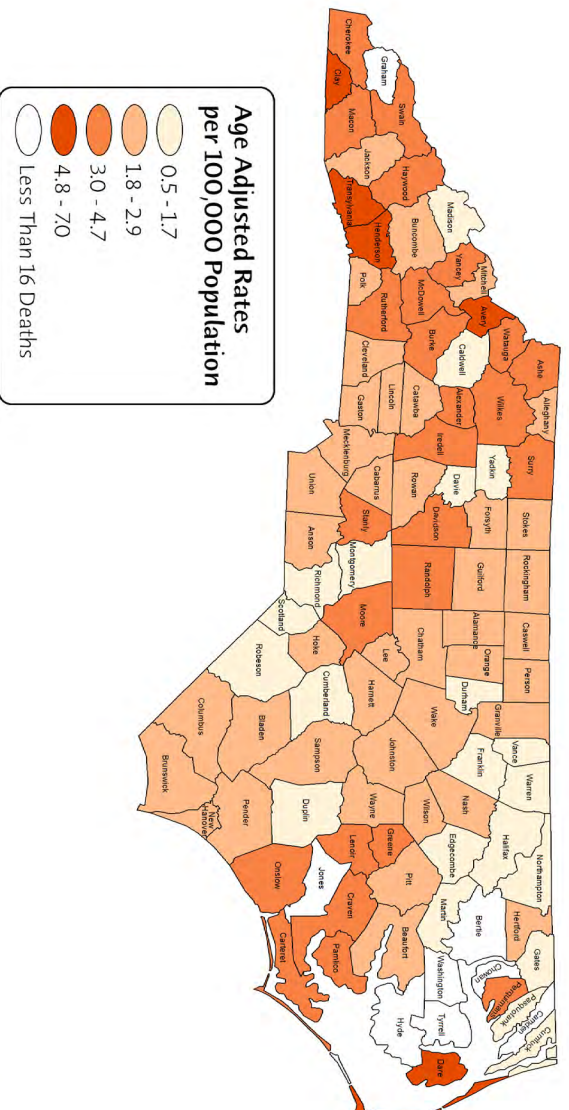
North Carolina Melanoma (Skin) Cancer Incidence Rates 2013-2017



State Center for Health Statistics
 Note: Rates based on less than 16 are suppressed.
 Information is subject to change as files are updated.
 May 2020



North Carolina Melanoma (Skin) Cancer Mortality Rates 2013-2017



State Center for Health Statistics
 Note: Rates based on less than 16 are suppressed.
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 May 2020



Appendix H - Glossary

Behavioral Risk Factor Surveillance System (BRFSS) is a randomized telephone survey of state residents, aged 18 and older, that captures health behavior and preventive health practices.

Cancer Prevention focuses on changing behaviors, policies, environments or other systems to reduce cancer risk.

Care and Treatment include diagnostic evaluation of the tumor and related areas and prompt implementation of evidence-based treatments including management of treatment side effects.

CCR stands for the Central Cancer Registry, located in the North Carolina State Center for Health Statistics, North Carolina Department of Health and Human Resources.

Colonoscopy is an outpatient procedure in which the inside of the large intestine (colon and rectum) is examined.

Early detection includes screening to detect disease at an early stage when treatment can be most effective.

Evidence-based is a process for making decisions about a program, practice or policy that is grounded in the best available research evidence and informed by experiential evidence from the field and relevant contextual evidence.

Genetics is the study of genes, genetic variation and heredity like hair and eye color.

Genomics is the branch of molecular biology concerned with the structure, function, evolution and mapping of genes like the molecular biology of a tumor.

Health Equity occurs when every person can attain his or her full health capability and no one is disadvantaged from achieving this capability because of his or her social position or other socially determined circumstance.

HPV stands for human papillomavirus. It's the most common sexually transmitted infection.

Incidence Rate is the rate at which new cases of a disease occur in a population.

Mammogram is an X-ray picture of the breast.

Mortality Rate is a measurement of death in a population.

NC Community Cancer Networks (CCN) bring together traditional and nontraditional partners to work together to improve the health of North Carolinians.

Obesity means having too much body fat.

Overweight means weighing too much. The weight may come from muscle, bone, fat, and/or body water.

Palliative Care specializes in the relief of pain, symptoms and stress of serious disease.

Sigmoidoscopy is an outpatient procedure that lets a doctor look inside the sigmoid colon by using a flexible tube with a light on it.

Survivorship focuses on improving the quality of health and life of a person with a disease until the end of life.

Tier 1 Counties are the 40 most economically distressed counties in North Carolina as ranked by the North Carolina Department of Commerce annually to encourage economic activity in the less prosperous areas of the state.

Cancer Information

NC 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

<https://nccancer.dph.ncdhhs.gov/>



NC DEPARTMENT OF
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