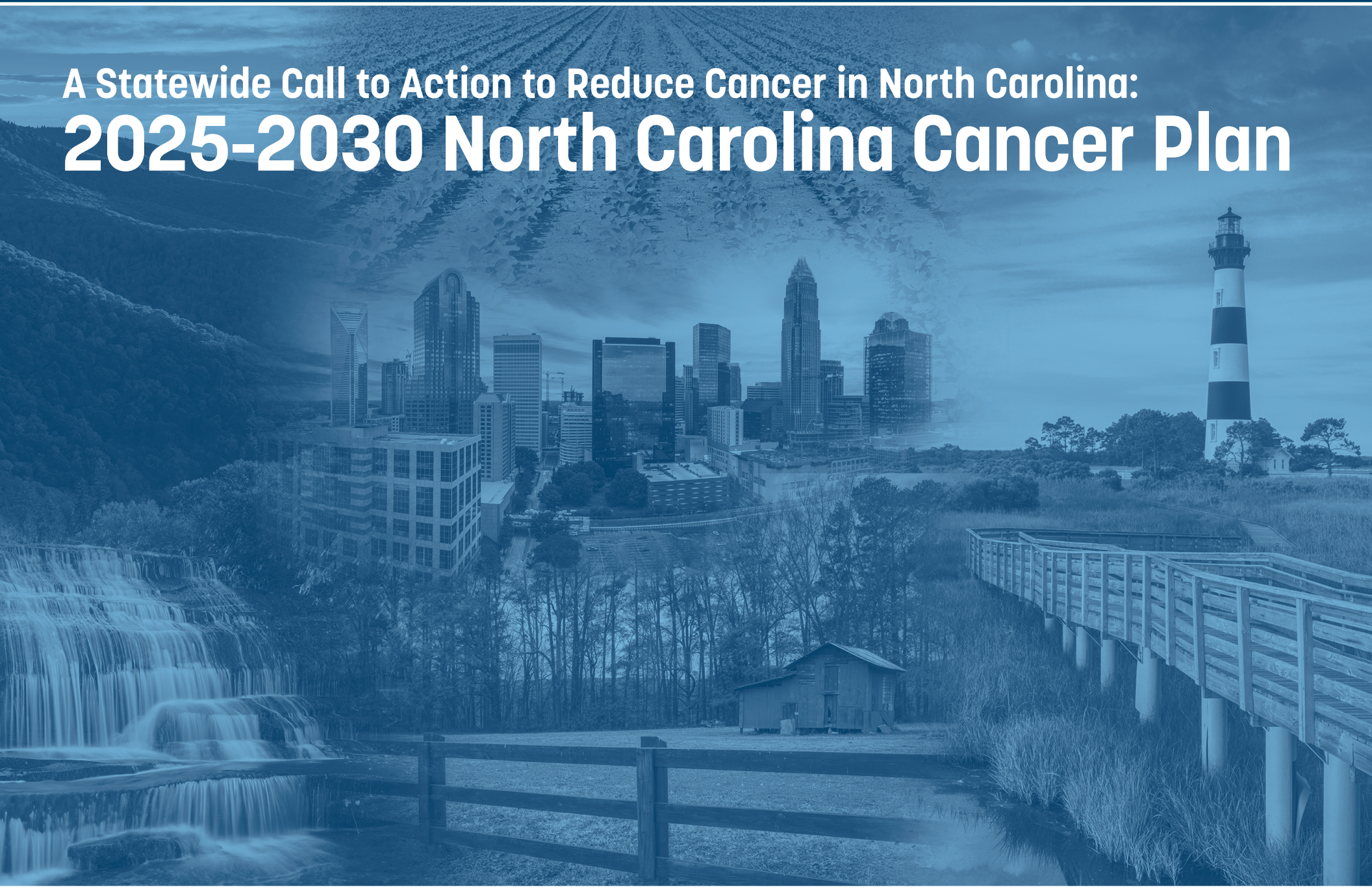
A Statewide Call to Action to Reduce Cancer in North Carolina:

2025-2030 North Carolina Cancer Plan



Dedication

A Statewide Call to Action to Reduce Cancer in North Carolina: 2025-2030 North Carolina Cancer Plan is dedicated to all North Carolinians whose lives have been affected by cancer.

NORTH CAROLINA
Advisory Committee on Cancer Coordination and Control
Celebrating 30 Years

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Dear Fellow North Carolinians:

Cancer has an impact on nearly every North Carolinian at some time in their lives whether as a patient, a survivor, a caregiver, or a loved one. Currently we lose an average of 55 North Carolinians to cancer every day, totaling more than 20,000 lives annually. These are not just statistics; these are our parents, siblings, children, friends, and neighbors. Cancer remains the second leading cause of death in our state and the North Carolina Advisory Committee on Cancer Coordination and Control remains committed to improving the burden the cancer.

We are proud to present the *A Statewide Call to Action to Reduce the Burden of Cancer in North Carolina: 2025-2030,* a renewed road map to reduce the burden of cancer and improve outcomes for individuals, families, and communities across our state. Building on the momentum of the Comprehensive Cancer Control Action Plan 2020-2025, this new plan continues our evidence-based approach to preventing cancer, increasing early detection, improving access to high-quality treatment, and supporting all North Carolinians through survivorship and beyond.

The goals and strategies in this plan are familiar, and that is intentional. By maintaining continuity, we can better track progress, learn which strategies are effective, and ensure lasting impact on recommended interventions. We know that no single organization or agency can achieve this vision alone. **This plan is meant for all of us** whether you are a clinician, public health leader, policymaker, educator, survivor, caregiver, or community advocate.

We thank the countless individuals and organizations across North Carolina who contributed their time, expertise, and heart to shaping this plan. We invite you, wherever you live and whatever your role, to use this plan as your own. **Together** we can reduce the number of lives lost each day, increase the number of lives saved, and ensure every North Carolinian has the best chance to live cancer free.

With gratitude,

Vickie Fowler, MD, FAAFP

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Chair
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The North Carolina Advisory Committee on Cancer Coordination and Control is a 34-member legislatively mandated committee. Our mission is to facilitate the reduction of cancer incidence and mortality for all North Carolinians, enhance statewide access to quality treatment and supportive services and maximize quality of life for all North Carolina cancer survivors, patients and their loved ones through educating and advising government officials, policy makers, public and private organizations and the public.

Acknowledgments

This *A Statewide Call to Action to Reduce Cancer in North Carolina: 2025-2030 North Carolina Cancer Plan* from the North Carolina Advisory Committee on Cancer Coordination and Control (ACCCC) was created in collaboration with the North Carolina Comprehensive Cancer Control Program; North Carolina State Center for Health Statistics, Central Cancer Registry; North Carolina Breast and Cervical Cancer Control Program; North Carolina Partnership to Increase Colorectal Cancer Screenings, North Carolina WISEWOMAN Program, and cancer partners from across North Carolina.

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Introduction

A *Statewide Call to Action to Reduce the Burden of Cancer in North Carolina: 2025-2030 North Carolina Cancer Plan* (Cancer Plan) is a **statewide call for action** with the overarching goal to reduce the cancer burden across North Carolina. The "cancer burden" refers to the overall impact of cancer on a population. This includes the number of new cases (incidence) and deaths (mortality), but also the wider societal and individual impact of the disease. This includes the financial costs of treatment, the emotional and psychological toll on patients and families, and the strain on health care systems. This plan can be used by individuals, health care providers, policy makers, community organizations, and cancer partners to collaborate with each other as they coordinate efforts, resources, and strategies to reduce North Carolinians' cancer incidence and mortality rates. Collaborating through partnerships can facilitate earlier cancer diagnosis and treatment, ultimately improve health outcomes, and ensure continuity of care across the cancer continuum - from screening to treatment and survivorship.

The North Carolina Advisory Committee on Cancer Coordination and Control (NC ACCCC) is proud to present this Cancer Plan to serve as a blueprint for statewide cancer prevention and control programs. See Appendix B for NC ACCCC Membership. A diverse group of cancer stakeholders including representatives from non-profit organizations, community and business organizations, and individual North Carolinians contributed their health care expertise to the development of this Cancer Plan. Much of the work was guided by the North Carolina Cancer Prevention and Control Branch which includes the Comprehensive Cancer Control Program (NC CCCP), the North Carolina Breast and Cervical Cancer Control Program (NC BCCCP); North Carolina Partnership to Increase Colorectal Cancer Screenings Program (NC PICCS); and the North Carolina Well-Integrated Screening and Evaluation for Women Across the Nation Program (NC WISEWOMAN). The North Carolina State Center for Health Statistics, Central Cancer Registry (NC CCR) provided data guidance and support. The North Carolina Advisory Committee on Cancer Coordination and Control Subcommittees which focus on prevention, early detection, supportive care, and policy support served as reviewers.

This Cancer Plan focuses on selected cancers (lung, female breast, prostate, colorectal, melanoma skin, and HPV-related). Lung, female breast, prostate, and colorectal cancer were selected because they are the leading causes of cancer deaths in North Carolina. Melanoma skin cancer was selected because it can be mostly prevented by avoiding exposure to the sun and tanning beds. Cervical cancer, an HPV-related cancer, was selected because it can mostly be prevented through vaccination and regular screening. While this plan focuses on a limited number of selected cancers, it supports all efforts: prevention, early detection, care and treatment, clinical trials, research, and policy to reduce the burden of cancer in North Carolina. The Appendices contain North Carolina cancer accredited hospital information, scientific resources, cancer screening guidelines, and printable North Carolina cancer incidence and mortality maps. Evidence-based interventions (EBIs) are listed with each selected cancer.

Cancer Plan – A blueprint for action to reduce cancer in North Carolina!

A Note about Data

Most North Carolina specific cancer data in this document was provided by the North Carolina State Center for Health Statistics, Central Cancer Registry and will not be specifically sited unless it is web available. Cancer incidence and mortality rates are cited in five-year measurement periods with incidence rates delayed by two years while mortality rates are delayed by one year. Data are age-adjusted per 100,000 population based on the 2000 U.S. Standard Population unless otherwise stated. The population labels used in *A Statewide Call to Action to Reduce the Burden of Cancer in North Carolina: 2025-2030 North Carolina Cancer Plan* are identified by the population designations used by the North Carolina State Center for Health Statistics and male and female labels refer to a person's designation in their medical records. The five largest population groups in North Carolina, as identified by the North Carolina State Center for Health Statistics, are non-Hispanic Whites, non-Hispanic African Americans, non-Hispanic American Indians, Hispanics/Latinos, and non-Hispanic Asians/Pacific Islanders. For the purposes of the Cancer Plan, non-Hispanic Whites will be referred to as whites, non-Hispanic African Americans as African Americans, Hispanics/Latinos as Hispanics, non-Hispanic American Indians as American Indians, and non-Hispanic Asians/Pacific Islanders as Asians. Caution must be used when comparing data in this document to data published in *North Carolina Comprehensive Cancer Control ACTION Plan 2020 -2025 or the Cancer in North Carolina: Data and Resource Guide 2024* because the population basis may be different. North Carolina Cancer Plan Printable Maps are available in Appendix G.

A Statewide Call to Action

Cancer is the second leading cause of death in our state, and the burden of cancer is not equal across all populations and counties.[1] North Carolinians have major differences in their health, healthy lifestyle resources, and health care access depending on their racial/ethnic background, gender, and where they live. Other factors that influence the burden of cancer include behavioral and lifestyle factors, health system quality, genetic and biological factors, socioeconomic status, environmental and occupational exposures, infectious agents, policy and public health interventions. Addressing these differences is key to improving cancer incidence and mortality rates in North Carolina.

The unique nature of North Carolina is reflected in recommended strategic actions which are based on state data and the Centers for Disease Control and Prevention's (CDC's) recommended evidence-based interventions (EBIs). Strategic actions consider policy and environmental change, rural and urban health care access, health equity, and demography and health data. Information on cancer risk factors, prevention, early detection, and health and supportive care is included. Suggested evidence-based interventions are listed for each cancer. Since North Carolinians experience major differences in their health, their healthy lifestyle resources, and medical care depending on where they live, the Cancer Plan examines major population groups in North Carolina and their cancer experiences and challenges.

People in rural areas often face major challenges in accessing health care providers, medications, transportation services, and caregivers. In 2025 cancer is projected to be responsible for over 22,600 deaths in North Carolina.[2] An American Academy of Cancer Research (AACR) report shows that 40% of all cancers in the U.S. are linked to risk factors like tobacco use, unhealthy diet, physical inactivity, ultraviolet exposure, alcohol consumption, pathogenic infections, and obesity. The AACR reported that infections accounted for 13% of global cancers, including human papillomavirus, in 2018. Infections from the human papillomavirus (HPV) can be prevented through HPV vaccination.[3]

State-level cancer plans play a crucial role in guiding a state's comprehensive cancer control efforts, promoting collaboration among cancer partners, and addressing cancer disparities. *A Statewide Call to Action to Reduce the Burden of Cancer in North Carolina: 2025-2030 North Carolina Cancer Plan* (Cancer Plan) is a **statewide call for action**. Reducing the burden of cancer for all North Carolinians is the overarching goal of the Cancer Plan. This plan both describes the problem and identifies opportunities for making a difference in the cancer burden. This can be used by individuals, health care providers, policy makers, community organizations, and cancer partners to collaborate as they coordinate efforts, resources, and strategies to reduce North Carolinians' cancer incidence and mortality rates.

National Comprehensive Cancer Priorities	North Carolina Comprehensive Cancer Priorities
• Prevention and early detection	• Preventing New Cancers • Detecting Cancer Early
• Equitable access to quality care	• Supporting Cancer Care
• Supporting survivors	• Supporting survivors

The Cancer Plan provides a set of objectives and evidence-based strategies for each of the selected cancers (lung, female breast, prostate, colorectal, cervical, and melanoma skin) to guide the cancer control efforts based on local and state cancer data and surveillance information including cancer rates, demographic, and health data. Information on cancer risk factors, prevention, early detection, health care, and supportive care is included. By working together, we can reduce the burden of cancer in North Carolina.

North Carolina Comprehensive Cancer Control Action Plan 2025-2030 Goals*	
NC Goal 1	Reduce cancer risks by supporting healthy behaviors for all North Carolinians.
NC Goal 2	Increase cancer screening and early detection of cancer.
NC Goal 3	Improve access to quality cancer treatment, enhance care coordination, and increase supportive care.
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 public.

**Measurable objectives are listed under the selected cancers.*

North Carolina's Changing Demographics and Cancer

North Carolina is experiencing significant demographic shifts, with changes in population composition reflecting a dynamic and evolving state. Each different population group faces varying challenges related to cancer prevention, detection, treatment, and outcomes. The population groups have major differences in health, healthy lifestyle resources, and access to medical care depending on their racial/ethnic background, gender, and where they live. Understanding the intersection between population demographics, social drivers of health, and cancer incidence and mortality is crucial for developing targeted strategic actions and improving health outcomes across the state. Several key factors are reshaping the demographic landscape of North Carolina.

Population Growth

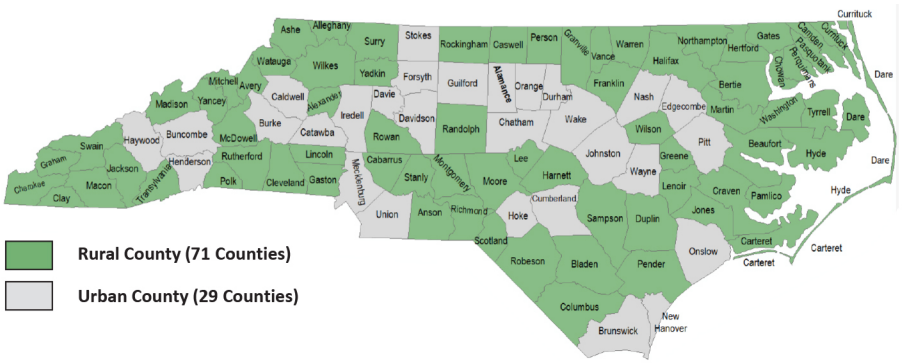
In the past few years, North Carolina's population growth has increased, driven by factors such as natural increases and net migration. North Carolina's population was 11,046,024 in 2024, a 1.15% increase from 2023.[4] During the 2022-2023 period, 91 counties saw more people moving into their county than leaving for another North Carolina county or another state. During this same time, about 21% of North Carolina's population growth came from international migration, people moving here from another country. In 2023 North Carolina added more people than all but two states in the nation.[5]

> Cancer Challenge: As the racial/ethnic makeup of the population changes, so do cancer risk and survival rates among the different population segments. These changes present unique challenges for cancer prevention, early detection, treatment, and supportive care.

Urban vs. Rural Population

The state's urban areas continue to attract residents seeking jobs, higher education opportunities, and other amenities along with the availability of health care and transportation. The U.S. Census Bureau defines urban as an area with at least 5,000 population or 2,000 households.[6] In 2020, North Carolina had the second largest rural population in the nation with one in every three people living in a rural area.[5] The map shows county classifications as urban or rural.[7]

Figure 1. North Carolina Office of Rural Health Rural and Urban Counties



The urban/rural spread presents opportunities and challenges in planning and implementing cancer prevention and control programs. Urban areas generally have a wider variety of health resources, strong economic opportunities, and reduced disease rates while the more rural areas have limited health resources, weaker economic opportunities, and higher disease rates. Rural areas play a crucial role in the state's economy, culture, and demographic evolution and they have their own unique challenges and opportunities related to population changes. A major challenge for rural residents is the closing/conversion of rural hospitals which has resulted in reduced services and increased travel time to get care. Between 2010 and 2024, eight North Carolina rural hospitals closed or converted (provided some types of care but no in-patient services) for a loss of 272 beds. The closures/conversions increased the percentage of patients who traveled more than 60 minutes per visit.[8,9]

> Cancer Challenge: People in the rural areas often face major challenges in accessing health care providers, medications, transportation services, and caregivers. Higher rates of tobacco use and obesity in rural areas may contribute to increased cancer risk and poorer outcomes. Addressing rural health and cancer control requires a comprehensive approach that focuses on enhancing access to care, improving community outreach, strengthening health care systems, and advocating for supportive policies.

Ethnic Diversity

North Carolina is becoming more racially/ethnically diverse. In the 2020 U.S. Decennial Census, racial/ethnic minorities made up nearly 30% of the North Carolina population. In 2030, it is estimated that this population will make up almost 41.5% of the population.[10] Table 1 shows the changes in the population from 2020 to 2024.[5, 11] The five largest population groups in North Carolina are non-Hispanic Whites, non-Hispanic African Americans, non-Hispanic American Indians, Hispanics/Latinos, and non-Hispanic Asians/Pacific Islanders.

The Asian population is diverse, with over 20 Asian ethnicities and countries of origin represented. Hispanics make up the youngest population group and represent a wide diversity of cultural and ethnic origins. Over 11% of North Carolinians identify as Hispanic. These changes reflect the state's evolving demographics where there is also a significant increase in the number of individuals identifying as Multiracial (two or more races).[3]

As the racial/ethnic makeup of the population changes, so does the cancer experience. There are major health equity differences in four of the selected cancers (lung, female breast, prostate, and colorectal) that have the highest North Carolina mortality rates depending on a person's racial/ethnic identity. The incidence and mortality rates by race/ethnicity are illustrated in Table 2.

- Whites tend to have a higher cancer incidence rate but a lower cancer mortality rate than African Americans who are much more likely to die from cancer than whites.
- African Americans have higher mortality rates than the other races in three (colorectal, female breast, and prostate) of the four most deadly cancers.
- African American males have both higher prostate cancer incidence and mortality rates. Asians have the lowest female breast, colorectal, and skin cancers mortality rates.
- American Indians have the highest lung cancer incidence and mortality rates of any other population group. They tend to have higher commercial tobacco use and often face health care inequalities.
- African American, American Indian, and Hispanic communities often face barriers such as limited access to health care, lower screening rates, and inadequate housing or food.

Achieving cancer health equity for all North Carolinians remains a guiding principle that applies to all activities across the cancer care continuum.

> Cancer Challenge: There are major differences in cancer incidence and mortality depending on one's racial/ethnic background. Nonwhite populations tend to have cancer diagnosed at a later stage when treatment is less successful. Increasing cancer screening opportunities for nonwhite populations presents major challenges.

Table 1. NC Estimated Population by Race/Ethnicity [5, 12]

	2021	2023	2024
Total Population	10,564,320	10,835,491	11,046,024
White	78.9%	60.7%	69.8%
African American	16.8%	21.0%	22.1%
Hispanic	2.1%	11.4%	11.4%
Asian	1.5%	3.6%	3.7%
American Indian	1.0%	1.0%	1.6%
Two or More Races		2.3%	2.7%

Table 2. NC Incidence & Mortality Cancer Rates by Race/Ethnicity per 100,000 Population 2019-2023* [11,1]

Cancer	All Races/ Ethnicities		White		African American		American Indian		Asian		Hispanic	
	Preliminary Incidence	Mortality	Preliminary Incidence	Mortality	Preliminary Incidence	Mortality	Preliminary Incidence	Mortality	Preliminary Incidence	Mortality	Preliminary Incidence	Mortality
Lung	58.6	36.8	60.9	38.0	58.5	37.4	64.4	46.9	28.3	19.1	26.0	12.7
Female Breast	174.6	19.9	176.9	18.6	180.0	27.0	132.6	18.0	129.6	8.2	133.1	10.1
Prostate	128.2	20.2	112.9	17.2	200.7	39.5	111.9	20.2	61.7	8.4	82.2	12.0
Colorectal	34.7	12.8	34.8	12.5	36.9	16.2	32.5	12.8	24.1	6.6	26.6	7.1
Cervical	6.9	1.9	6.6	1.8	6.9	2.7	11.4	**	4.9	**	10.5	2.2

**Melanoma skin cancer is not included because the rates for some minorities are unstable because of small numbers.*
***Numbers were too small to report.*

Population Age Shift

In North Carolina the proportion of older adults (aged 65 and above) is growing rapidly while the adolescent population growth is slowing. For example, Table 3 shows that one in every six (17%) North Carolinians were 65 years of age or older in 2020 while in 2024 one in five North Carolinians (20%) were age 65 and older. There are more older adults than children in 86 of North Carolina's 100 counties. The aging population varies by county, with higher percentages of older adults in rural areas than in urban areas. These populations are disproportionately female with a ratio of 1.4 older women to every older man.[5]

The needs of oldest older adults (85+) are different from those for younger older adults (ages 65 to 85). As people age, their physical and mental agility declines and their likelihood of acquiring one or more disabilities or health issues increases. They may face challenges such as comorbidities, limited mobility, reduced financial resources, and limited access to geriatric oncology services. According to the 2023 Behavioral Risk Factor Surveillance System (BRFSS) survey: 70% of the people aged 65 to 74 reported that they had one or more chronic diseases; over 25% reported they had fallen at least once. Of the people over 75, 75% had one or more chronic diseases; over 29% reported they had fallen at least once.[13] These factors complicate cancer prevention, screening, and treatment for this population group.

Table 3. NC Estimated Population by Age[5]

Age	2020	2024
0-17	22%	21%
18-44	36%	36%
45-59	20%	19%
60+	23%	24%
65+	17%	18%
85+	2%	2%

NC Office of State Budget and Management

> Cancer Challenge: The risk of developing and dying from cancer increases as one ages. Physical/mental declines and the potential for disabilities or chronic health problems complicate cancer prevention, early detection, treatment, and supportive care.

Sexual and Gender Minority Population

In North Carolina, the Sexual and Gender Minority (SGM) population is diverse and growing, reflecting increasing social acceptance and visibility of individuals with diverse sexual orientations and gender identities. This population includes individuals who identify as lesbian, gay, bisexual, transgender, queer, or other non-binary gender identities. They represent a range of ages, racial/ethnic backgrounds, socioeconomic status, and geographic locations.

The SGM population faces unique health challenges and disparities like discrimination, minority stress, lack of health care access, and specific cancer risks. Studies suggest that SGM individuals may face higher rates of certain cancers, such as anal, cervical, breast, and lung cancers compared to the general population.[14] Understanding the disparities SGM individuals face is essential for promoting health equity and providing culturally competent care. The social stigma and discrimination faced by the SGM population create stress and hardship that can lead to mental health conditions which make it harder for them to seek medical and mental health treatment.[15]

> Cancer Challenge: SGM populations have a unique mixture of socio-economic factors and behaviors combined with health care system barriers that lead to higher cancer incidence and later stage diagnosis.

Population with Disabilities

As of 2022, roughly 2.7 million people in North Carolina reported some form of disability, including physical, cognitive, sensory, and mental health conditions.[16] The North Carolina population with disabilities is diverse, representing various racial and ethnic backgrounds and is growing. Several factors influence this growth: aging population, awareness of disability rights, and availability of services. Disabilities are common across all age groups, but the prevalence tends to increase with age. Disparities exist in access to health services and resources for each of the different disability groups. The increased awareness of disabilities and available services leads to higher reporting and recognition of disabilities.

People with disabilities may experience barriers to screening services and inequities in cancer treatment. These barriers can have different implications for people with cognitive vs. physical disabilities. In addition to experiencing transportation barriers and inaccessible facilities and diagnostic equipment, people with disabilities often encounter providers who fail to acknowledge their disability-related needs and provide disability-related accommodations; disregard cancer signs and symptoms as emotional responses to a chronic health condition; and erroneously attribute physical signs and symptoms of cancer to the underlying disability.

People living in rural areas may have limited health resources and experience increased difficulties in accessing health care resources.

> Cancer Challenge: People with disabilities face major challenges in accessing health care providers, treatments, medications, transportation services, and caregivers. These factors complicate cancer prevention, early detection, treatment, and supportive care.

STATEWIDE CALL TO ACTION AND DEMOGRAPHICS AND CANCER REFERENCES

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Cancer Health for all North Carolinians

Achieving cancer health for all North Carolinians remains a guiding principle across the cancer care continuum. North Carolinians' cancer burden is not equal. There are major differences in health, healthy lifestyle resources, and medical care depending on a person's racial/ethnic background, gender, and geographic location. White, African American, American Indian, Asian, and Hispanic North Carolinians experience different incidence and mortality rates for different cancers. Minority populations tend to have cancer diagnosed at a later stage when treatment is less successful. African Americans are much more likely to die from cancer than whites.

Cancer disparities persist despite new breakthroughs in diagnostics, therapeutics, and changes in the health care delivery system such as passage of the Affordable Care Act. Disparities are driven by a complex interaction among social, lifestyle, environmental, and health system determinants of health. Factors that influence health disparities include lack of employment or under employment, inadequate housing, food insecurity, reduced educational opportunities, and limited access to health care. Also, there is also a long history of implicit bias and structural racism embedded in the nation's systems of health care. People in rural areas often face major challenges in access to health care providers, medications, transportation services, and caregivers. These challenges speak to the need for more prevention efforts and increased screening and treatment opportunities that are easily accessible and available in a timely manner, with care delivered by properly trained health care providers without putting an unaffordable financial burden on the patient and/or family.

Preventing New Cancers

Successful cancer prevention requires actions by individuals, communities, organizations, and agencies/governments. Changing behaviors, policies, environments, or other systems to reduce the cancer risk is important since cancer is the second leading cause of death in North Carolina. Approximately 30% to 50% of newly diagnosed cancers in the U.S. might have been prevented by avoiding tobacco use, maintaining a healthy weight, being physically active, using alcohol in moderation or not at all, and eating a healthy diet.[1] For example, approximately 90% of lung cancer deaths are caused by cigarette smoking.[2]

To reduce cancer risks, individuals can make changes to their lifestyle behaviors such as reducing exposure to tobacco, eating healthy, exercising regularly, avoiding or limiting alcohol use, maintaining a healthy weight, getting an appropriate human papillomavirus (HPV) vaccine, using sun protection, and having recommended cancer screenings. These are considered modifiable risks. Screening tests can prevent cancer by detecting and removing precancerous growths and by detecting cancer at an early stage, when treatment may be more successful and less expensive.

A personal health history, family health history, genetic counseling, and genetic testing all together can give an individual and the health care provider detailed information about the individual's cancer risks and health care options. A personal health history is a record of a person's health information and can provide valuable information for the health care provider. Health histories may include information such as immunization records, doctors contact information, important numbers like blood pressure and blood sugar readings, prescription records, lists of surgeries, diseases and/or health conditions. Family health histories are a low-cost and effective method to identify patients with a higher-than-usual chance of developing cancer. This is increasingly important as more is known about the relationship between genetics and cancer risk.

Organizations, businesses, and governments can implement policy changes that reduce the exposure to tobacco and radon, reduce availability and affordability of alcohol, promote healthier lifestyles, provide safe places for physical activity and sun protection, and adopt environmental regulations to avoid exposure to environmental toxins.[3] These prevention practices also help reduce non-cancer deaths, such as heart disease, diabetes, and stroke. Action steps are outlined in the chart at the end of each section.

Everyone in North Carolina has a role to play in supporting the cancer prevention and control efforts outlined in this plan. Together we can make a difference!

Action Steps to Prevent Cancer

Individual	Stop smoking cigarettes or never start and avoid secondhand smoke.	Don't drink alcohol or if you choose to drink, limit drinks per day: men (2) women (1).	Eat more healthy foods, maintain a healthy weight, and be more active.	Protect skin and eyes from ultraviolet rays from sun and avoid tanning beds.	Get HPV vaccine for children/youth (ages 9-12) and teens/young adults (up to age 26).	Test the home for radon and mitigate high levels, if necessary.
Community Organizations	Sponsor tobacco prevention and cessation programs.	Support policies that reduce the availability and affordability of alcohol.	Adopt healthy food and drink standards and provide healthy food at events, meals, and in vending machines.	Support recreation programs and provide safe, sun-protected spaces for physical activity.	Encourage radon testing for homes, schools, workplaces, and public buildings.	Support recreation programs and provide safe, sun-protected spaces for physical activity.
Community Partners	Provide smoking cessation programs.	Educate the public about the relationship between cancer and alcohol.	Encourage employees and volunteers to take time during the day for physical activity.	Provide sun protection to employees and volunteers who work outside.	Promote HPV education as cancer prevention.	Educate others about the need for radon testing in homes, schools, workplaces, and public buildings.
Schools	Adopt/update tobacco free policies to include new tobacco products like e-cigarettes, etc.	Limit alcohol and tobacco advertising and availability around youth while educating them on alcohol and tobacco-related dangers.	Incorporate healthy living messages by using the NC Healthy Living Standards.[4] Adopt healthy food and drink standards and provide healthy food and drinks.	Increase physical education requirements and provide opportunities for physical activity with sun protection.	Provide programs for parents/ students about the importance of (HPV) vaccinations as a cancer prevention.	Educate others about the need for radon testing in homes, schools, workplaces, and public buildings.
Businesses	Maintain a tobacco/vape-free workplace inside and outside of buildings.	Support workplace policies to prevent and reduce alcohol use.	Encourage employees to adopt a healthy lifestyle including healthy meals and regular physical activity. Provide healthy food at events, meals, and in vending machines.	Partner with other businesses/community organizations to sponsor health/cancer screening opportunities.	Provide full financial coverage and paid time off for recommended health/cancer screenings/ vaccines.	Educate others about the need for radon testing in homes, schools, workplaces, and public buildings.
Health care Professionals	Provide smoking cessation services.	Promote use of alcohol screening and provide intervention/ referral, as needed.	Encourage employees to adopt a healthy lifestyle (healthy meals and regular physical activity).	Partner with businesses/ community groups to offer health/cancer screening/ vaccination opportunities.	Provide full financial coverage and paid time off for employees for recommended health/ cancer screenings/ vaccines.	Encourage radon testing for homes, schools, workplaces, and public buildings.
Policy Makers	Adopt tobacco free policies/legislation (e.g., increasing tobacco taxes and control of sales).	Adopt policies/ legislation that reduce the availability and affordability of alcohol (e.g., maintaining government control of alcohol sales, increasing alcohol taxes).	Encourage members and staff to adopt a healthy lifestyle including healthy meals and regular physical activity.	Allow paid time off for health care including health/cancer screenings/ vaccines.	Adopt policies/legislation to provide full financial coverage for recommended health/cancer screenings/ vaccines.	Encourage radon testing for homes, schools, workplaces, and public buildings.

**Action Steps based on Centers for Disease Control and Prevention (CDC) and American Cancer Society (ACS) Evidence-Based Interventions*[5, 6]

Detecting Cancer Early

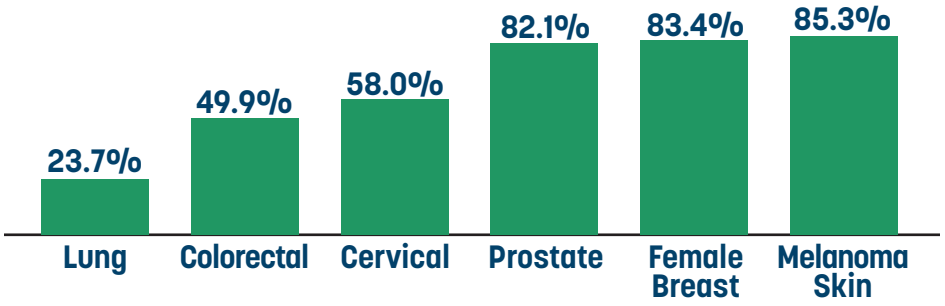
Detecting cancer early is an effective way to reduce cancer mortality. Early detection of cancer, when prognosis is more favorable, is correlated with survival and emphasizes the importance of screening to identify cancer early when treatment may be more successful and less expensive.[7]

Screening tests are available for lung (LDCT [low-dose spiral computed tomography]), prostate (PSA [prostate-specific antigen]), breast (mammogram), and colorectal (stool tests and colonoscopy). Cervical (Pap and human papillomavirus [HPV]) tests and melanoma skin examinations can detect cancer early. 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.

Figure 2 shows the cumulative observed survival rates of the selected cancers.[8] The cumulative observed survival rate is the percentage of patients who would be expected to be alive five years after being diagnosed. African Americans and Hispanics often have later-stage diagnoses, and poorer survival rates compared to whites. This may be due to lack of employment or underemployment, lack of/inadequate health insurance, lack of access to quality health care, limited education, and other factors.

Recommended cancer screenings for breast, cervical, colorectal, lung and prostate can prevent many deaths from cancer only if positive tests are followed up with prompt and appropriate treatment. Everyone has a role in increasing the number of people who have the recommended screenings and follow up. See Appendix F for recommended screening guidelines.

Figure 2. NC Cumulative Observed Survival Rate by Cancer 2018-2022



Action Steps to Detect Cancer Early

Individual	Get recommended screenings and support health/cancer screening programs in your community.	Discuss your family health history with other family members and your health care provider.	Encourage family, friends, and coworkers to get recommended health/cancer screenings.
Community Organizations	Advocate for funding needed for cancer prevention, screening, treatment, and research.	Partner with others in the community to promote small mass media information on the benefits of health/cancer screening.	Encourage employees and volunteers to get regular health/cancer screenings.
Community Partners	Advocate for funding needed for cancer prevention, screening, treatment, and research.	Promote system, policy, and funding changes that will increase access to health/cancer screenings.	Partner with traditional and non-traditional community partners to sponsor education events to support health/cancer screening.
Schools	Educate students, teachers, administrators and staff about the importance of age-appropriate health/cancer screenings.	Allow paid time for teachers and staff to get health/cancer screenings.	Provide educational opportunities for parents and teachers on how HPV vaccine prevents HPV related cancers.
Businesses	Allow paid time off for health/cancer screenings and provide full financial coverage for recommended health/cancer screenings and follow-up.	Promote the tobacco *QuitlineNC*[9] (1-800-784-8669) and Check your Alcohol Use Tool.[10]	Encourage employees to adopt a healthy lifestyle including healthy meals and regular physical activity. Provide healthy food at events, meals, and in vending machines.
Health care Professionals	Recommend, provide, and/or refer patients for appropriate health/cancer screenings and follow-up testing.	Provide insurance coverage for employees to cover health/cancer screenings and follow-up testing.	Partner with others in the community to sponsor educational events to increase demand for health/cancer screening.
Policy Makers	Adopt policies/legislation to provide financial coverage for recommended health/cancer screenings.	Promote system and funding changes that will increase access to health/cancer screenings, medications, and care.	Support recommended early health/cancer detection methods and programs.

**Action Steps based on Centers for Disease Control and Prevention (CDC) and American Cancer Society (ACS) Evidence-Based Interventions*[5, 6]

Supporting Cancer Care and Survivorship

Cancer is a complex disease requiring a variety of treatments and supportive care depending on the type of cancer and its severity. Traditionally, cancer treatment efforts focused only on surgery, radiation, and/or chemotherapy. While these continue to be treatment options, additional options include immunotherapy, targeted therapy, hormone therapy, stem cell transplant, and precision medicine. Many people with cancer have successful treatment and can continue with their lives, either living with cancer or living cancer free.

The increase in the number of years of people who are either living with cancer or living cancer free brings about challenges for supportive care. This includes managing potential late effects of treatment, addressing risk of recurrence or second cancers, and improving overall quality of life. 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 rural counties with limited health care providers and limited community resources.

As of January 2022, it is estimated that there are 18.1 million cancer survivors in the United States which represents approximately 5.4% of the population. The number of cancer survivors is expected to increase to 20.3 million by 2026 and is expected to grow rapidly since 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.[11]

Action Steps to Support Cancer Care and Survivorship

Individual	Create a legal document plan for health care and end-of-life decisions including advanced health care directive, durable power of attorney for health care, living will, etc.	Advocate for funding needed for cancer prevention, screening, treatment, and research.	Volunteer with organizations/ agencies that support cancer patents, care givers, and cancer survivors (shopping, transportation, childcare).	Urge grocery stores, bodegas, corner stores, etc. to include healthy food options.
Community Organizations	Partner with agencies/ organizations to promote patient navigation and community health worker programs.	Establish programs to provide cancer prevention, education, screening/follow up, and support for cancer patients.	Encourage local government agencies to develop healthy living programs and clean air policies.	Urge grocery stores, bodegas, corner stores, etc. to include healthy food options.
Community Partners	Advocate for funding needed for cancer prevention, screening, treatment, and research.	Promote system, policy, and funding changes that will increase support for cancer survivors.	Promote patient navigation and community health worker programs.	Partner with community partners to sponsor survivorship support events.
Schools	Educate administrators, staff, and faculty about patients' rights in the Americans with Disabilities Act.	Educate teachers/staff about school-related issues with cancer treatment and how to support patients and survivors.	Work with teachers and staff on best ways to ease students' return to school during and after cancer treatment.	Educate policy makers about the need for healthy lifestyle programs on campus.
Businesses	Provide health insurance coverage to all employees.	Advocate for funding needed for health/ cancer prevention, screening, treatment, and research.	Educate supervisors and staff about patients' rights in the Americans with Disabilities Act.	Educate employees on best ways to support coworkers during and after cancer treatment.
Health care Professionals	Advocate for funding needed for health/ cancer prevention, screening, treatment, and research.	Use patient navigators and community health workers to provide patient support.	Provide insurance coverage for employees to cover health/cancer screenings/ vaccines and follow-up.	Offer survivorship educational forums for patients and caregivers.
Policy Makers	Adopt policies/legislation to provide financial support for cancer screening, treatments and research.	Promote system changes that will increase access to health/ cancer screenings, care, medications, and support.	Provide insurance coverage for employees to cover health/cancer screenings/vaccines and follow-up.	Adopt policies/legislation to provide paid leave for employees' health/cancer screenings/vaccines and follow-up.

**Action Steps based on Centers for Disease Control and Prevention (CDC) and American Cancer Society (ACS) Evidence-Based Interventions*[5, 6]

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Cross-Cutting Challenges

Addressing challenges in cancer prevention and control requires a comprehensive, multi-faceted approach that includes, but is not limited to, improving access to screening and care, enhancing public awareness, addressing socioeconomic disparities, and fostering collaboration among health care providers, policymakers, and communities. In tackling these issues, the North Carolina Cancer Advisory Committee on Cancer Coordination and Control; the NC Department of Health and Human Services, Cancer Prevention Branch, Comprehensive Control Cancer Program; and their partners work together toward reducing cancer incidence and improving outcomes for all populations. The good news is that the overall cancer mortality rate has been declining over the past few decades. The bad news is that cancer diagnoses are on the rise for young adults, including colorectal and breast cancer. Below are some of the key challenges in the field of cancer prevention and control in North Carolina.

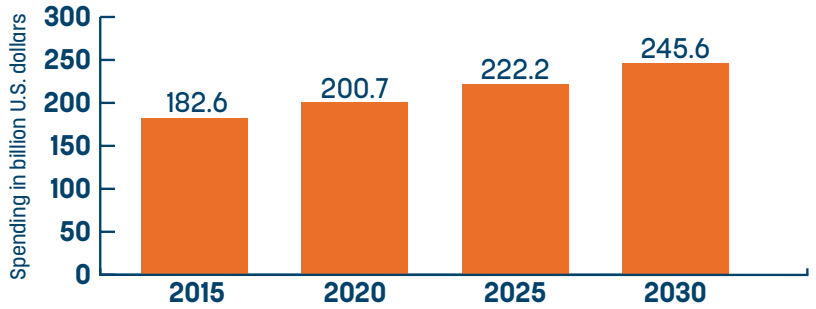
Challenge – Financial Toxicity

Cancer is one of the most expensive medical conditions to treat in the United States. People with cancer may receive multiple types of costly treatments, like radiation therapy, chemotherapy, immunotherapy, and/or surgery and hospitalization. The high cost of cancer treatment can have a significant impact on patients' financial well-being, quality of life, and ability to adhere to their treatment plan. Cancer care costs are expected to rise as the population ages and there is an increased need for cancer care and treatment. As illustrated in Figure 3, the United States projected cost for cancer care in 2030 including medical services and prescriptions is $245.6 billion, an increase of 34% from 2015.[1]

Out-of-pocket costs like copayments for each health care appointment/ service, insurance deductibles, health care supplies, non-reimbursed medications, child care expenses, and travel and hotel expenses are not covered by health insurance. Copayments and coinsurance for drugs may cause financial toxicity even for cancer survivors who have health insurance. Some of them report spending more than 20% of their annual income on medical care. Coverage gaps for cancer related care often include behavioral health care services, fertility preservation, and oral chemotherapy drugs. Patients may also experience job loss or reduced working hours due to their illness, leading to further financial challenges. Cancer survivors may have financial problems many years after they are diagnosed because they are paying for ongoing cancer treatment or care for late effects from their treatment. Cancer financial toxicity particularly impacts special populations like low-income families, uninsured/underinsured individuals, racial/ethnic minorities, rural populations, and sexual and gender minorities.

In August 2024, North Carolina's Governor introduced a medical debt forgiveness plan to ease patient medical debt. The major hospitals in the state agreed to wipe out medical debt and start automatically enrolling low-income patients in charity care. The program relieved existing medical debt, prevented future debt through capped payment plans, and protected patients from aggressive debt collection practices.[2]

Figure 3. National cancer costs in the United States in 2015 and projections until 2030 (in billion U.S. dollars)



American Cancer Society; Expert(s) © Statista 2024
Additional Information: United States; Expert(s) (Mariotto AB, et al.); 2019

Challenge – Social Drivers of Health

Social drivers of health, often referred to as social determinants of health, are the conditions in which people are born, grow, live, work, and age. Factors such as income, education, neighborhood environment, health care access, exposure to carcinogens, and access to preventive services influence people's behaviors. These factors play a significant role in shaping a person's cancer risk. The health care community recognizes the importance of addressing cancer not just as a biological disease but as a multifaceted issue influenced by various social, environmental, and economic factors. People who come from a low socioeconomic background may face more exposure to tobacco and environmental hazards. They may lack access to fresh food, which can lead to an unhealthy diet and may not be physically active due to a lack of time and safe space. By considering the patient's socioeconomic background, health care providers can have a better understanding of their patients, their treatment challenges, and supportive needs. This information can also help determine a patient's risk for certain diseases which could lead to earlier detection of cancer and other diseases.

EDUCATION

Basic educational expertise and skills, including fundamental knowledge, reasoning ability, emotional self-regulation, and ability to work with others, are critical components of health. Higher levels of education are associated with healthier lifestyles, better job opportunities with insurance and health benefits, and access to health care resources. Educational level also influences a person's ability to understand health information and services crucial for making informed health decisions. Research has shown that education, especially of the mother, is a major predictor of health outcomes.[3]

ECONOMIC STABILITY

Employment and income greatly impact health outcomes. Quality employment and job security can provide health benefits, paid leave, access to health care, and social support. Higher income levels often correlate with better health outcomes due to access to resources, health care, and healthy housing. In many cases people who carry the biggest cancer burden are those experiencing inadequate or inaccessible health care, inadequate housing and/or food, and other aspects of poverty. This often includes people of racial/ethnic or sexual and gender minorities and people living in rural geographical regions. Their burden is caused by complex interactions between social, lifestyle, environmental, and biological factors.

A recent study from the University of Minnesota highlighted socioeconomic status (SES) as a disparity when they researched the availability, utilization, and outcomes of stem cell transplants. This study found that cancer patients were more likely to die if the cells they received were from low SES donors. They found that cancer patients who received transplants from donors with lower socioeconomic status saw a 9.7% reduction in overall survival rates and a 6.6% increase in transplant-related mortality after three years, compared to those who received cells from donors with higher SES. This effect was irrespective of the patients' own SES status and emphasized the importance of addressing social drivers of health to ensure equitable access to life-saving therapies.[4]

RURAL HEALTH

People in rural areas often face major challenges in accessing health care providers and facilities, medications, transportation services, and caregivers so they may experience higher rates of cancer mortality and morbidity. These rural areas often have fewer health care facilities; health care professionals, including oncologists, nurses, and specialists; and cancer treatment centers which can lead to delays in appointments, diagnosis, and treatment. Rural populations may experience lower income levels, education, and health insurance coverage which limits their access to the services available. Lack of transportation may prevent patients from accessing necessary care, completing cancer screenings, and accessing local specialists for treatment. This is especially critical for those living in remote rural geographical regions. A major challenge for rural residents is the closing/conversion of rural hospitals across North Carolina which results in increased travel time needed to access care.

RACISM

The effects of racism on cancer treatment can be profound and multifaceted, impacting access to care, treatment quality, patient-provider interactions, and health outcomes. Racism is defined as a system that assigns people into categories based on nationality, ethnicity, or other markers of social differences.[5] Racism includes structural, institutional, interpersonal, and internalized racism. It contributes to cancer health disparities by limiting access to prevention, screening, treatment, and supportive care.

A long history of implicit bias and structural racism embedded in health care systems and among health care providers, continues to influence access to appropriate health care. For example, a study on *Racial bias in pain assessment*

and treatment recommendations, and false beliefs about biological differences between blacks and whites found that over 50% of the white medical students and residents surveyed believed false information about how African Americans perceived pain which influenced their treatment recommendations.[6] Other factors that influence health disparities include lack of employment or under employment, limited income, lack of health insurance, inadequate housing, food insecurity, limited education, limited access to health care, and lack of transportation.

Challenge – Mental Health

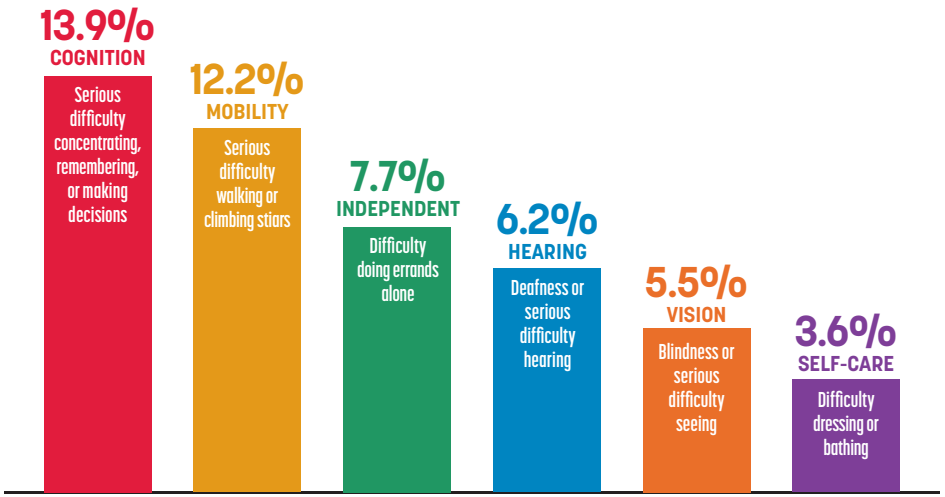
Cancer diagnosis unexpectedly changes people's worlds and the world of their family and caregivers. They may be numb, in shock, afraid, and worried about the future. Coping with a diagnosis, treatment side effects, and a changing body can become difficult producing feelings of anxiety, distress, depression, and loneliness. This underscores the importance of interventions such as psychological therapy, mindfulness, physical activity, and social support to help patients manage stress, potentially improving their health outcomes before, during, and after cancer treatment.

Challenge – Disabilities

According to the Centers for Disease Control and Prevention (CDC) more than one in four adults in North Carolina has a disability which can range from physical disabilities (e.g., mobility limitations) to cognitive disabilities (e.g., intellectual disabilities, developmental disorders), to sensory disabilities (e.g., hearing or vision impairments) as illustrated in Figure 4. These disabilities affect health/cancer screening and treatment. These individuals face challenges in accessing health care facilities and services, employment, education, community services, housing, and transportation.[7]

This population is dynamic, with variations in age, gender, ethnic background, and disability types, so it is important to understand the needs of the population in order to provide supportive health care. People with disabilities may experience depression, anxiety, loneliness, isolation, and post-traumatic stress disorder, which should be considered when providing health care. It spans all age groups and life stages, from children and adolescents to older adults.

Figure 4. Disability Impacts All of Us



Source: https://www.cdc.gov/disability-and-health/articles-documents/disability-impacts-all-of-us-infographic.html

Challenge – Childhood and Adolescent Cancer

Information on childhood cancer (ages 0-19 years) in North Carolina is limited. Understanding its prevalence, treatment, and outcomes is important for improving care and support for patients and families. Ongoing research is crucial for understanding the causes of childhood cancers, improving treatment protocols, and finding cures. The five most common types of cancer in children are:

- Leukemia: This is the most common childhood cancer, particularly acute lymphoblastic leukemia.
- Brain and Central Nervous System (CNS) Tumors: These are the second most common type of childhood cancer.
- Neuroblastoma: This affects nerve tissue and is most common in infants and young children.
- Wilms Tumor: A kidney cancer that typically occurs in children.
- Lymphomas: This includes both Hodgkin and non-Hodgkin lymphoma.[8]

Challenge – Early Onset Cancers in Young Adults

The rate of cancer among people ages 18 to 49 has climbed by almost 80% since the 1990s. The factors contributing to this change are poorly understood and are not explained by elevated screening rates. The significant rise in cancer incidence in young adults is unlikely to have a simple explanation. For example, researchers have linked certain genetic conditions, dietary habits, and obesity to colorectal cancer, but these risk factors do not fully explain the sharp rise in this cancer among young adults.[9] To learn more about risk factors in this age group, researchers are also investigating the role of accelerated aging processes, pollution, and even microbes that live in the gut. Other studies seek to understand the higher rates of death from early-onset colorectal cancer.[10]

Challenge – Clinical Trial Expansion

Oncology clinical trials had grown until 2019 when the COVID-19 pandemic led to a marked reduction in trials. A study reported in the Journal of Clinical Oncology reported a general trend of decreasing clinical trials in 2022 compared to 2021. This means that oncology clinical trials have not resumed pre-pandemic growth.[11] Expansion of clinical trials is essential for advancing medical research, improving patient care, and enhancing the development of new therapeutics. Expansion of clinical trials allows for the inclusion of a more diverse patient population in age, gender, race/ethnicity, and comorbid conditions. For current information on NCI supported clinical trials click Find NCI-Supported Clinical Trials - NCI.

Challenge – Natural Disasters

In North Carolina, cancer patients have faced unique challenges related to natural disasters like hurricanes, fires, and floods. Some of the challenges include:

- disrupted access to cancer screening and cancer treatment appointments especially regularly scheduled treatments such as chemotherapy or radiation therapy. For cancer patients, especially those undergoing aggressive treatment, even short delays can have significant consequences for their health,
- interrupted supply of special equipment like oxygen and inability to use that equipment,
- disruptions in patient-support supplies like restricted access to essential medications, including those over-the-counter drugs that manage side effects,
- limited ability of caregivers to reach or to care for patients,

- difficulty in finding appropriate accommodation, whether from evacuation or forced relocation due to damage to their living accommodations, and
- damage to health care facilities.

Hospitals, health care systems, and other facilities must create and implement disaster preparedness plans that account for the needs of cancer patients. This includes ensuring that records are accessible, treatments are continued or appointments rescheduled, and resources for psychological support are available.

Challenge – Health Care Workforce Shortage

According to a 2024 survey by the NC Center on the Workforce for Health, over 16% of the registered nurses and certified nurse assistant nurse positions were vacant in North Carolina. About 14% of the medical assistants' positions and 24% of the licensed practical nurses' positions were vacant statewide. The survey also considered turnover rates. Both open positions and turnover rates vary geographically with the highest rates in the mountain and southern areas of the state.[12]

Health care worker shortage can significantly impact cancer care, and these effects have been seen in cancer prevention, screening, diagnosis, treatment, and survivorship. Staffing shortages can delay getting appointments and cancer diagnosis and can increase waiting times for treatments like chemotherapy, radiation therapy, and surgeries. Delays can result in loss of quality and coordination of care. Staff shortages can increase treatment errors, medication mismanagement, and fragmented patient monitoring and care. Rural areas often face shortages of health care workers with patients having to travel long distances to receive necessary cancer care, which can discourage them from seeking timely treatment.

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Selected Cancers

Cancer is the second leading cause of death in North Carolina. The selected cancers were chosen because of the opportunity for prevention and early detection. They include the four leading causes of cancer deaths in North Carolina (lung, female breast, prostate, and colorectal). HPV-related cancers, including cervical and oral cancer, is included because they 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 and avoiding tanning beds.

Modifiable risk factors (obesity, physical inactivity, smoking tobacco, alcohol use, UV ray exposure, and environmental toxin exposure) can be reduced through lifestyle changes as illustrated in blue on Figure 5.[1,2] Professional health care interventions can help a person reduce these risks. According to the CDC over 40% of US adults are obese, with 10% of adults considered severely obese. The proportions of adults 18 years of age or older with obesity or severe obesity differ by ethnic and racial groups. CDC data from 2020 shows the following obesity rates: Non-Hispanic Black, 41.6%; American Indian/Alaska Native, 38.8%; Hawaiian/Pacific Islander, 38.5%; Hispanic, 36.6%; Non-Hispanic White, 30.7% and Asian, 11.8%.[3]

Figure 5. Modifiable and Non-Modifiable Risk Factors by Selected Cancers

	Lung	Breast	Prostate	Colorectal	HPV RELATED		Skin
					Cervical	Oral	
Deaths (Rate per 100,000 population)	25,146 deaths (36.8 Rate)	6,991 deaths (2.2 Rate)	5,326 deaths (20.2 Rate)	8,225 deaths (12.8 Rate)	621 deaths (1.9 Rate)	NA	1,425 melanoma deaths (2.2 Rate)
Alcohol Use							
Environmental Toxins							
Obesity							
Secondhand Smoke							
Physical Inactivity							
Smoking Tobacco							
Ultraviolet Exposure							
Viruses							
Non-Modifiable Risk Factors							
Age							
Family History							

Smoking rates have dropped in recent years but 13.2% of North Carolina adults still say they are current smokers.[4] North Carolina historically has had higher smoking rates compared to the national average of 11.6%.[5] Youth smoking is also down, but a significant proportion of high school students in North Carolina report using e-cigarettes and vaping products. Some see these as an alternative to cigarette smoking. E-cigarettes and vaping products contain highly addictive nicotine and an array of cancer-causing chemicals. Scientists are still learning about the immediate and long-term health effects of using e-cigarettes.[6]

Alcohol use has remained steady in North Carolina, with roughly 48.4% of North Carolinians reporting that they drink alcohol. Among those who drink, nearly 1 in 4 binge drink and 1 in 10 drink heavily.[7] Alcohol is also included with tobacco, asbestos, and radiation as a Group 1 carcinogen, which is the highest group of cancer-causing agents. Drinking any type of alcohol, in any amount, including red and white wine, beer, and liquor increases the risk of cancer. The more alcohol consumed, the higher the risk of cancer becomes.[8]

Each cancer section looks at risk factors, prevention, early detection, treatment, and strategic actions needed to reduce mortality and incidence rates. The risk of cancer varies by type of cancer and a person's age, gender, and race/ethnicity.

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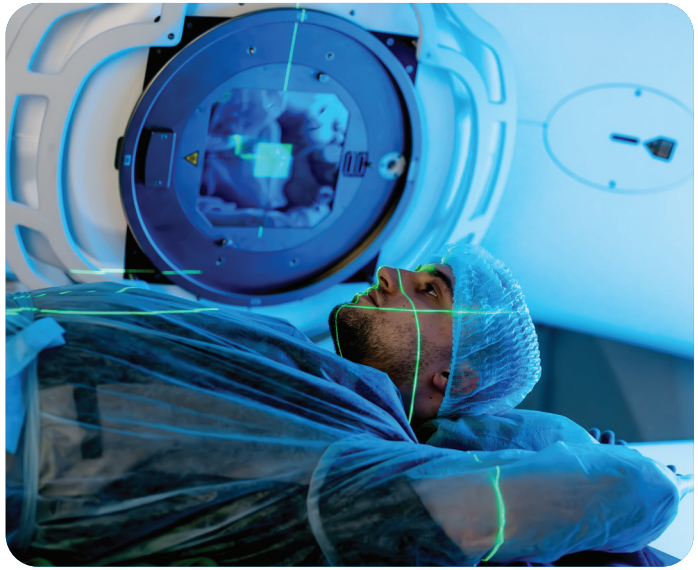


Lung Cancer

Lung cancer continues to be the leading cause of cancer deaths in North Carolina.[1] The North Carolina State Center for Health Statistics, Central Cancer Registry estimates that 9,511 people will be diagnosed with lung cancer and 5,620 people will die from lung cancer in 2025.[2]

Lung cancer is one of the few cancers in North Carolina where African Americans fare slightly better than whites. The preliminary lung cancer incidence rate for African Americans was 58.5 per 100,000 population while the rate for whites was 60.9 per 100,000 population from 2019-2023.[3] In the same period, the mortality rate for African Americans was 37.5 per 100,000 population while the rate for whites was 38.0 per 100,000. Hispanics, with a lung cancer mortality rate of 12.7 per 100,000 population, fare far better than other North Carolina racial/ethnic groups.[1]

The decline in overall lung cancer mortality rate in recent years is attributed to reductions in smoking prevalence and advancements in screening and treatment. According to the United States Centers for Disease Control and Prevention (CDC), 80% to 90% of lung cancer cases are attributable to smoking with radon being the leading cause of lung cancer deaths among people who do not smoke.[4]

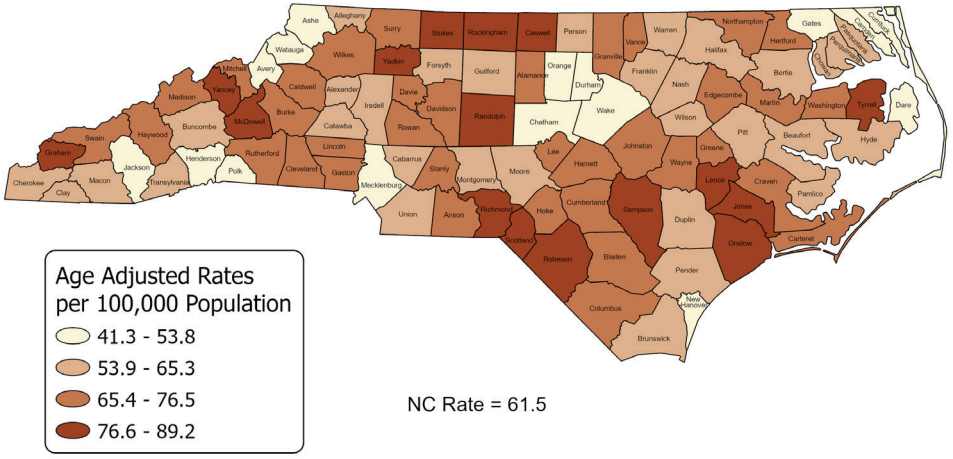
- The 2023 Behavioral Risk Factor Surveillance System (BRFSS) reported that 24.2% of North Carolinians surveyed reported they now smoke cigarettes every day, 11.4% said that they smoke some days, and 64.4% reported that they did not smoke at all.[5]
- North Carolinians over the age of 65 have the highest rates for lung cancer in terms of both lung cancer incidence (325.8 per 100,000) and mortality (204.6 per 100,000).
- American Indians have the highest lung cancer incidence (75.1 per 100,000) and mortality rates (48.0 per 100,000) of any racial/ethnic group in North Carolina.[3] Many American Indians are heavy users of commercial tobacco which increases their risk for cancer.

Maps from the North Carolina State Center for Health Statistics show the differences in lung cancer incidence and mortality rates by county during the 2018-2022 period.[3,1] (Note: These maps are updated yearly.[6]) There are many reasons for the rate differences. People living in rural North Carolina counties face greater challenges for getting early diagnosis and care because there is a lack of access to health care – especially low-dose spiral computed tomography (LDCT) screening and lack of transportation to screening facilities. In addition, they may not have health insurance because they are unemployed or underemployed. In 2020 North Carolina had the second largest rural population in the nation with one in every three people living in a rural area.[7] The U.S. Census Bureau defines rural as an area with under 5,000 population or less than 2,000 households.[8]

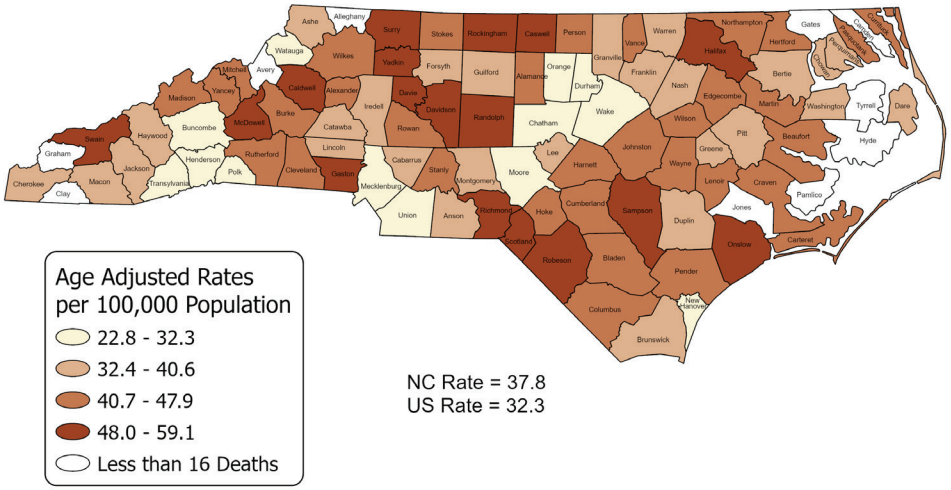
Lung Cancer Call to Action

- Reduce tobacco use.
- Promote low dose computed tomography screening according to recommendations. (Appendix F)
- Support state and local policies that reduce occupational and environmental exposures to tobacco use, radon, and chemicals 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.
- Encourage the building of radon-resistant new construction and radon testing of all buildings.

North Carolina Lung and Bronchus Cancer Incidence Rates 2018-2022



North Carolina Lung and Bronchus Cancer Mortality Rates 2018-2022



Men in North Carolina have higher lung cancer incidence and mortality rates than women as shown in Table 4. They tend to have higher rates of cigarette smoking, heavier alcohol use, and are often employed in occupations that increase cancer risk.[9, 10]

Table 4. NC Lung Cancer Projected New Cancer Cases and Deaths 2025

MALE		FEMALE	
New Cases	Deaths	New Cases	Deaths
4,926	3,047	4,585	2,573

One population that is often overlooked is the Sexual and Gender Minority population (SGM). Data on this population is limited but it appears that the SGM population experiences a high incidence of lung cancer and later-stage diagnosis. An estimated 16% of the SGM population currently smoke cigarettes, compared to 12% of the heterosexual population. Transgender women are more likely than cisgender women to smoke cigarettes. Transgender people are especially likely to be diagnosed with lung cancer at a later stage because of a unique mixture of socio-economic factors and behaviors combined with health care system barriers that lead to higher cancer incidence and later stage diagnosis.[11]

Risk Factors

Cigarette smoking is the number one risk factor for lung cancer; it is the cause of 80% to 90% of lung cancer cases. Even smoking a few cigarettes a day or smoking occasionally increases the risk of lung cancer. Using other tobacco products such as cigars or pipes also increases the risk of lung cancer.

While cigarette smoking remains the leading cause of lung cancer, research shows that various environmental exposures are increasingly contributing to lung cancer incidence. One environmental exposure that most everyone encounters is secondhand smoke. This is smoke from burning tobacco products and the smoke exhaled by people who smoke. Secondhand smoke can be found in homes, cars, and work and public places such as restaurants, shopping centers, public transportation, and parks. Multi-unit housing where smoking is allowed is a special concern because tobacco smoke can move through air ducts, wall and floor cracks, elevator shafts, and along crawl spaces to contaminate units on other floors. There is no safe level of exposure to secondhand smoke, and even brief exposure can cause serious health problems.[4]

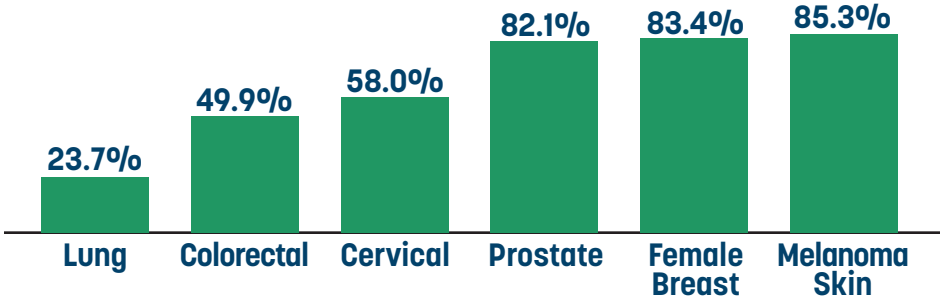
Vaping, which involves inhaling aerosolized liquid from electronic cigarettes (e-cigarettes) or similar devices, has been a subject of much debate and research concerning its relationship to lung cancer. It has gained significant popularity, particularly among younger populations, as an alternative to traditional cigarette smoking. However, the relationship between vaping and lung cancer is a growing area of concern, given the potential health risks associated with e-cigarette use and the composition of vaping products. E-cigarettes typically contain a liquid that includes nicotine, flavorings, and various chemical compounds, many of which are not fully understood in terms of their long-term health effects. Some e-liquids also contain substances which are known carcinogens. The potential link between vaping and lung cancer continues to be researched.[12]

Prevention and Early Detection

The single most important step in lung cancer prevention is to quit smoking or never start as this significantly reduces the risk of developing lung cancer over time. Smoking also increases the risk of many second cancers even when the first cancer was not smoking related.[13] There are various cessation efforts, like QuitlineNC.com, nicotine replacement therapies, other pharmacotherapy, counseling, and support groups, available to help people who smoke quit smoking. Policies that limit the availability and accessibility of tobacco (e.g., control of tobacco sales, increasing tobacco taxes, smoke-free private and public spaces) can help keep people from starting smoking and helping adults quit.

Reducing environmental exposures involves widespread monitoring of air quality, testing/mitigating radon, enforcing occupational safety regulations, and promoting policies to reduce emissions from vehicles and industries. Radon, a naturally occurring radioactive gas, has been found elevated in some homes in 77 of the 100 North Carolina counties; radon is the leading cause of lung cancer deaths among people who do not smoke. Reducing exposure to radon in homes, schools, and workplaces is important. Radon comes into a home through cracks and holes in the foundation and becomes trapped in the house. Radon can also enter the home from underground well water. All homes, as well as ground or well water used in the home, should be tested for radon levels. Test kits can be ordered through the North Carolina Radon Program in the North Carolina Department of Health and Human Services.[14] If high radon levels are found, the home should be mitigated by nationally certified radon measurement and mitigation professionals.[15] The risk for lung cancer increases for individuals with radon in the home who are smokers and/or who are exposed to secondhand smoke. Public places should be tested for radon levels and mitigated, if radon is above the recommended levels. For individuals working in industries with potential carcinogenic exposure (e.g., construction, mining, or chemical manufacturing), wearing protective equipment and following safety protocols can reduce the risk of lung cancer. Nonwhite and low-income populations tend to have a disproportionate exposure to toxic chemicals because of where they live and work.

Figure 6. NC Cumulative Observed Survival Rate by Cancer 2018-2022



Detecting lung cancer early when prognosis is more favorable is correlated with survival. This emphasizes the importance of screening to identify cancer early when treatment may be more successful and less expensive. Lung cancer screening tests are available using LDCT (low-dose spiral computed tomography. Figure 6 shows the cumulative observed survival rates of the selected cancers. Lung cancer has the lowest cumulative observed survival rate (23.7%) of any of the North Carolina selected cancers. This points to the need for early detection of lung cancer when the cancer can be treated more successfully. The cumulative observed survival rate is the percentage of patients who would be expected to be alive five years after being diagnosed with cancer.[16] Most organizations recommend yearly lung cancer screening using low-dose CT scans for high risk individuals. See Appendix F for recommended screening guidelines.

Treatment and Survivorship

Lung cancer treatment varies based on several factors, including the type and stage of cancer, the patient's overall health, and individual preferences. The main types of lung cancer are non-small cell lung cancer (NSCLC) and small cell lung cancer (SCLC), each of which may require different treatment approaches. Treatment of lung cancer is highly individualized and often involves a multidisciplinary team approach, including oncologists, surgeons, radiologists, and supportive care specialists. Biomarkers, molecular, or genomic testing may be used to identify abnormalities in the tumor's DNA and levels of specific proteins in the tumor. This may allow the patient to have targeted therapy that can slow tumor growth or shrink the tumor.[17] Treatment options include surgery, radiation therapy, chemotherapy, targeted therapies, and immunotherapy.

Survival rates for lung cancer have been gradually improving due to advances in detection and treatment. The overall five-year survival rate for lung cancer varies significantly based on factors such as stage at diagnosis, type of lung cancer (non-small cell vs. small cell), and the treatments received. Navigating cancer treatment and survivorship can be complex and challenging. Building a strong support network, maintaining open communication with health care providers, and prioritizing mental and physical health are key components of a successful survivorship. This may involve:

- follow-up appointments to monitor recurrences and manage long term side effects of treatment,
- lifestyle changes like pulmonary rehabilitation, diet, weight and physical activity management, and smoking cessation for those who smoked prior to their diagnosis, and avoiding alcohol, and
- emotional support for anxiety, depression, and/or fear of recurrence.

Every individual's experience with cancer is unique, and personalized guidance can help survivors reclaim their health and well-being as they move forward in their lives.

Lung Cancer Objective: Reduce lung cancer incidence and mortality rates in North Carolina.

Lung Cancer Incidence Rate[3]	Baseline 2019-2023:	58.6/100,000	Lung Cancer Mortality Rate[1]	Baseline 2019-2023:	36.8/100,000
	NC Cancer Plan 2030 Target:	47.5/100,000		NC Cancer Plan 2030 Target:	28.3/100,000

POLICY, SYSTEMS, AND ENVIRONMENTAL CHANGES

- Encourage governments, businesses, schools, community colleges, and universities to adopt smoke-free policies and/or update their tobacco policies to include new tobacco products like e-cigarettes.
- Encourage governments, businesses, schools, community colleges, and universities to adopt policies that limit the availability and accessibility of tobacco (e.g. control of tobacco sales, increasing tobacco taxes).
- Encourage businesses, governments, and organizations to adopt policies that provide full coverage for health insurance and paid time off for health/cancer and screenings.
- Encourage businesses, governments, and organizations to adopt policies that promote QuitlineNC services to workers who smoke.
- Develop an agreement with NC State Extension that they will include programs about lung cancer risks and the benefits of lung cancer screening in their educational programs, as appropriate.
- Encourage local building supply stores to adopt policies/practices to ensure that radon test kits are in the store along with advertisements about the availability of the kits and mitigation information.
- Work with local builders and real estate companies to adopt policies to build only radon-free buildings and homes.
- Encourage businesses, governments, and organizations to adopt policies that support lung cancer screening and follow-up tests for high-risk populations like African American and SGM populations.

POPULATIONS AT HIGH RISK

- Develop partnerships with local health departments, Federally Qualified Health Centers (FQHCs), and other health care organizations to increase lung cancer screening rates and to offer lung cancer screening in mobile units.
- Reach out to high-risk populations with the highest distant stage lung cancer diagnosis, incidence, and mortality rates with messages about eliminating/reducing tobacco use, exposure to secondhand smoke, and radon.
- Explore opportunities for addressing transportation barriers (e.g., mobile units, gas cards, travel vouchers, etc.).

COMMUNICATION/EDUCATION

- Partner with public/private organizations to support/develop education programs about the importance of lung cancer screening for previous or current cigarette smokers including smoking cessation services or classes with emphasis on African American and SGM populations.
- Encourage community partners to plan and implement lung cancer education/screening programs including healthy living lifestyle information.
- Work with local builders and real estate companies to test homes, schools, and buildings for radon and mitigate, if needed.

HEALTH CARE PROFESSIONALS

- Train providers on how to use shared decision making to discuss lung cancer screening guidelines using low-dose computer tomography (low-dose CT scan) including assessing their screening eligibility, referrals, and screening follow-up.
- Send patient reminders cards/messaging to patients who should get a regular low-dose CT scan.
- Use linguistically and culturally appropriate health education materials to reach populations at higher risk for lung cancer.
- Encourage providers to use lay health advisors, native language speakers, or telehealth to provide education about risk factors and preventive health behaviors.

TREATMENT AND SURVIVORSHIP

- Team up with local health departments, hospitals, cancer centers, and Federally Qualified Health Centers to offer cancer survivorship educational forums for survivors and caregivers.
- Partner with other cancer partners to develop a resource listing of services and sources of supplies for cancer survivors and their caregivers. Make this available at local health departments, hospitals, cancer centers, and Federally Qualified Health Centers.

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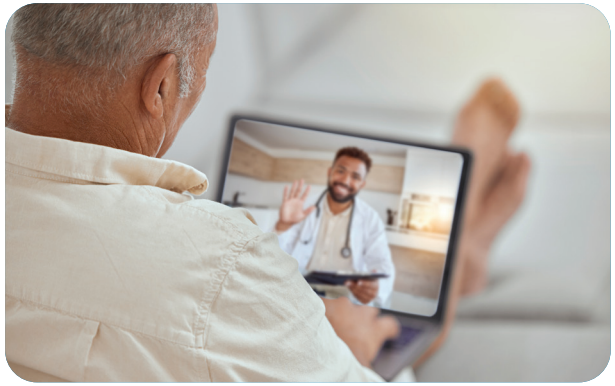


Female Breast Cancer

Female breast cancer has the second highest mortality rate for cancers among women.[1] The North Carolina State Center for Health Statistics, Central Cancer Registry estimates that 13,207 women will be diagnosed with breast cancer and 1,567 women will die from breast cancer in 2025.[2] Breast cancer incidence and mortality rates increase as women age. While breast cancer occurs mostly in women, men can develop it. They should be seen by a health care professional if there is any indication of a problem like a lump over the breast or a retraction of the nipple.

A recent report by the American Cancer Society found female breast cancer incidence rates have continue to increase. While most breast cancers are found in women who are 50 years of age or older, this report showed that female breast cancer incidence is rising in women under 50.

- About 10% of all new cases of female breast cancer in the United States are found in women younger than 45 years of age.
- Asian women had the fastest increase in breast cancer incidence for both age groups while this group previously had a low female breast cancer incidence rate.
- The female breast cancer mortality rate is declining but there continues to be wide racial/ethnic disparities. This decline in mortality rates is attributed to early detection and treatment advances.[3]

North Carolina female breast cancer mortality rates for African American women (27.0 per 100,000 population) are higher than white women (18.6 per 100,000 population) as shown in Table 5.[1] The higher mortality rate for African American women is consistent with research describing a more advanced cancer stage at diagnosis, lower treatment adherence, limited access to high-quality care, and a higher risk of developing the most aggressive subtypes of breast cancer. Lack of employment or under employment, lack of or inadequate health insurance, transportation availability and costs, and available child care reduce access to early detection and treatments. These factors contribute to higher breast cancer mortality rates in both African American and American Indian women.

The Sexual and Gender Minority populations (SGM) face a disproportionate burden of breast cancer with both a higher incidence of female (assigned at birth) breast cancer and later-stage diagnosis. Lesbian and bisexual women have an increased risk for breast cancer, and transgender people are less likely to be offered screening tests appropriate to their organs.[4] One survey of medical students found that 95% were comfortable caring for lesbian, gay, or bisexual patients but only 70% were comfortable caring for transgender patients. Only 1 in 4 were confident regarding the health needs of transgender patients.[5]

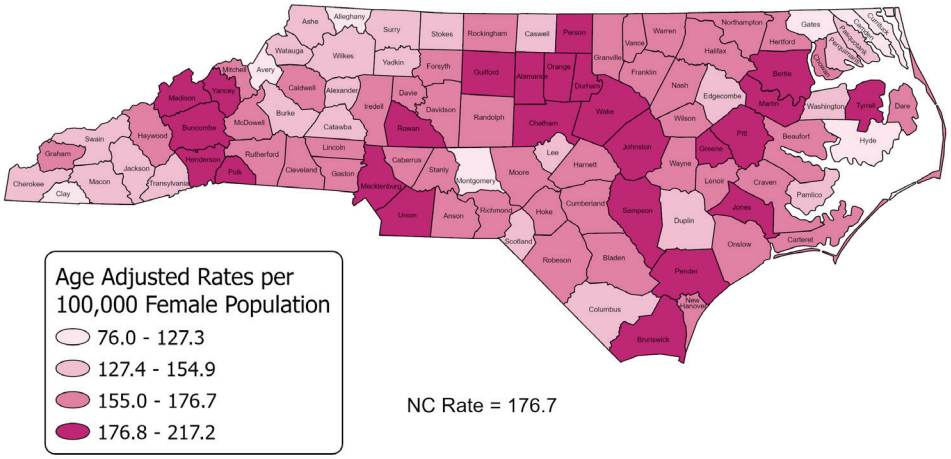
Breast Cancer Call to Action

- Promote awareness of breast cancer screening methods and recommendations, with emphasis on younger women. (Appendix F)
- Improve access and adherence to high quality breast cancer treatment.
- Identify population groups who experience high breast cancer mortality rates and implement evidence-based outreach strategies to get individuals into screening opportunities.
- Partner with the NC Breast and Cervical Cancer Control Program (NC BCCCP) and NC WISEWOMAN Program to assure that eligible patients get appropriate screening and diagnostic services through public awareness of the program.
- Educate policymakers about the need for increased funding for programs and coalitions to support additional breast cancer screening opportunities, especially in areas identified as experiencing high breast cancer mortality rates.

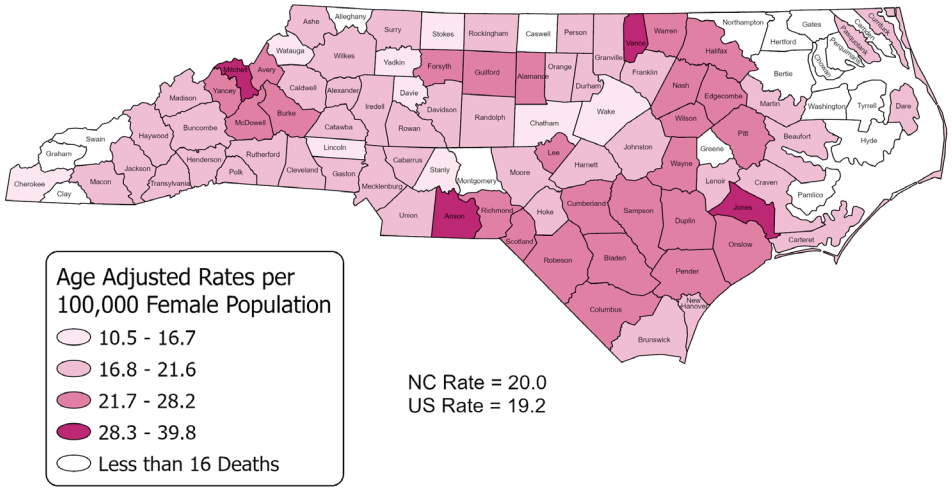
Table 5. NC Female Breast Cancer Preliminary Incidence & Mortality Cancer Rates by Race/Ethnicity per 100,000 Population 2019-2023

ALL RACES/ETHNICITIES		WHITES		AFRICAN AMERICANS		AMERICAN INDIANS		ASIANS		HISPANICS	
Preliminary Incidence	Mortality	Preliminary Incidence	Mortality	Preliminary Incidence	Mortality	Preliminary Incidence	Mortality	Preliminary Incidence	Mortality	Preliminary Incidence	Mortality
174.6	19.9	176.9	18.6	180.0	27.0	132.6	18.0	129.6	8.2	133.1	10.1

North Carolina Female Breast Cancer Incidence Rates 2018-2022



North Carolina Female Breast Cancer Mortality Rates 2018-2022



Maps from the North Carolina State Center for Health Statistics comparing incidence and mortality data from 2018-2022 show the differences in female breast cancer incidence and mortality rates by county.[6,1] (Note: These maps are updated yearly.[7]) Women in rural North Carolina counties may not have child care for their appointment and/or may not be able to afford the cost to travel long distances to get screened and receive treatment. They may be unemployed or underemployed with no health insurance coverage. The NC Breast and Cervical Cancer Control Program helps reduce some barriers by providing free or low-cost screenings for eligible low-income individuals. The U.S. Census Bureau defines rural as an area with under 5,000 population or less than 2,000 households.[8]

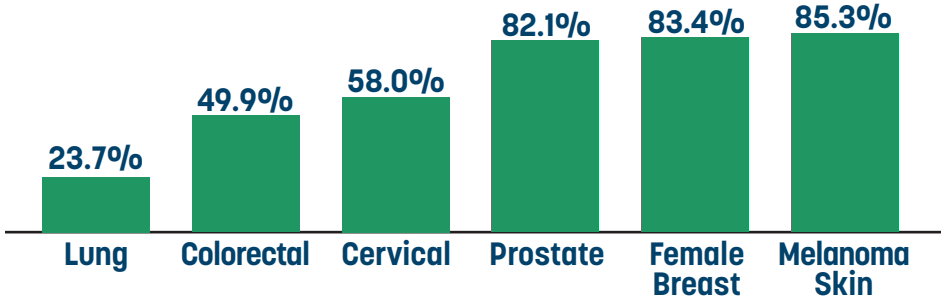
Risk Factors

Being female is the strongest risk factor for female breast cancer. About 5% to 10% of breast cancer is hereditary, usually from changes in the BRCA1 and BRCA2 genes.[9] Other non-modifiable risk factors are increasing age, a family history of female breast cancer, early puberty, and late menopause. Obesity, smoking, and alcohol use are considered modifiable risks since an individual can make lifestyle changes to reduce the risk of cancer.

Prevention and Early Detection

Women can reduce their risk of breast cancer by maintaining a healthy weight, exercising regularly, eating a healthy diet, avoiding or limiting alcohol, and avoiding smoking. Genetic counseling can help a person understand the risk and determine how to prevent or detect cancer early. Depending on the results, the health care provider may suggest chemoprevention and/or preventive surgery to reduce the risk. In chemoprevention, estrogen-blocking medications are given to reduce cancer risk. Preventive surgery, where healthy breasts are surgically removed, is another option. Some women at very high risk choose to have both their healthy breasts and ovaries removed to reduce the risk of both breast and ovarian cancer.

Figure 7. NC Cumulative Observed Survival Rate by Cancer 2018-2022



Detecting breast cancer early is an effective way to reduce breast cancer mortality rates. Early detection of cancer when prognosis is more favorable is correlated with survival and emphasizes the importance of screening to identify cancer early when treatment may be more successful and less expensive. Figure 7 shows the cumulative observed survival rates of the selected cancers, which is the percentage of patients who would be expected to be alive five years after being diagnosed. The survival rate for female breast cancer is 83.4%.[10] African Americans and Hispanics often have later-stage diagnoses, and poorer survival rates compared to whites. This may be due to lack of employment or under employment, lack of or inadequate health insurance, lack of access to quality health care, limited education, and other factors.

Mammograms are the most effective method to detect breast cancer early before it causes symptoms. According to the 2022 Behavioral Risk Factor Surveillance System (BRFSS), 73.3 % of North Carolina women age 40+ reported "having a mammogram within the past 2 years."[11] Accessibility to mammogram screening services can be difficult for underserved and/or rural populations. The NC Breast and Cervical Cancer Control Program helps reduce barriers by providing free or low-cost breast cancer screenings for eligible low-income women.[12] See Appendix F for recommended screening guidelines.

Treatment and Survivorship

Treatment is usually most successful when cancer is detected early. Breast cancer treatments may involve surgery, radiation therapy, chemotherapy, aromatase inhibitors, and other therapies. The type, grade and size of breast cancer may require different treatment approaches. Breast cancer treatment often involves a multidisciplinary team approach, including oncologists, surgeons, radiologists, and supportive care specialists.

Navigating cancer treatment and survivorship can be complex and challenging. Building a strong support network, maintaining open communication with health care providers, and prioritizing mental and physical health are key components of a successful survivorship. These may involve:

- follow-up appointments to monitor recurrences and manage long term side effects of treatment,
- lifestyle changes like adopting a healthy diet, maintaining a healthy weight, increasing physical activity, stopping smoking, and avoiding alcohol, and
- emotional support for anxiety, depression, or fear of recurrence.

Every individual's experience with cancer is unique, and personalized guidance can help survivors reclaim their health and well-being as they move forward in their lives.

Female Breast Cancer Objective: Reduce female breast cancer incidence and mortality rates in North Carolina.

Female Breast Cancer Incidence Rate[3]	**Baseline 2019-2023:**	**174.6/100,000**	**Female Breast Cancer Mortality Rate[1]**	**Baseline 2019-2023:**	**19.9/100,000**
	NC Cancer Plan 2030 Target:	**174.6/100,000***		**NC Cancer Plan 2030 Target:**	**18.3/100,000**

**Trend analysis for female breast cancer incidence rates results in an incidence rate greater than the baseline. The 2030 Target female breast cancer rate is set to not exceed the baseline of 174.6/100,000. Breast cancer incidence rates have been increasing nationally across all racial and ethnic groups. The trend of increasing incidence rates primarily is seen in younger women (ages 20-50).*

POLICY, SYSTEMS, AND ENVIRONMENTAL CHANGES

- Develop formal partnerships with local health departments and other organizations to include NC Breast and Cervical Cancer Control Programs (NC BCCCP) and NC WISEWOMAN Program services.
- Encourage governments, businesses, schools, community colleges, and universities to adopt tobacco free policies and/or update their tobacco policies to include new tobacco products.
- Encourage governments, businesses, schools, community colleges, and universities to adopt policies that limit the availability and accessibility of alcohol (e.g., control of alcohol sales, increasing alcohol taxes).
- Encourage businesses, governments, and organizations to adopt policies that provide full coverage for health insurance and paid time off for health/cancer screenings.
- Develop an agreement with NC State Extension that they will include programs about breast cancer risks and the benefits of breast cancer screening in their educational programs, as appropriate.

POPULATIONS AT HIGH RISK

- Encourage businesses, governments, and organizations to adopt policies that support breast cancer screening services to high-risk populations based on their cancer incidence and mortality rates.
- Develop partnerships with local health departments, Federally Qualified Health Centers (FQHCs), and other health care organizations to increase breast cancer screening rates and to offer breast cancer screening in mobile units.
- Explore opportunities for addressing transportation barriers (e.g., mobile units, gas cards, travel vouchers, etc.).

COMMUNICATION/EDUCATION

- Encourage businesses, governments, and organizations to offer programs on healthy lifestyles and on-time screening, especially with high-risk populations like the African Americans, American Indians, SGM populations, and those with mutations and high-risk assessment scores.
- Encourage businesses, governments, and organizations to offer education on modifiable risk factors, such as alcohol and tobacco use, obesity and physical inactivity.
- Partner with public/private organizations to support/develop and implement female breast cancer education/screening programs with emphasis on previous or current smokers.
- Develop an agreement with NC State Extension that they will include programs about breast cancer risks and the benefits of breast cancer screening in their educational programs, as appropriate.

HEALTH CARE PROFESSIONALS

- Educate patients about the link between breast cancer and modifiable risk factors (e.g., alcohol, obesity, and physical inactivity).
- Provide and/or refer to on-time mammogram screening and follow-up.
- Send reminder cards/messaging to patients who should get mammograms.
- Increase alcohol screening and provide treatment referral.
- Partner with NC BCCCP to offer/expand NC BCCCP services in the community.
- Encourage providers to use lay health advisors, native language speakers, or telehealth to provide breast health information using linguistically and culturally appropriate health education materials.
- Train health care professionals on how to communicate most effectively with SGM patients.

TREATMENT AND SURVIVORSHIP

- Team up with local health departments, hospitals, cancer centers, and Federally Qualified Health Centers to offer breast cancer survivorship educational forums for survivors and caregivers.
- Partner with other cancer partners to develop a resource listing of services and sources of supplies for breast cancer survivors and their caregivers. Make this available at local health departments, hospitals, cancer centers, and Federally Qualified Health Centers.

FEMALE BREAST CANCER REFERENCES

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12 NC Department of Health and Human Services. *Breast and Cervical Cancer Control Program*. https://bcccp.dph.ncdhhs.gov/

13 SEER*Explorer: An interactive website for SEER cancer statistics [Internet]. Surveillance Research Program, National Cancer Institute; SEER Incidence Data, November 2024 Submission (1975-2022), SEER 21 registries 2025 Jul 2. [cited 2025 Aug 19]. https://seer.cancer.gov/statistics-network/explorer/

Prostate Cancer

Prostate cancer is the second leading cause of cancer deaths in North Carolina men and is the most frequently diagnosed cancer in men.[1] The North Carolina State Center for Health Statistics, Central Cancer Registry estimates that 9,566 men will be diagnosed with prostate cancer and 1,202 men will die from prostate cancer in 2025.[2] Prostate cancer incidence and mortality rates increase as men age. Men have a greater chance of getting prostate cancer than dying from it because diagnosis often occurs when men are older, and the cancer is slow growing.

Table 6 shows that African American men had the highest incidence rates of prostate cancer during the 2019-2023 period (200.7/100,000 population) compared to men in other racial and ethnic groups. The rate for white men was 112.9 per 100,00 population while the rates for other groups were American Indian men 111.9 per 100,00 population, Hispanic men 82.2 per 100,000 population, and Asian men 61.7 per 100,000 population.[3] In the 2019-2023 period, African American men also had the highest mortality rate (39.5 per 100,000 population) followed by American Indian men (20.2 per 100,000) and white men (17.2 per 100,000 population). Hispanic men (12.0 per 100,000 population) were followed by Asian men (8.4 per 100,000 population).[1]

The Sexual Gender Minority (SGM) populations face a disproportionate burden of prostate cancer with both higher incidence and later-stage diagnosis rates. Transgender people are less likely to be offered screening tests appropriate to their organs.

Table 6. NC Prostate Cancer Preliminary Incidence & Mortality Cancer Rates by Race/Ethnicity per 100,000 Population, 2019-2023

ALL RACES/ETHNICITIES		WHITES		AFRICAN AMERICANS	
Preliminary Incidence	Mortality	Preliminary Incidence	Mortality	Preliminary Incidence	Mortality
128.2	20.2	112.9	17.2	200.7	39.5

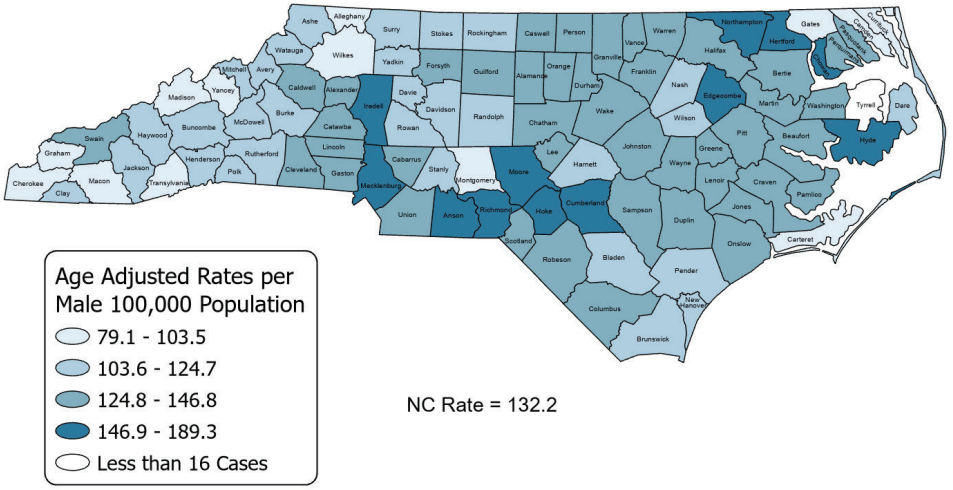
AMERICAN INDIANS		ASIANS		HISPANICS	
Preliminary Incidence	Mortality	Preliminary Incidence	Mortality	Preliminary Incidence	Mortality
111.9	20.2	61.7	8.4	82.2	12.0

Prostate Cancer Call to Action

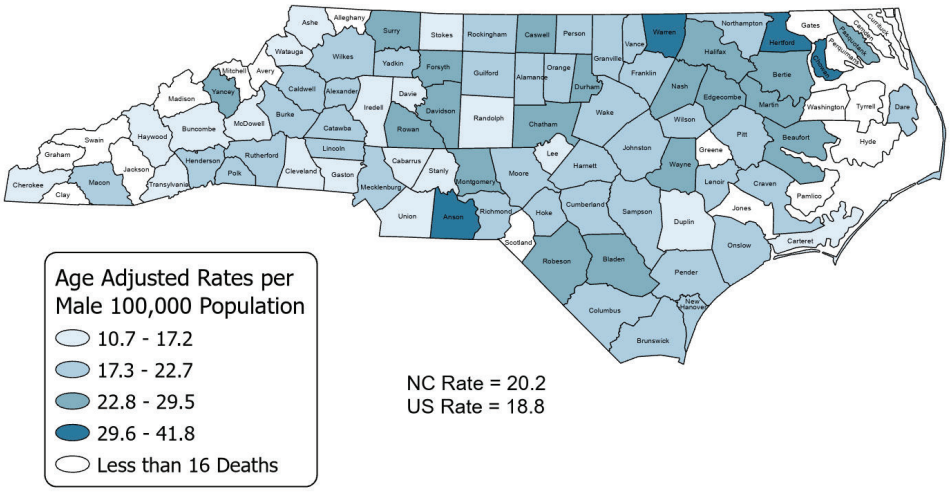
- Promote awareness of screening methods and recommendations for men who meet specific age criteria. (Appendix F)
- Conduct targeted outreach using evidence-based strategies to decrease disparities in prostate cancer mortality for population groups who experience high mortality rates from prostate cancer.
- Educate providers in high prostate cancer incidence areas about how to discuss the advantages and disadvantages of PSA tests and prostate treatments.

The differences in prostate cancer incidence and mortality rates by county are shown in the maps which compare incidence and mortality rates from 2018-2022.[1, 2] (Note: These maps are updated yearly.[4]) There are many reasons for differences in both incidence and mortality rates in a county. Residents in rural North Carolina counties may lack employment opportunities leading to a lack of health insurance coverage, have long distances to travel to get health care which is a burden because of both time and costs. They may miss time at work to travel and receive services, which may mean time off without pay. The U.S. Census Bureau defines rural as an area with under 5,000 population or less than 2,000 households.[5]

North Carolina Prostate Cancer Incidence Rates 2018-2022



North Carolina Prostate Cancer Mortality Rates 2018-2022



Prostate cancer screening guidelines were changed by the United States Preventive Services Taskforce to encourage less prostate-specific antigen (PSA) blood testing in 2012. After this change, United States screening rates declined 23.4%, biopsy rates declined 64.3%, and incidence rates declined 53.5%. Nationally, this resulted in 1,871 fewer cancers detected and an increase in the rate of late-stage cancers.[6] North Carolina prostate cancer incidence rates reflect the changes from the 2012 national screening guidelines: the number of cases diagnosed declined, and the number of late-stage cancers increased.

The 2020 Behavioral Risk Factor Surveillance System (BRFSS) reported that only 49.3% of the males age 40+ interviewed said that a doctor, nurse, or other health care professional had EVER talked with them about the advantages of the PSA test while 50.3 % stated that they had never had a PSA test.[7] Early detection of prostate cancer is important so that the cancer can be identified early and treated. If individuals do not have PSA screening tests, then they may have their cancer diagnosed when the cancer is at a later stage when treatment may not be as successful. Confusion over guidelines, lack of employment or under employment, inadequate access to health care and health insurance, and men's reluctance to seek health care contributed to the decline in incidence rates.

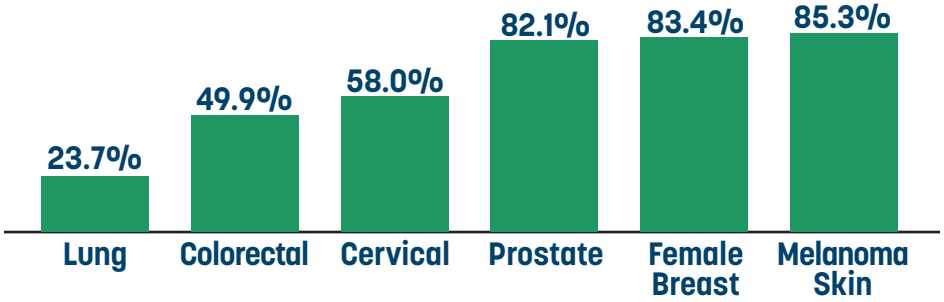
Risk Factors

The non-modifiable risk factors for prostate cancer include being male, increasing age, African American or American Indian ancestry, and a family history of prostate cancer. 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. 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.[2]

Prevention and Early Detection

Most screening guidelines recommend that men talk to their health care provider about the need for prostate screening. The recommended age when men should start this informed decision making varies among the organizations. See Appendix F for recommended screening guidelines. Figure 8 shows the cumulative observed prostate cancer survival rate during 2018-2022. The prostate cancer rate was 82.1%, which is the percentage of patients who would be expected to be alive five years after being diagnosed with early-stage prostate cancer.[8]

Figure 8. NC Cumulative Observed Survival Rate by Cancer 2018-2022



Treatment and Survivorship

Some forms of prostate cancer are slow growing and are often diagnosed in older men so they may not require treatment. For those who do need treatment, it may include surgery, radiation, chemotherapy, and/or hormone therapy. Navigating cancer treatment and survivorship can be complex and challenging. Building a strong support network, maintaining open communication with health care providers, and prioritizing mental and physical health are key components of a successful survivorship. These may involve:

- follow-up appointments to monitor recurrences and manage long term side effects of treatment, and
- emotional support for anxiety, depression, or fear of recurrence.

Every individual's experience with cancer is unique, and personalized guidance can help survivors reclaim their health and well-being as they move forward in their lives.

Prostate Cancer Objective: Reduce the prostate cancer incidence and mortality rates in North Carolina.

Prostate Cancer Incidence Rate[3]	**Baseline 2019-2023:**	**128.2/100,000**	**Prostate Cancer Mortality Rate[1]**	**Baseline 2019-2023:**	**20.2/100,000**
	NC Cancer Plan 2030 Target:	**128.2/100,000***		**NC Cancer Plan 2030 Target:**	**20.2/100,000**

***Trend analysis for prostate cancer incidence rates results in an incidence rate greater than the baseline rate. The 2030 Target for prostate cancer is set to not exceed the baseline of 128.2/100,000. Prostate cancer incidence rates have been increasing nationally by 3% each year since 2014.[9]*

POLICY, SYSTEMS, AND ENVIRONMENTAL CHANGES

- Encourage businesses, governments, and organizations to adopt policies that provide full coverage for health insurance and paid time off for health/cancer screenings and genetic counseling and testing.
- Encourage businesses, governments, organizations, schools, community colleges, and universities to adopt tobacco free policies and/or update their tobacco policies to include new tobacco products.
- Encourage governments, businesses, schools, community colleges, and universities to adopt policies that limit the availability and accessibility of alcohol.
- Encourage businesses, governments, and organizations to adopt policies that support prostate cancer screening for high-risk populations like African American and SGM populations and men who have a father, brother, or son that had prostate cancer.

POPULATIONS AT HIGH RISK

- Sponsor/support programs on the increased risk of prostate cancer among African American and SGM populations and men who have a father, brother or son that had prostate cancer and the importance of talking to their health care provider about prostate cancer screening.
- Work with partners to develop programs on obesity prevention and increased physical activity for counties with high African American populations.
- Encourage businesses, governments, and organizations to adopt policies that support prostate cancer screening for high-risk populations like African American and SGM populations.
- Focus prostate cancer early detection and educational efforts in the counties that have the highest African American population along with the highest prostate cancer incidence and mortality rates.
- Explore opportunities for addressing transportation barriers (e.g., mobile units, gas cards, travel vouchers, etc.).

COMMUNICATION/EDUCATION

- Support/conduct messaging campaigns to increase awareness of the importance of age-appropriate prostate cancer screening with emphasis on African American and SGM populations.
- Encourage community partners to plan and implement prostate cancer education/screening programs including healthy living lifestyle information.
- Encourage businesses, governments, and organizations to offer education on modifiable risk factors, such as alcohol and tobacco use.

HEALTH CARE PROFESSIONALS

- Encourage providers to incorporate prostate cancer screening in their colorectal cancer screening protocols for men.
- Increase utilization of informed decision-making tools to increase the number of patients with a prostate who decide with their health care provider on prostate cancer screening.
- Encourage providers to stratify their patients by their prostate cancer risk to increase the number of patients who are making informed decisions.
- Perform, refer and/or follow-up on prostate cancer screening.
- Increase alcohol screening and provide a brief intervention and referral to treatment as needed.
- Develop programs for health care professionals on health challenges facing high-risk patients and how to communicate effectively with them.
- Encourage providers to use lay health advisors, native language speakers, or telehealth to provide education about risk factors and preventive health behaviors.

PROSTATE CANCER REFERENCES

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Colorectal Cancer

Colorectal cancer was the fourth leading cause of cancer deaths in North Carolina in 2023 with a rate of 12.8 people per 100,000 population. It is second in the number of deaths after lung cancer.[1] Both colorectal cancer incidence and mortality rates are higher among men than women. The North Carolina State Center for Health Statistics, Central Cancer Registry estimates that 4,927 people will be diagnosed with colorectal cancer and 1,802 people will die from colorectal cancer in 2025.[2] The colorectal cancer incidence rate increased from 37.0 per 100,000 population to a rate of 37.4 per 100,000 population in the five years from 2015 to 2019 and the 2019-2023 periods.[3,4] Despite higher incidence in men than in women, trends over time are very similar by sex. From 2015-2019 to 2019-2023, the colorectal cancer mortality rate dropped from 13.1 per 100,000 population to 12.8 per 100,000 population.[5,1]

As with many of the selected cancers, African Americans experience the greatest burden among all races/ethnicities in both colorectal cancer incidence and mortality. According to the 2019-2023 preliminary incidence rates shown in Table 7, African American colorectal cancer incidence rate was 36.9 per 100,000 population while the colorectal cancer incidence rate for all North Carolinians was 34.7 per 100,000 population. The colorectal incidence rate for the other racial/ethnicities during the same period was 34.8 per 100,000 population for whites, American Indians 32.5 per 100,000 population, Hispanics 26.6 per 100,000 population, and Asian 24.1 per 100,000 population.[3]

Table 7. NC Colorectal Cancer Preliminary Incidence & Mortality Cancer Rates by Race/Ethnicity per 100,000 Population, 2019-2023

ALL RACES/ETHNICITIES		WHITES		AFRICAN AMERICANS	
Preliminary Incidence	Mortality	Preliminary Incidence	Mortality	Preliminary Incidence	Mortality
34.7	12.8	34.8	12.5	36.9	16.2

AMERICAN INDIANS		ASIANS		HISPANICS	
Preliminary Incidence	Mortality	Preliminary Incidence	Mortality	Preliminary Incidence	Mortality
32.5	12.8	24.1	6.6	26.6	7.1

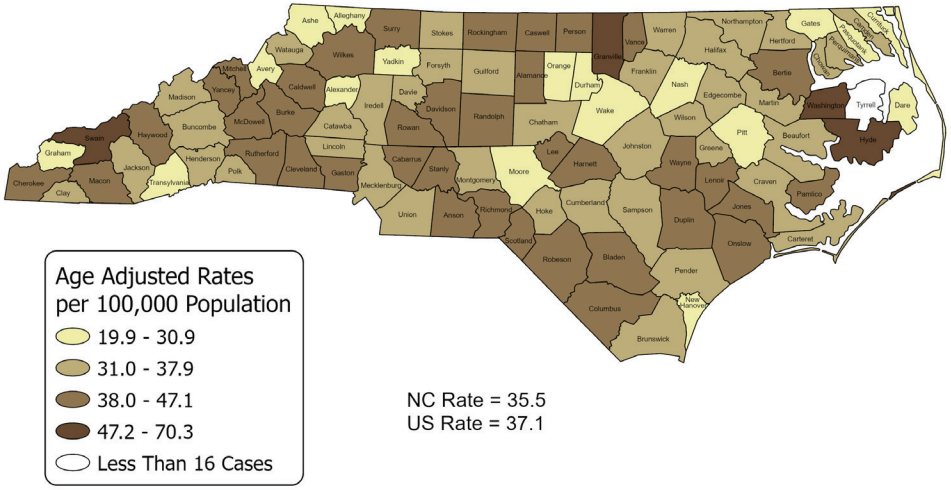
Colorectal Cancer Call to Action

- Promote colorectal screening according to recommendations. (Appendix F)
- Support programs/campaigns/screening opportunities in clusters of counties with high colorectal cancer mortality rates.
- Explore the possibility of offering colonoscopies using mobile units or of partnering with private health care providers to offer colonoscopies to disadvantaged populations.
- Encourage businesses, governments, and organizations to adopt policies that provide health insurance coverage and time off for health care, especially health screenings.
- Educate policymakers about the need for increased funding for programs, coalitions and action groups that address or reduce the risk factors of colorectal cancer.

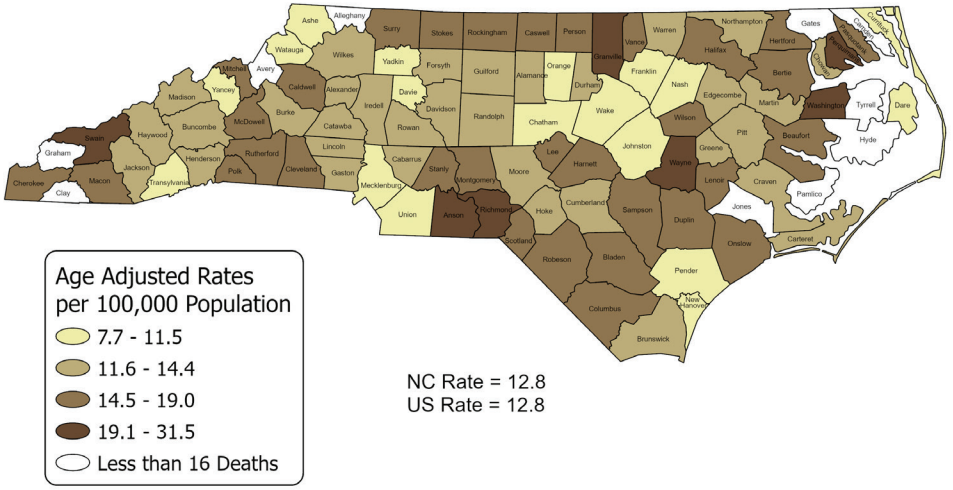
The 2019-2023 African American mortality rate for colorectal cancer was 16.2 per 100,000 population compared to American Indians (12.8 per 100,000 population), whites (12.5 per 100,000 population), Hispanics (7.1 per 100,000 population) and Asian (6.6 per 100,000 population) during the same period.[1] Some factors that contribute to the high African American colorectal cancer burden are lack of employment or under employment, inadequate housing, food insecurity, limited education, transportation, lack of health insurance, and limited access to health care.[6]

Where a person lives in North Carolina influences his or her colorectal cancer experience according to maps showing the 2018-2022 incidence and mortality rates from North Carolina State Center for Health Statistics. (Note: These maps are updated yearly.[7]) Researchers from the University of North Carolina, Lineberger Comprehensive Cancer Center found a cluster of 10 counties with higher colorectal cancer mortality rates in 2019. The cancer mortality map shows these elevated mortality rates in the northeastern part of the state. In those 10 counties, an average of 55 people died in each county from colorectal cancer per 100,000 people, with mortality rates as high as 75 per 100,000 people.[8] By comparison, the overall colorectal mortality rate per county for North Carolina at the time of the article was 45 deaths per 100,000 people. The researchers reported that socioeconomic deprivation, which included lack of employment and income along with many other risk factors, contributed to the cluster.

North Carolina Colon and Rectum Cancer Incidence Rates 2018-2022



North Carolina Colon and Rectum Cancer Mortality Rates 2018-2022



Sexual and gender minority (SGM) populations face a disproportionate burden of colorectal cancer with both a higher incidence of colorectal cancer and distant-stage (cancer has spread to a different part of the body) diagnosis. Transgender people are less likely to get screened for colorectal cancer and have a higher rate of late-stage diagnosis.[9]

Risk Factors

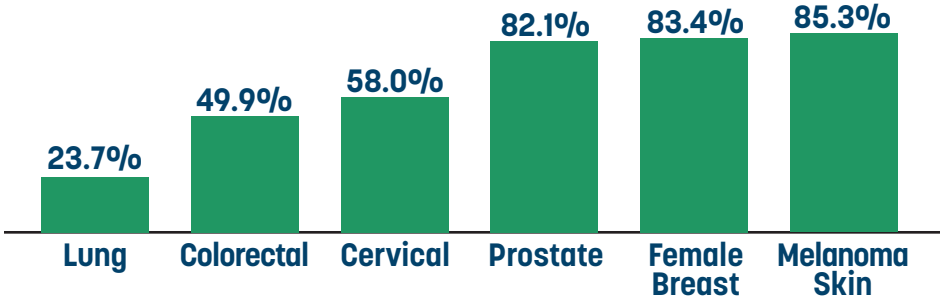
Risk factors for colorectal cancer include age, being overweight or obese, smoking tobacco, alcohol use, physical inactivity, chronic inflammatory colon conditions or colorectal polyps, type 2 diabetes, diets high in red meat and low in whole grains, and a family history of colorectal cancer. Five of these risk factors, being overweight or obese, smoking tobacco, physical inactivity, alcohol use and diets high in red meat and low in whole grains, are considered modifiable risk factors as an individual can make lifestyle choices to reduce his or her colorectal cancer risk.

Prevention and Early Detection

Changing lifestyle choices like maintaining a healthy weight, increasing physical activity, and avoiding smoking and alcohol might reduce the overall risk of colorectal cancer but there is no definite way to prevent colorectal cancer. Screening can find abnormal cells that can be removed before they become cancer. Recommended screening tests include stool-based tests and/or direct visualization tests (colonoscopy, CT colonography, and flexible sigmoidoscopy).[10] The type of test is based on risk and benefit for the individual.

Evidence-based cancer screening interventions such as implementing patient screening reminders and supporting patients with patient navigation increases cancer screenings.

Figure 9. NC Cumulative Observed Survival Rate by Cancer 2018-2022



Follow-up care and referrals for colorectal screening remain inadequate, leaving many susceptible to preventable deaths despite evidence that colorectal cancer screening reduces mortality. In 2022 26.9% of North Carolina adults aged 45 and older reported that they had never had a colonoscopy or sigmoidoscopy screening for colorectal cancer.[11] Figure 9 shows that colorectal cancer cumulative observed colorectal cancer survival rate, the percentage of patients who would be expected to be alive five years after being diagnosed with colorectal cancer, was 49.9%. See Appendix F for recommended screening guidelines.

Treatment and Survivorship

Treatment is most successful when cancer is detected early through a colonoscopy where a polyp can be removed before it becomes cancerous. Early-stage colorectal cancer is curable with surgery. Treatment for more advanced colorectal cancer may involve surgery, radiation therapy, chemotherapy, and/or other therapies, including immunotherapy.

Navigating cancer treatment and survivorship can be complex and challenging. Building a strong support network, maintaining open communication with health care providers, and prioritizing mental and physical health are key components of a successful survivorship. These may involve:

- follow-up appointments to monitor recurrences and manage long-term side effects of treatment,
- lifestyle changes like adopting a healthy diet, maintaining a healthy weight, increasing physical activity, stopping smoking, and avoiding alcohol, and
- emotional support for anxiety, depression, or fear of recurrence.

Every individual's experience with cancer is unique, and personalized guidance can help survivors reclaim their health and well-being as they move forward in their lives.

Colorectal Cancer Objective: Reduce colorectal cancer incidence and mortality rates in North Carolina.

Colorectal Cancer Incidence Rate[3]			Colorectal Cancer Mortality Rate[1]		
	Baseline 2019-2023:	34.7/100,000		Baseline 2019-2023:	12.8/100,000
	NC Cancer Plan 2030 Target:	31.5/100,000		NC Cancer Plan 2030 Target:	12.0/100,000

POLICY, SYSTEMS, AND ENVIRONMENTAL CHANGES

- Partner with rural, especially northeastern NC counties, to offer colorectal cancer screening in those areas identified as colorectal cancer hot spots by UNC researchers.
- Encourage businesses, governments, and organizations to adopt policies that provide full coverage for health insurance and paid time off for health/cancer screenings and appointments.
- Encourage governments, businesses, schools, community colleges, and universities to adopt tobacco free policies and/or update their tobacco policies to include new tobacco products.
- Encourage governments, businesses, schools, community colleges, and universities to adopt policies that limit the availability and accessibility of alcohol (e.g., government control of alcohol sales, increasing alcohol taxes).
- Develop an agreement with NC State Extension to offer programs about colorectal cancer risks and the benefits of colorectal cancer screening.

POPULATIONS AT HIGH RISK

- Encourage businesses, governments, and organizations to adopt policies that support colorectal cancer screening services to high-risk populations based on their cancer incidence and mortality rates.
- Develop partnerships with local health departments, Federally Qualified Health Centers (FQHCs), and other health care organizations to increase the number of colorectal cancer screening opportunities.
- Explore opportunities for addressing transportation barriers (e.g., mobile units, gas cards, travel vouchers, etc.).

COMMUNICATION/EDUCATION

- Encourage businesses, governments, and organizations to offer programs on healthy lifestyles especially with high-risk populations like the African American, American Indian, and SGM populations.
- Partner with public/private organizations to support/develop education programs about the importance of colorectal cancer screening for previous or current cigarette smokers which include smoking cessation services.
- Encourage businesses, governments, and organizations to offer education on modifiable risk factors, such as alcohol and tobacco use, obesity and physical inactivity.
- Encourage community partners to plan and implement colorectal cancer education/screening programs including healthy living lifestyle information.
- Develop an agreement with NC State Extension to offer programs about colorectal cancer risks and the benefits of colorectal cancer screening, especially for previous or current smokers.

HEALTH CARE PROFESSIONALS

- Train providers about how to discuss colorectal cancer screening options with their patients as they decide which screening method to use.
- Increase alcohol screening and provide intervention and referral for treatment, as needed.
- Encourage providers to use native language speakers or telehealth to provide education about risk factors and preventive health using culturally appropriate health education materials to reach high risk.
- Encourage providers to implement a reminder system to remind patients of their screenings.

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Melanoma and Non-Melanoma Skin Cancer

Skin cancer (melanoma, basal cell, and squamous cell) was chosen because it is the most frequently diagnosed cancer in North Carolina. Melanoma accounts for just a small portion of the diagnosed skin cancers but is the most serious because it can spread, making it difficult to control. The North Carolina State Center for Health Statistics, Central Cancer Registry estimates that 3,903 people will be diagnosed with melanoma skin cancer and 315 people will die from melanoma skin cancer in 2025.[1] Melanoma is the only skin cancer tracked by the North Carolina Central Cancer Registry, so data is not available for basal and squamous cell cancers. While basal cell and squamous cell cancers are less serious types, all skin cancers need to be identified early so that they can be treated and, in many cases, cured.

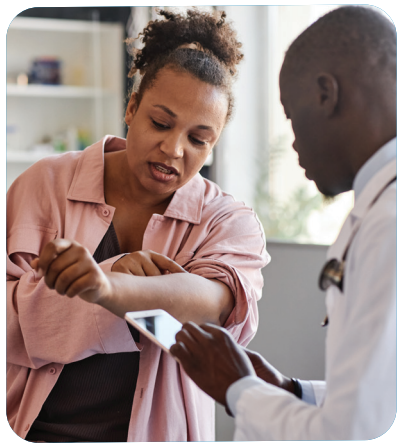
North Carolina tends to have higher rates of melanoma than other areas of the country because of a climate with a lot of sunny weather which encourages outdoor activities. Table 8 shows that whites have skin cancer rates that are many times higher than that of African Americans, American Indians, and Hispanics.

Table 8. NC Melanoma Cancer Preliminary Incidence & Mortality Cancer Rates by Race/Ethnicity per 100,000 Population, 2019-2023

ALL RACES/ETHNICITIES		WHITES		AFRICAN AMERICANS		AMERICAN INDIANS		ASIANS		HISPANICS	
Preliminary Incidence	Mortality	Preliminary Incidence	Mortality	Preliminary Incidence	Mortality	Preliminary Incidence	Mortality	Preliminary Incidence	Mortality	Preliminary Incidence	Mortality
28.5	2.2	38.7	2.8	0.7	.03	4.9	**	**	**	6.3	0.7

***Numbers were too small to report.*

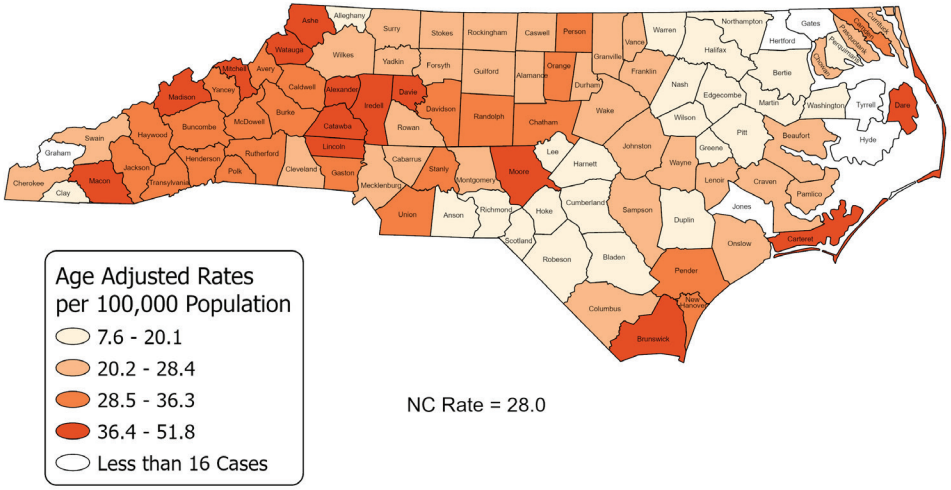
The differences in 2018-2022 incidence and melanoma skin cancer rates by county are shown in the North Carolina State Center for Health Statistics maps.[2] (Note: These maps are updated yearly.) The incidence map reflects the higher incidence rate in the western counties which have a large percentage of the population that identify as white. The eastern counties have a larger minority population. While skin cancers are more common among people with a light (fair) skin tone, they are not limited to fair-complexion individuals.



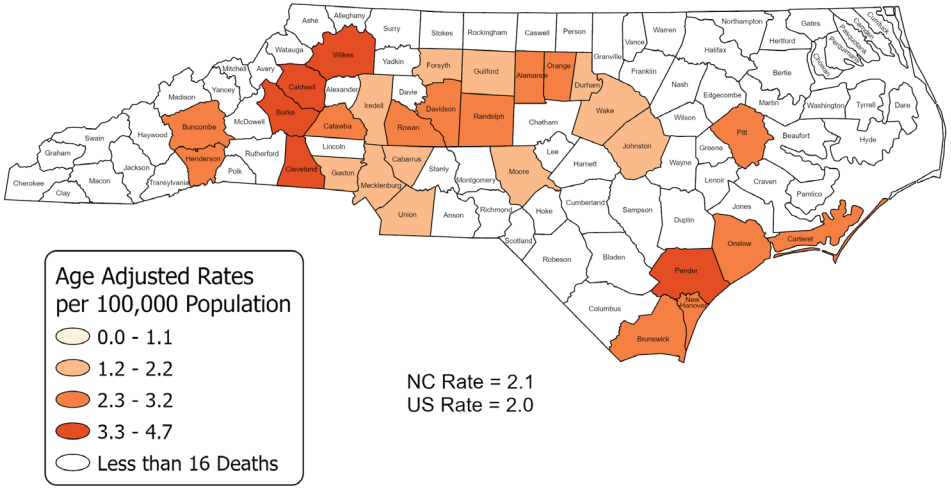
Melanoma Skin Cancer Call to Action

- Promote education and policies in schools and recreational, tourism and work settings that can support sun safety behaviors.
- Support messaging campaigns about skin cancer risk factors and protective behaviors.
- Support policy changes that require parental approval for adolescents to use artificial sun tanning facilities and other artificial sources of ultraviolet light.
- Educate policymakers about the need for increased funding for programs, coalitions and action groups that address or reduce the risk factors of melanoma and other skin cancers.

North Carolina Melanoma (Skin) Cancer Incidence Rates 2018-2022



North Carolina Melanoma (Skin) Cancer Mortality Rates 2018-2022



Risk Factors

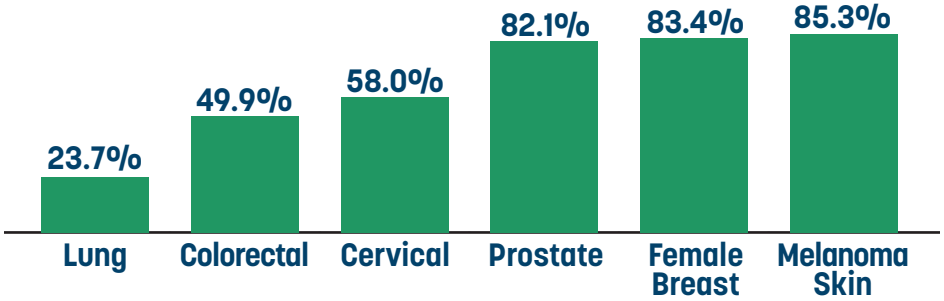
There is a strong association between increased risk of melanoma and exposure to ultraviolet (UV) light from the sun, tanning beds, and sun lamps. Intense sun exposure leading to sunburns as well as chronic sun exposure, increases the risk. Sunburn in children is a significant concern due to the long-term risks associated with UV exposure and the development of skin cancer later in life. Individuals with fair skin, particularly those with light hair (blond or red) and light-colored eyes (blue or green), are at a higher risk. A family history of melanoma increases an individual's risk as well as having previous melanoma or other skin cancers. Having atypical moles (irregular shapes and colors) or a greater number of moles (more than 50) can increase the risk.

Prevention and Early Detection

Since research shows that there is a correlation between exposure to ultraviolet (UV) light and skin cancer, it is important to use broad-spectrum sunscreen (SPF) of 30 or higher, wear protective clothing, and avoid tanning beds and sun exposure during peak sun hours. Be vigilant about changes in existing moles or the appearance of new moles and have them checked by a health care provider. Dress children in protective clothing, wide-brimmed hats, and UV-blocking sunglasses even on cloudy days. Shade is the best way to protect babies from the sun, especially if they are younger than six months.

Regular self-examination of the skin and annual skin exams by a dermatologist can detect any unusual changes or early signs of melanoma or other skin cancers. Figure 10 shows the cumulative observed survival rates of the selected cancers. The cumulative observed survival rate for melanoma in 2018-2022 was 85.3%.[3] The cumulative observed survival rate is the percentage of patients who would be expected to be alive five years after being diagnosed.

Figure 10. NC Cumulative Observed Survival Rate by Cancer 2018-2022



Treatment and Survivorship

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.

Navigating cancer treatment and survivorship can be complex and challenging. Building a strong support network, maintaining open communication with health care providers, and prioritizing mental and physical health are key components of a successful survivorship. These may involve:

- follow-up appointments to monitor recurrences and manage long term side effects of treatment,
- lifestyle changes like avoiding exposure to ultraviolet radiation and smoking cessation, and
- emotional support for anxiety, depression, or fear of recurrence.

Every individual's experience with cancer is unique, and personalized guidance can help survivors reclaim their health and well-being as they move forward in their lives.

Melanoma Cancers Objective: Reduce the melanoma cancers incidence and mortality rates in North Carolina.

Melanoma Cancer Incidence Rate[3]	**Baseline 2019-2023:**	**28.5/100,000**	**Melanoma Cancer Mortality Rate[1]**	**Baseline 2019-2023:**	**2.2/100,000**
	NC Cancer Plan 2030 Target:	**28.5/100,000***		**NC Cancer Plan 2030 Target:**	**2.1/100,000**

**Trend analysis for melanoma incidence rates in North Carolina coincide with the national trend of increasing melanoma incidence rates. The trend analysis reveals a rate greater than the baseline rate of 28.5/100,000; therefore the 2030 Target Rate is set to not exceed the baseline of 28.5/100,000.*

Melanoma incidence rates have been increasing nationally by 2% since 2012.[4]

POLICY, SYSTEMS, AND ENVIRONMENTAL CHANGES

- Encourage businesses, organizations, and governments to adopt policies and practices to provide employees with high sun exposure with sun protective clothing and sunscreen.
- Encourage parks, recreational programs, schools and other childcare facilities to adopt policies and practices that provide areas of shade in all their facilities.
- Encourage businesses, governments, and organizations to adopt policies that provide full coverage for health insurance and paid time off for health/cancer screenings and appointments.
- Develop an agreement with NC State Extension to offer programs about skin cancer risks and the benefits of practicing sun-safety behavior.

POPULATIONS AT HIGH RISK

- Prioritize skin cancer education efforts in the Mountain and Northwest regions of the state, each of which have high melanoma cancer incidence and mortality rates.
- Partner with schools and child care centers to offer programs about the importance of sun protection and to provide areas of shade in their outdoor spaces.
- Focus educational efforts on the early signs of melanoma in areas where high concentrations of minority residents reside, due to their disparities in late-stage diagnoses.

COMMUNICATION/EDUCATION

- Encourage parks and recreational programs to offer programs on the dangers of skin cancer and the importance of sun protection as part of their community outreach.
- Provide education programs with emphasis on senior populations about early signs of melanoma skin cancer and the importance of practicing sun safety behaviors.
- Encourage businesses and governments to promote and educate employees about sun safety at work and at home.

HEALTH CARE PROFESSIONALS

- Encourage providers to emphasize the importance of preventing sunburn, especially in young children.
- Partner with senior centers, senior living communities, and churches to offer skin cancer screening programs.
- Talk to patients about the early signs of skin cancer and the importance of skin cancer screening.

MELANOMA SKIN CANCER REFERENCES

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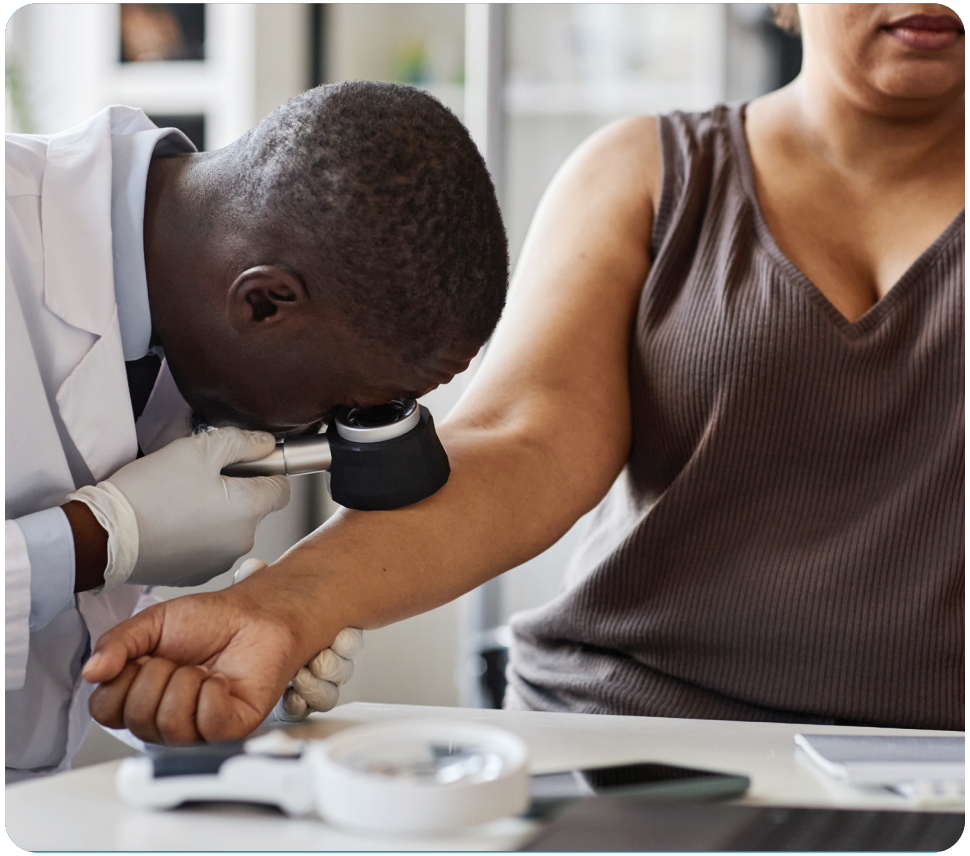


Human Papillomavirus (HPV) Related Cancer

Human Papillomavirus (HPV) cancer was chosen as a selected cancer because it can be mostly prevented through human papillomavirus (HPV) vaccinations. HPV-related cancer includes cervical, vaginal, vulvar, anal, penile, and oropharyngeal cancers. HPV vaccination protects against more than 90% of HPV related cancers.[1]

North Carolina's HPV vaccination rate (55%) is far below the national rate (63%) for children ages 13-17 who have been fully vaccinated.[1] The Centers for Disease Control and Prevention recommends routine HPV vaccination at age 11 or 12 although they can be started at age 9. It is recommended that both girls and boys receive HPV vaccinations to reduce their risk of HPV related cancers. Children and young adults ages 13 to 26, who have not been vaccinated or have not completed their vaccine schedule should get the vaccine as soon as possible. Some adults ages 27 to 45 who are not already vaccinated may decide to get the HPV vaccine after speaking with their doctor about their risk for HPV infections.[2] The vaccine works to prevent HPV related infections and HPV-related cancers. HPV vaccines are available at no cost from county health departments in North Carolina.

Sexual and gender minority (SGM) populations face a disproportionate burden of HPV-related cancers with a higher cervical cancer incidence rate and increase risk of oropharyngeal cancer. Lesbian and bisexual women have an increased risk for cervical cancer, and transgender people are less likely to be offered screening tests appropriate to their organs. Middle-age white men have the highest rate of oropharyngeal cancer.[3]

Cervical Cancer

Cervical cancer is the only HPV-related cancer that is tracked by the NC State Center for Health Statistics, Central Cancer Registry. Maps from the North Carolina State Center for Health Statistics show that cervical cancer incidence and mortality rates vary by county.[8,9] (Note: These maps are updated yearly.[10]) County differences include lack of access to care, screening, health insurance, and women's reluctance to have a cervical cancer screening. HPV vaccination rates vary because some parents are reluctance to have their child vaccinated due to the fear of encouraging sex, concerns about vaccine safety, or the vaccine was not recommended by their health care provider. Cervical cancer can potentially be eliminated though human papillomavirus (HPV) vaccinations and regular cancer screenings.

Cervical cancer incidence rates peak in females between the ages of 45-64. It rarely develops in women younger than 20. The North Carolina State Center for Health Statistics, Central Cancer Registry estimates that 428 women will be diagnosed with cervical cancer and 135 women will die from cervical cancer in 2025.[11] There is a clear racial/ethnic difference in the burden of cervical cancer. American Indian women (11.4 per 100,000 population) have the highest incidence of cervical cancer followed by Hispanic women (10.5 per 100,000 population), African American women (6.9 per 100,000 population), white women (6.6 per 100,000 population), and Asian women (4.9 per 100,000 population) as shown in Table 9.[8] North Carolina cervical cancer incidence rates have declined due to increased screening and human papillomavirus (HPV) vaccinations.

HPV Related Cancers Call to Action

- Promote HPV vaccinations according to recommendations.
- Promote cervical cancer screening recommendations (Appendix F)
- Encourage dental health professionals to urge their patients to get HPV vaccinations for themselves and their family members, especially children and young adults.
- Encourage businesses, governments, and organizations to offer programs/campaigns on HPV vaccinations and cervical cancer screening in the counties with highest distant stage cervical cancer diagnosis, incidence, and mortality rates.
- Encourage businesses, governments, and organizations to adopt policies that provide health insurance coverage and time off for health care, especially health screenings.
- Educate policymakers about the need for increased funding for programs, coalitions and action groups that address the need to promote HPV vaccinations and cervical cancer screenings.

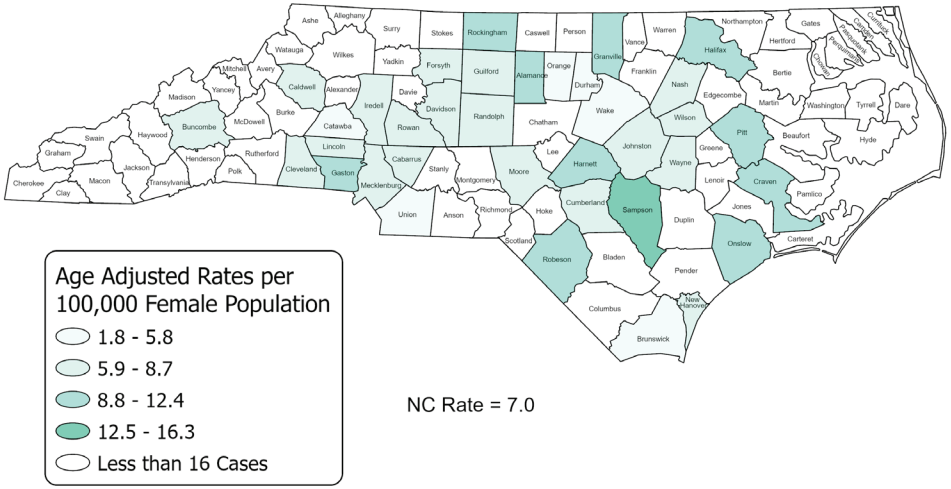
Table 9. NC Cervical Cancer Preliminary Incidence & Mortality Cancer Rates by Race/Ethnicity per 100,000 Population, 2019-2023

ALL RACES/ETHNICITIES		WHITES		AFRICAN AMERICANS		AMERICAN INDIANS		ASIANS		HISPANICS	
Preliminary Incidence	Mortality	Preliminary Incidence	Mortality	Preliminary Incidence	Mortality	Preliminary Incidence	Mortality	Preliminary Incidence	Mortality	Preliminary Incidence	Mortality
6.9	1.9	6.6	1.8	6.9	2.7	11.4	**	4.9	**	10.5	2.2

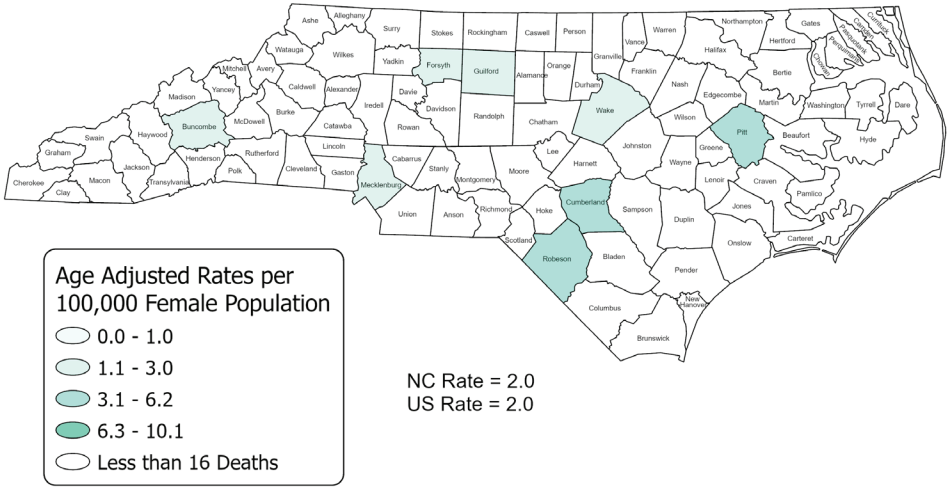
***Numbers were too small to report.*

Unfortunately, cervical cancer mortality rates in North Carolina have increased in the past few years. African American women who have a cervical cancer mortality rate of 2.7 per 100,000 population are more likely to die from cervical cancer than other women. They are closely followed by Hispanic women who have a cervical cancer mortality rate of 2.2 per 100,000 population while white women have a cervical cancer mortality rate of 1.8 per 100,000 population. There is no information available for Asians and American Indians because of the small number of cases.[9]

North Carolina Cervical Cancer Incidence Rates 2018-2022



North Carolina Cervical Cancer Mortality Rates 2018-2022



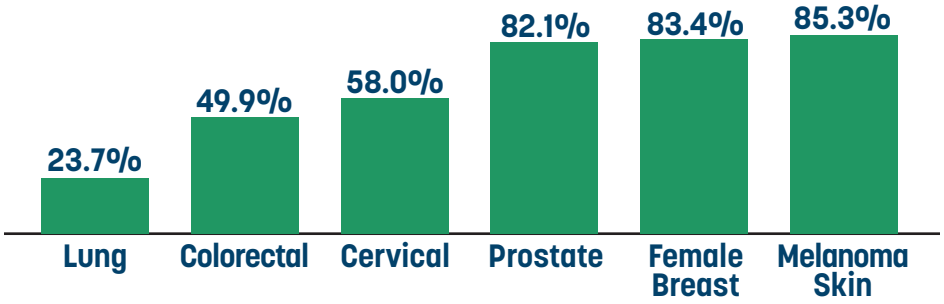
Risk Factors

Lack of HPV vaccination, exposure to HPV related infection, and excessive tobacco and alcohol use all are risk factors for HPV-related cancers. Age increases the risk as many HPV related cancers are diagnosed in middle-aged adults.

Prevention and Early Detection

Human papillomavirus (HPV)-related cancer can be mostly prevented through the use of the HPV vaccine and regular screening for cervical cancer. Early detection of cervical cancer through screening is directly related to cervical cancer survival. Figure 11 shows the cumulative observed survival rates of the selected cancers. The cumulative observed survival rate is the percentage of patients who would be expected to be alive five years after being diagnosed. The five-year cumulative observed survival rate for cervical cancer was 58.0% for cases reported from 2018-2022.[4] The 2022 Behavior Risk Factor Surveillance System (BRFSS) reported that 65.3% of the North Carolina respondents said they had a cervical cancer screening test.[5] This is important since cervical cancer screening can identify precancerous lesions which can be removed, thus preventing the development of cervical cancer. The NC Breast and Cervical Cancer Control Program (NCCCP) helps reduce barriers by providing free or low-cost breast and cervical cancer screenings for eligible low-income women.[6]

Figure 11. NC Cumulative Observed Survival Rate by Cancer 2018-2022



Two tests can help detect 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. This test involves a pelvic exam to collect samples. In 2024 the FDA approved regular HPV screening tests which allow self-collection of samples in a health care setting. This expanded screening options for women who do not want a pelvic exam.[7] Regular cervical cancer screenings should start at age 21. The other test is the human papillomavirus (HPV) test. This test looks for the HPV virus that can cause cell changes. See Appendix F for recommended cervical cancer screening guidelines.

Treatment and Survivorship

Treatment is usually most successful when the cancer is detected early. Treatment options include surgery, chemotherapy and/or radiation therapy depending on the type of cancer. Navigating cancer treatment and survivorship can be complex and challenging.

Building a strong support network, maintaining open communication with health care providers, and prioritizing mental and physical health are key components of a successful survivorship. These may involve:

- follow-up appointments to monitor recurrences and manage long term side effects of treatment,
- lifestyle changes like weight and physical activity management, stopping smoking, and avoiding alcohol, and
- emotional support for anxiety, depression, or fear of recurrence.

Every individual's experience with cancer is unique, and personalized guidance can help survivors reclaim their health and well-being as they move forward in their lives.

Oropharyngeal Cancer

Oropharyngeal cancer is cancer of the back of the mouth and throat and is primarily associated with specific demographic groups. North Carolina has a higher rate (19.1 per 100,000 men) than the United States (17.9 per 100,000 men). The population group with the highest incidence of HPV-related oropharyngeal cancer is typically middle-age (ages 40-64), white men. It is the 8th most common cancer in US men. This trend is linked to changes in sexual practices over the years, including an increase in oral-oral sexual transmission of HPV.[12] While this is typically diagnosed more frequently in men, women can have oropharyngeal cancer.

Oropharyngeal cancer risk factors include a high number of oral sex partners, excessive smoking, alcohol use, and low rates of HPV vaccination. There is no screening test for oropharyngeal cancer. This is an area of ongoing research with researchers working with both medical and dental professionals. The signs of oropharyngeal cancer are a sore throat that doesn't go away and difficulty swallowing.

Anal and Penile Cancers

Anal and penile cancers are associated with specific demographic populations. Anal cancer has a higher incidence among individuals with HPV, particularly in men who have sex with men and individuals with compromised immune systems. Penile cancer that is associated with HPV, is generally found in uncircumcised men or those with multiple sexual partners.

HPV Cancer Objective: Eliminate HPV-related cancers in North Carolina starting with cervical cancer.

(Note: Cervical cancer is the only HPV related cancer tracked by the NC Central Cancer Registry.

Cervical Cancer Incidence Rate[3]	Baseline 2019-2023:	6.9/100,000
	NC Cancer Plan 2030 Target:	6.5/100,000

Cervical Cancer Mortality Rate[1]	Baseline 2019-2023:	1.9/100,000
	NC Cancer Plan 2030 Target:	1.8/100,000

POLICY, SYSTEMS, AND ENVIRONMENTAL CHANGES

- Encourage businesses, governments, and organizations to adopt policies that provide full coverage for health insurance and paid time off for health/cancer vaccinations, screenings, and care.
- Develop partnerships with local health departments and other organizations to include NCBCCC and NC WISEWOMAN programs services.
- Encourage governments, businesses, schools, community colleges, and universities to adopt smoke free policies and/or update their tobacco policies to include new tobacco products.
- Encourage governments, businesses, schools, community colleges, and universities to adopt policies that limit the availability and accessibility of alcohol.
- Develop an agreement with NC State Extension to offer programs about HPV-related cancers risks and the benefits of HPV related cancer screening, especially for previous or current smokers.

POPULATIONS AT HIGH RISK

- Encourage businesses, governments, and organizations to adopt policies that support HPV vaccination and HPV-related cancer screening services targeting efforts in counties with the highest distant stage cervical cancer diagnosis, incidence, and mortality rates.
- Maintain/cultivate traditional and non-traditional partnerships to increase HPV-related cancer screening in high-risk populations, especially African American, Hispanic, American Indian, and SGM populations.
- Develop partnerships with local health departments, Federally Qualified Health Centers (FQHCs), and other health care organizations to offer HPV vaccinations and HPV-related cancer screening.
- Explore opportunities for addressing transportation barriers (e.g., mobile units, gas cards, travel vouchers, etc.).

COMMUNICATION/EDUCATION

- Encourage community partners to plan/implement messaging campaigns for parents about the importance of HPV childhood vaccinations to prevent HPV-related cancers.
- Encourage businesses, governments, and organizations to offer programs for women on HPV-related cancers screening and vaccination, obesity prevention, nutrition, and physical activity.
- Partner with public/private organizations to support/develop education programs about the importance of HPV-related cancers screening for previous or current cigarette smokers including smoking cessation services.
- Encourage businesses, governments, and organizations to offer education on modifiable risk factors, such as avoiding alcohol and tobacco use.

HEALTH CARE PROFESSIONALS

- Work with medical and dental providers about how to discuss the urgency for parents to have their children get HPV vaccinations to prevent HPV-related cancers.
- Train providers to discuss cervical cancer screening options with their patients as they decide which screening method to use.
- Encourage providers to use native language speakers or telehealth to provide education about risk factors and preventive health using culturally appropriate health education materials.

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Emerging Areas in Cancer Control and Prevention

Cancer prevention, treatment, and supportive care are undergoing rapid transformations with new screening methods, medical treatments, scientific discoveries, and health care delivery developments. These emerging areas in cancer treatment and supportive care are offering new hope and opportunities for improving outcomes and increasing quality of life for cancer patients. Scientists are using artificial intelligence (AI), DNA sequencing, precision medicine, and other technologies to improve treatment and diagnosis.

Emerging Areas—Artificial Intelligence

Artificial intelligence (AI) is a rapidly growing field that has the potential to revolutionize the speed, accuracy, and reliability of some cancer screening and detection methods. One of the opportunities in cancer screening is using AI to process mammograms and other X-rays which allow radiologists to focus their time on other tasks that require their medical judgement. AI can also be used to process X-rays in areas where experts might not be available, like rural health care facilities. AI systems can help automate mundane tasks, freeing up trained staff for other work requiring their judgement. In some instances, it can also provide more accurate results than humans can achieve on their own, reduce errors, and improve accuracy. Researchers are developing AI models to include detection of cancer cells, identification of a tumor's origin, prediction of patient outcomes, and identification of the presence of genes and DNA patterns associated with treatment response. Clinical trials and evaluation of the AI models still need to be done in the real world.[1] There is the potential that AI can help address health inequities by reducing human biases and thus, better identify at risk patients. AI use is limited because it needs human oversight to ensure it performs correctly.

Emerging Areas—COVID Impacts

The COVID-19 pandemic disrupted health care delivery due to stay-at-home orders and patient fears about visiting health care facilities. Health care use, including cancer screenings, sharply decreased in early 2020. Studies suggest that cancer screening rebounded through summer 2020; however, more than 2 years after the start of the pandemic, long-term consequences for preventive cancer screening and diagnosis are unknown.[2]

Some of the ways that the pandemic affected critical aspects of cancer care are listed below.

- Drop in patient visits for routine care including screenings or follow-up appointments because of fear of COVID-19 and misinformation causing a disruption of cancer screening and suspension of elective procedures.
- Drop in screenings led to delayed diagnoses of cancer so many patients presented with more advanced stages of cancer when they finally sought care.
- Existing disparities among vulnerable populations like lack of transportation, child care, and internet access prevented many from seeking timely screenings and timely cancer care.
- Cancer treatments, including chemotherapy and surgery, were postponed for patients where risks outweighed benefits, particularly during peak COVID-19 months.
- Support services for cancer patients, including counseling, nutrition, and rehabilitation were interrupted due to pandemic restrictions.

Emerging Areas—Environmental Hazards

New cancer dangers are being identified in the environment.[3] These dangers can influence both personal and community health actions, policy, and regulatory measures. Some emerging environmental cancer risks are:

- pollution and poor air quality from airborne particulates and volatile organic compounds;
- chemical exposures from pesticides and herbicides, BPA (Phthalates and Bisphenol A) chemicals, and PFAS (forever chemicals);
- radiation exposure from electromagnetic fields and radon gas;
- climate change including increased heat, ultraviolet (UV) radiation, and urban heat islands;
- infectious agents from changes in the habitats of certain insects and animals that carry cancer-causing viruses;
- industrial accidents like fires, chemical exposures, train derailments;
- natural disasters like hurricanes and floods; and
- waste disposal including landfills and waste incineration.

A potential environmental hazard may be the use of nanotechnology (technology that deals with dimensions and tolerances of less than 100 nanometers, especially the manipulation of individual atoms and molecules). While nanotechnology is showing great promise in certain cancer treatments, it may present unknown cancer risks since preliminary studies have shown it to cause cellular damage.[4]

Emerging Areas—Genetics

Genetic challenges in cancer encompass a range of issues related to the role of genetics in the development, progression, and treatment of cancer. These challenges include understanding the genetic basis of cancer, managing inherited cancer predispositions, and addressing the complexities of personalized medicine. Addressing these genetic challenges in cancer requires a multidisciplinary approach involving geneticists, oncologists, genetic counselors, bioinformaticians, and public health professionals. Ongoing research, technological advancements, and improvements in genetic counseling and testing will be crucial in developing effective strategies for cancer prevention, diagnosis, and treatment tailored to individual genetic profiles. Public education about cancer genetics and access to adequate screening and counseling services will be essential in overcoming these challenges.

Emerging Areas—Precision Medicine

Precision medicine involves tailoring treatment plans based on a patient's specific genetic makeup or tumor characteristics. This personalized approach can lead to more effective treatments and may help reduce the risk of side effects. One approach used in precision medicine is targeted therapies. These are drugs that target specific molecular alterations in cancer cells, disrupting their growth and spread. These therapies are often more effective and have fewer side effects compared to traditional treatments.

Recent developments in messenger ribonucleic acid (mRNA) vaccine technology and AI-enhanced data analysis methods have sparked optimism about the potential of therapeutic cancer vaccines to transform cancer treatment. The body's immune system is used to target and destroy cancer cells by programming the immune system to attack cancer cells by changing T cells (a type of white blood cell) in the lab so they can find and destroy cancer cells. This approach has shown great success in treating certain types of cancer and has fewer side effects compared to traditional treatments like chemotherapy. Some blood cancers patients have had excellent response rates to this personalized, targeted approach.[5]

Conventional cancer treatments may be combined with complementary evidence-based therapies such as acupuncture, massage therapy, and mindfulness practices in integrative medicine. This approach treats the whole person and includes physical, emotional, mental, and spiritual needs to improve overall well-being and quality of life for the cancer patient.

Emerging Areas—Screening Advances

Current U.S. Food and Drug Administration (FDA) approved liquid biopsy tests can detect some types of advanced cancers which can help health care providers make treatment decisions. This test involves analyzing blood samples for circulating tumor cells or deoxyribonucleic acid (DNA). Liquid biopsies provide a less invasive way to detect and monitor cancer progression and treatment compared to traditional tissue biopsies.[6] HPV screening tests which allow self-collection of samples in a health care setting were approved in 2024 by the FDA. This expanded screening options for women who do not want a pelvic exam.[7]

Emerging Areas—Telemedicine

Telemedicine is the remote delivery of health care services using telecommunications technology. It offers an accessible, convenient, and efficient model of care, and can transcend geographical barriers, enhance patient engagement, and improve health outcomes. It can reduce the need for frequent in-person visits and enhance the patient's experience. Telemedicine is particularly important in the rural areas of North Carolina as it allows cancer patients to receive care remotely through virtual consultations and monitoring. It offers local providers a way to contact specialists who may not be available locally to discuss care and treatment options for patients. While progress in telecommunications technology has been made in many areas, much still needs to be done.

EMERGING AREAS REFERENCE

1 Nierengarten, Mary Beth. New AI model shows promise for cancer diagnosis. American Cancer Society Journals: Cancer. February 1, 2025. https://acsjournals.onlinelibrary.wiley.com/doi/full/10.1002/cncr.35715

2 Allison H. Oakes, PhD1; Kelly Boyce, MS[1]; Catherine Patton, BS[1]; *Before vs After the COVID-19 Pandemic*. JAMA Oncology. 2023;9;(1):145-146. doi:10.1001/jamaoncol.2022.5481. https://jamanetwork.com/journals/jamaoncology/fullarticle/2798851

3 National Institutes of Health. National Cancer Institute. *Cancer-Causing Substances in the Environment*. Accessed February 2025. https://www.cancer.gov/about-cancer/causes-prevention/risk/substances

4 National Library of Medicine, National Center for Biotechnology Information. *Toxicity and environmental Risks of Nanomaterials: Challenges and Future Needs*. March 2023. https://pmc.ncbi.nlm.nih.gov/articles/PMC2844666/

5 National Library of Medicine, National Center for Biotechnology Information. *Recent Advancement in mRNA Vaccine Development and Applications*. July 18, 2023. https://pmc.ncbi.nlm.nih.gov/articles/PMC10384963/

6 Cleveland Clinic. *Liquid Biopsy*. August 11, 2022. https://my.clevelandclinic.org/health/diagnostics/23992-liquid-biopsy

7 National Institute of Health, *FDA Allows for Self-Collection in a Healthcare Setting.* July 2024. https://www.cancer.gov/news-events/cancer-currents-blog/2024/fda-hpv-test-self-collection-health-care-setting

Appendix A—North Carolina Comprehensive Cancer Control ACTION Plan 2020-2025 Score Card

Measures	2020-2025 NC Cancer Plan Baseline (Per 100,000 population)	2020-2025 NC Cancer Plan Target (Per 100,000 population)	2019-2023 Values* (Per 100,000 population)
Met			
Cervical cancer mortality rate	2.1	2.0	1.9
Improved			
Colorectal cancer incidence rate	35.2	29.6	34.7
Female breast cancer mortality rate	20.3	18.8	19.9
Lung cancer incidence rate	62.9	54.8	58.6
Lung cancer mortality rate	39.6	31.0	36.8
Challenges			
Cervical cancer incidence rate	6.5	6.24	6.9
Colorectal cancer mortality rate	12.6	11.0	12.8
Female breast cancer incidence rate	162.3	152.8	174.6
Melanoma cancer incidence rate	25.5	21.7	28.5
Melanoma cancer mortality rate	2.0	1.5	2.2
Prostate cancer incidence rate	120.7	100.6	128.2
Prostate cancer mortality rate	19.7	16.6	20.2

*NC State Center for Health Statistics, Central Cancer Registry. *2019-2023 North Carolina Preliminary Cancer Incidence by County for Selected Sites per 100,000 Population. January 2025.* 2019-2023 North Carolina Preliminary Cancer Incidence by Race and Ethnicity

NC State Center for Health Statistics, Central Cancer Registry, *2019-2023 North Carolina Cancer Mortality by Race and Ethnicity per 100,000 Population. February 2025.* 2019-2023 North Carolina Cancer Morality by Race and Ethnicity

Note: The COVID-19 pandemic had significant impact on cancer screening, diagnosis and treatment. Some of the impacts are listed below.

- Disruption of health care services as many facilities were temporarily closed or limited to urgent care.
- Reluctance of people to go to health care appointments for fear of being exposed to COVID-19.
- Limited screening availability, and delays in cancer diagnoses and treatment resulting in cancers diagnosed at a more advanced stage.

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

American Academy of Family Physicians

American Cancer Society

American College of Surgeons

Association of NC Cancer Registrars

Bowman Gray School of Medicine/NCI

Duke University School of Medicine/NCI

ECU School of Medicine

Medical Directors of NC

NC Community Colleges

NC Department of Environmental Quality

NC Department of Health and Human Services

NC Department of Public Instruction

NC Healthcare Association

NC Local Health Directors Association

NC Medical Society

NC Nurses Association

NC Oncology Society

NCDHHS Secretary

Old North State Medical Society

UNC School of Medicine/NCI

4 Cancer Survivors

4 Members at Large

3 Members of the NC House of Representatives

3 Members of the NC Senate

Appendix C—North Carolina Cancer Prevention and Control Branch

The North Carolina Cancer Prevention and Control Branch 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 lifestyle behavior and other cancer risk factors, and
- recommending priorities for health promotion and education and cancer risk reduction activities for professionals and the public.

The Branch has several programs that work to ensure a comprehensive and collaborative approach in addressing the state's cancer burden. The four programs in the Branch are discussed below. For information, call: 919-707-5300 or https://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm.

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; promotes and encourages policy, environmental and system changes to reduce the incidence of cancer in NC; serves as a resource to help local communities and organizations promote healthy lifestyles and recommended cancer screenings. Program staff serve in support and advisory positions with the North Carolina Advisory Committee on Cancer Coordination and Control. For more information, call 919-707-5300 or NC Comprehensive Cancer Control Program (NC CCCP) | Division of Public Health

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 referral and follow-up services to eligible individuals 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 NCDHHS DPH: Breast and Cervical Cancer Control Program.

North Carolina Well-Integrated Screening and Evaluation for Women Across the Nation

The NC Well-Integrated Screening and Evaluation for Women Across the Nation Program (NC WISEWOMAN Program) provides cardiovascular disease screening, intervention, counseling, and referral services to women eligible for NC BCCCP. NC WISEWOMAN Program services are offered in conjunction with NC BCCCP services at 26 local health departments and local health centers across the state. For more information, call 919-707-5300 or NCDHHS DPH: NC WISEWOMAN Program

North Carolina Partnership to Increase Colorectal Cancer Screenings Program

North Carolina Partnership to Increase Colorectal Cancer Screenings (NC PICCS) partners with Federally Qualified Health Centers and health systems to implement evidence-based interventions to increase colorectal cancer screenings in North Carolina underserved communities. For more information, call 919-707-5300.

Appendix D—North Carolina Central Cancer Registry

The North Carolina Central Cancer Registry (NC CCR) was founded by law as a statewide, population-based cancer registry in 1945 by the General Assembly with the mission to "compile, tabulate and preserve statistical, clinical and other reports and records relating to the incidence, treatment and cure of cancer." Further, the NC CCR Law (GS 130A-209) authorizes the release of cancer data for research and support cancer prevention and control activities through cancer surveillance data. NC CCR data is crucial for understanding the cancer landscape in North Carolina and guiding efforts to address the cancer burden effectively.

The NC CCR is one of the six branches within the North Carolina State Center for Health Statistics (SCHS). The NC CCR is recognized as the Registry of Distinction, Registry for Surveillance and received Gold Certification for collecting timely, accurate, complete, and high-quality data that exceeds national standards. This data is essential for understanding cancer trends and burdens and guiding effective cancer control efforts across the state. NC CCR data helps in identifying differences in cancer rates and late-stage diagnoses among various racial and ethnic groups. By analyzing these differences, targeted cancer prevention and control efforts can be implemented to address the specific needs of different communities, effectively addressing the cancer burden across the state and improving outcomes for all. This data allows organizations to effectively direct funding and resources where they will make the greatest impact to reduce cancer in the state.

Aggregated reports on cancer statistics can be requested by email: schs.info@dhhs.nc.gov

Additional information on the CCR can be found here: https://schs.dph.ncdhhs.gov/units/ccr/.

Appendix E—Accredited Commission on Cancer Programs

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.

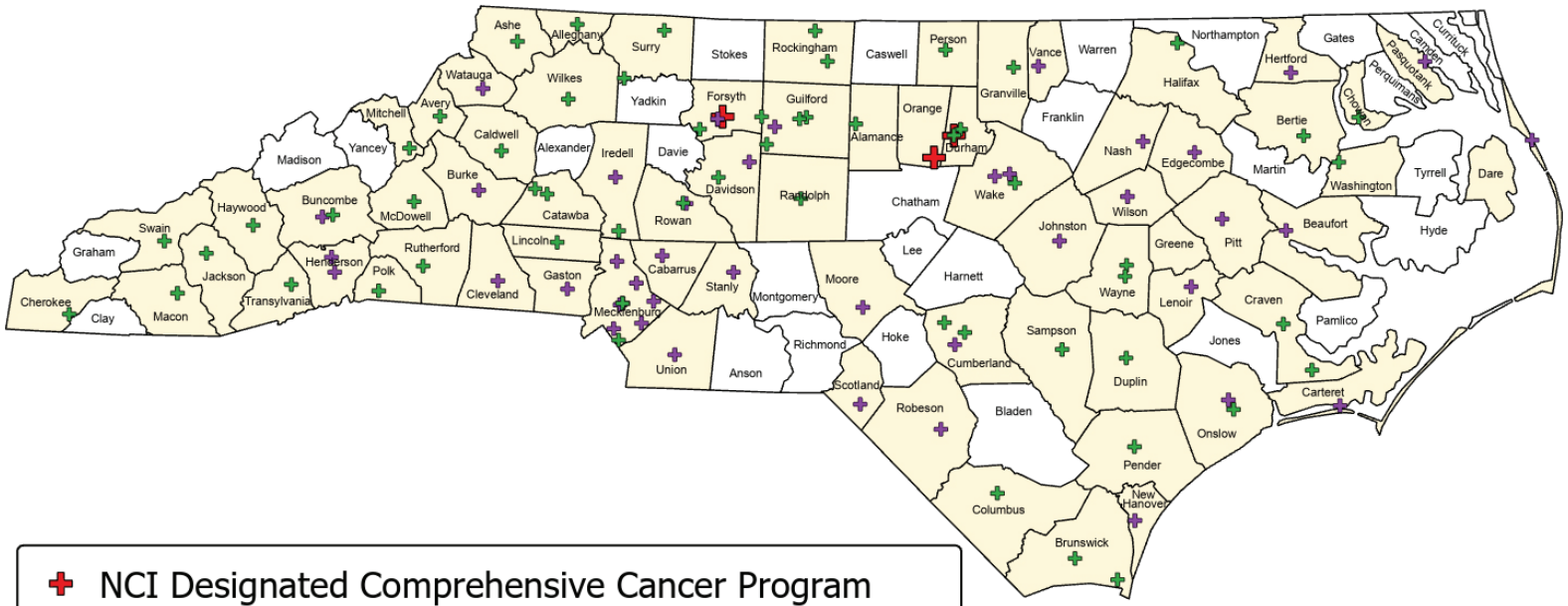
Commission on Cancer Accredited Programs

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. Each CoC-accredited facility is assigned to a cancer program category based on the type of facility or organization, services provided, and case load. North Carolina has 49 Commission on Cancer accredited cancer programs. https://www.facs.org/quality-programs/cancer-programs/commission-on-cancer/coc-accreditation/

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.

North Carolina
Hospitals Treating Cancer



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

*Hospitals Reporting to the Central Cancer Registry

State Center for Health Statistics

September 2025

NC DEPARTMENT OF HEALTH AND HUMAN SERVICES

Appendix F—Cancer Screening Guidelines

Summary of Cancer Screening Recommendations

Click on the Organization to see more information.

	American Cancer Society	American Lung Association	United State Preventive Services Task Force
Lung Screening (LDS)	Screen people age 50 to 80 years with ≥ 20 pack year smoking history, who either currently smoke or have quit and who are in relatively good health — with a low-dose CT (LDCT) scan.	Screen people age 50 to 80 years with ≥ 20 pack year smoking history or who have quit within the past 15 years. No history of lung cancer.	Screen people age 50 to 80 years with ≥ 20 pack year smoking history, or who have quit within the past 15 years.

	American Cancer Society	American College of Obstetricians and Gynecologists	United State Preventive Services Task Force
Breast	Women between 40 and 44 have the option to start mammogram screening a every year. Women 45 to 54 should get mammograms every year. Women 55 and older can get a mammogram every other year, or they can choose to continue yearly mammograms. Screening should continue as long as a woman is in good health and is expected to live 10 more years or longer.	Women should have annual mammograms beginning at age 40. Women 40 – 75 should have annual or biennial screening based on shared decision making.	Women aged 40 to 74 years should have biennial screening mammography.

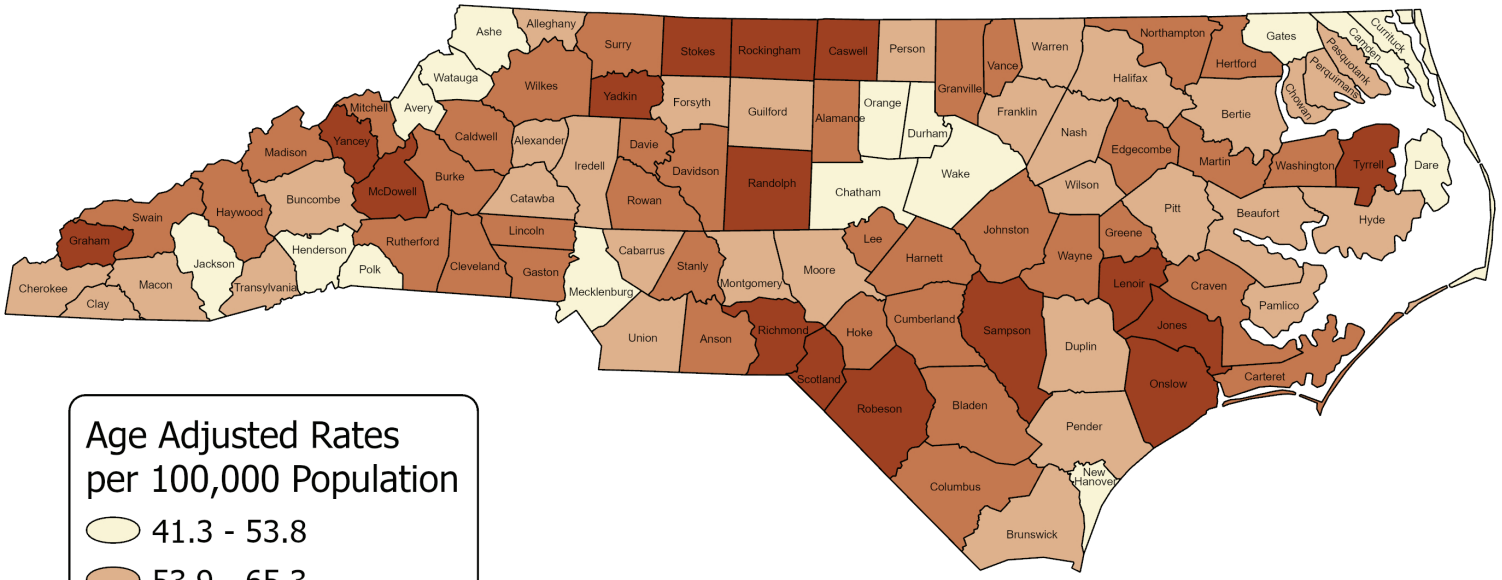
	American Cancer Society	American College of Obstetricians and Gynecologists	United State Preventive Services Task Force
Cervical	Those aged 25 to 65 should have a primary HPV test* every 5 years. If primary HPV testing is not available, screening may be done with either a co-test that combines an HPV test with a Papanicolaou (Pap) test every 5 years or a Pap test alone every 3 years. Those over the age of 65 who have had regular screening in the past 10 years with normal results and no history of CIN2 or more serious diagnosis within the past 25 years should stop cervical cancer screening. Once stopped, it should not be started again.	Screen every 3 years with cervical cytology alone (pap smear) in women aged 21 to 29. For women aged 30-65 years screen every 3 years with cervical cytology alone, every 5 years with high-risk human papillomavirus (hrHPV) testing along, or every 5 years with hrHPV testing in combination with cytology (contesting)	Screen every 3 years with cervical cytology alone (pap smear) in women aged 21 to 29. For women aged 30-65 years screen every 3 years with cervical cytology alone, every 5 years with high-risk human papillomavirus (hrHPV) testing along, or every 5 years with hrHPV testing in combination with cytology (contesting)

	American Cancer Society	United State Preventive Services Task Force
Colorectal	People at average risk of colorectal cancer should start regular screening at age 45 and continue regular colorectal cancer screening through age 75. For people ages 76 through 85, the decision to be screened should be based on a person's preferences, life expectancy, overall health, and prior screening history. People over age 85 should no longer get colorectal cancer screening.	The USPSTF recommends screening for colorectal cancer starting at age 50 years and continuing until age 75 years. The decision to screen for colorectal cancer in adults aged 76 to 85 years should be on an individual basis.

	American Cancer Society	United State Preventive Services Task Force
Prostate	Men aged 50 years and older who have at least a 10-year life expectancy should have an opportunity to make an informed decision regarding prostate cancer screening. For men with an elevated risk (African American or have a first degree relative diagnosed before 65), the discussion of prostate cancer screening should occur at age 45 years. For men with at even higher risk (those with more than one first-degree relative who had prostate cancer before 65) the discussion should occur at age 40.	Informed decision-making process for prostate cancer screening (prostate-specific antigen) but limits screening to the ages of 55 to 69 years.

Appendix G – North Carolina Cancer Plan Printable Maps

North Carolina
Lung and Bronchus Cancer Incidence Rates
2018 - 2022



Age Adjusted Rates
per 100,000 Population

- 41.3 - 53.8
- 53.9 - 65.3
- 65.4 - 76.5
- 76.6 - 89.2

NC Rate = 61.5

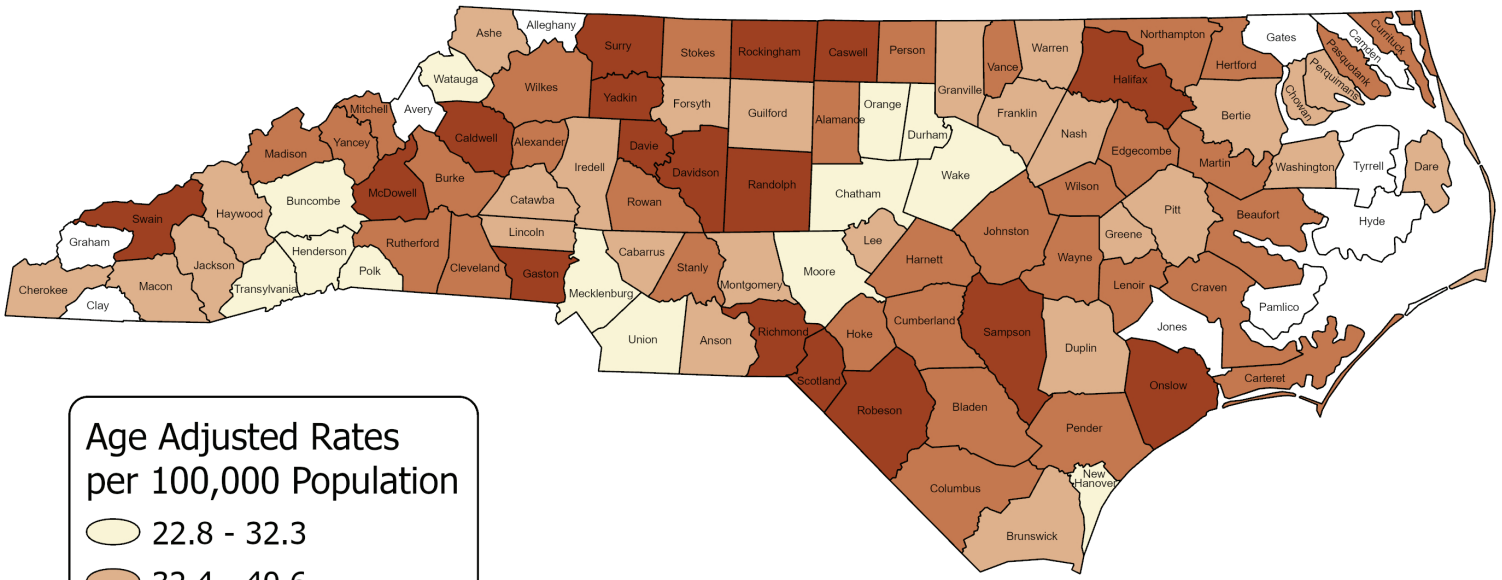
Note: Information is subject to change as files are updated.

State Center for Health Statistics

March 2025

NC DEPARTMENT OF HEALTH AND HUMAN SERVICES

North Carolina
Lung and Bronchus Cancer Mortality Rates
2018 - 2022



Age Adjusted Rates
per 100,000 Population

- 22.8 - 32.3
- 32.4 - 40.6
- 40.7 - 47.9
- 48.0 - 59.1
- Less than 16 Deaths

NC Rate = 37.8
US Rate = 32.3

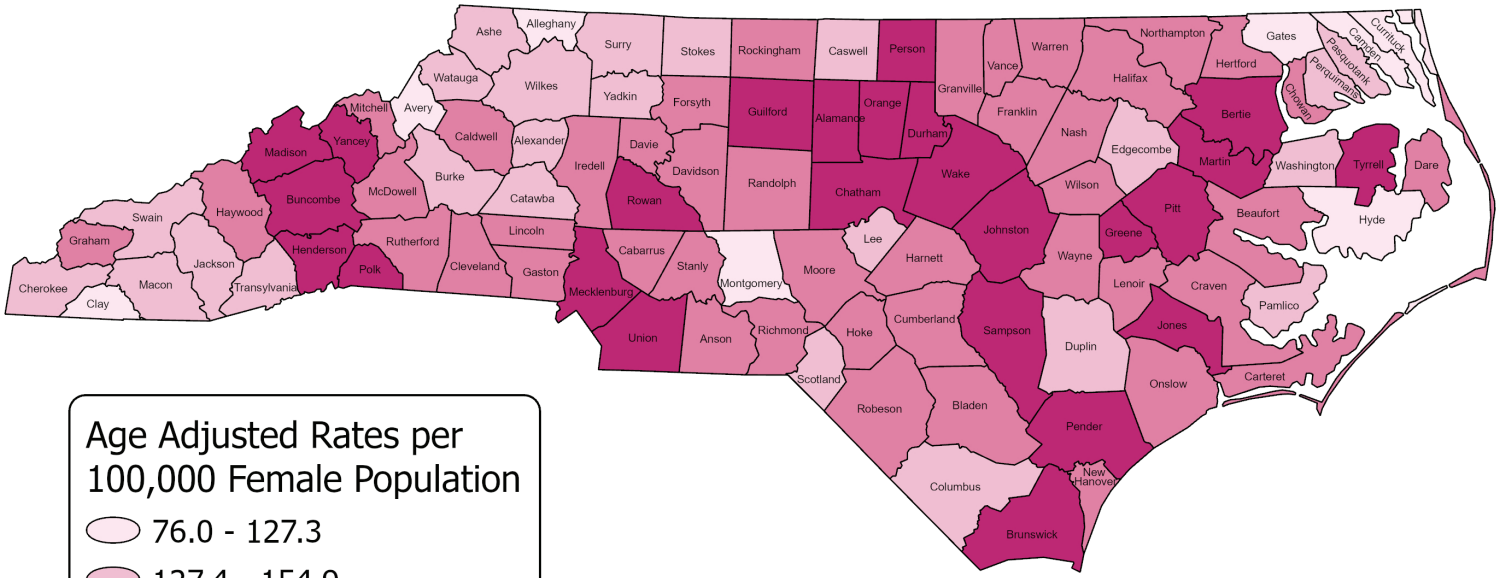
Note: Information is subject to change as files are updated.

State Center for Health Statistics

March 2025

NC DEPARTMENT OF HEALTH AND HUMAN SERVICES

North Carolina
Female Breast Cancer Incidence Rates
2018 - 2022



Age Adjusted Rates per 100,000 Female Population

- 76.0 - 127.3
- 127.4 - 154.9
- 155.0 - 176.7
- 176.8 - 217.2

NC Rate = 176.7

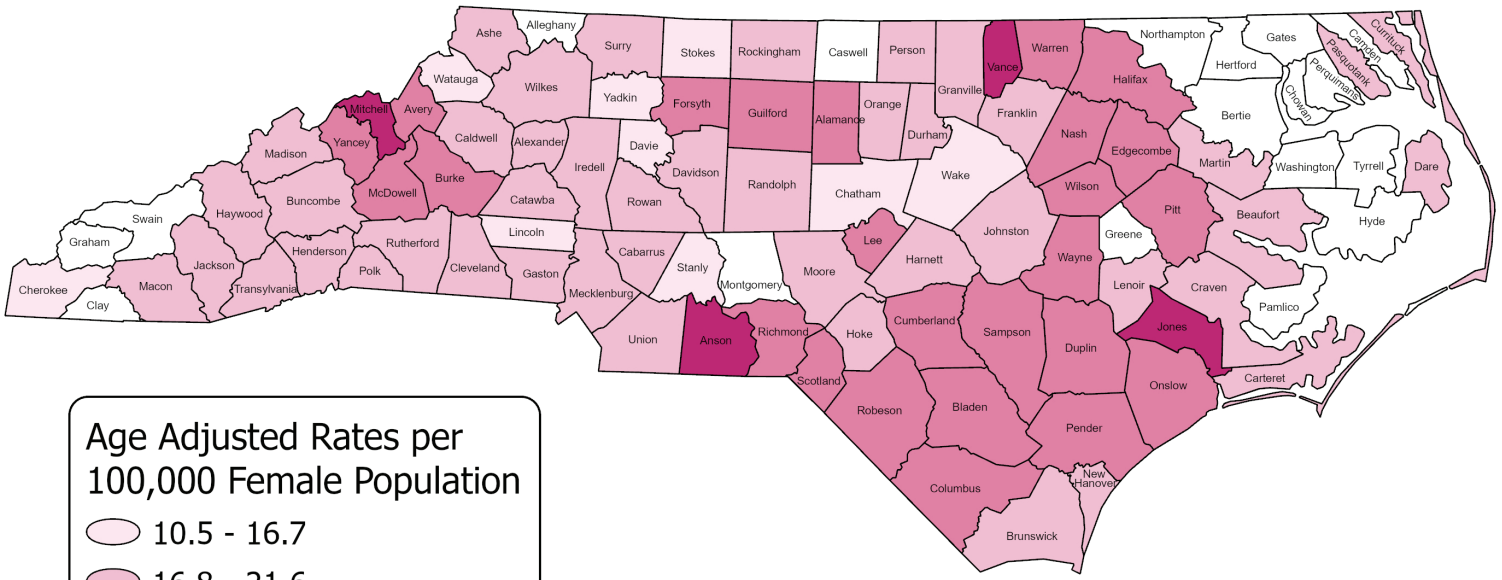
Note: Information is subject to change as files are updated.

State Center for Health Statistics

March 2025

NC DEPARTMENT OF HEALTH AND HUMAN SERVICES

North Carolina
Female Breast Cancer Mortality Rates
2018 - 2022



Age Adjusted Rates per 100,000 Female Population

- 10.5 - 16.7
- 16.8 - 21.6
- 21.7 - 28.2
- 28.3 - 39.8
- Less than 16 Deaths

NC Rate = 20.0
US Rate = 19.2

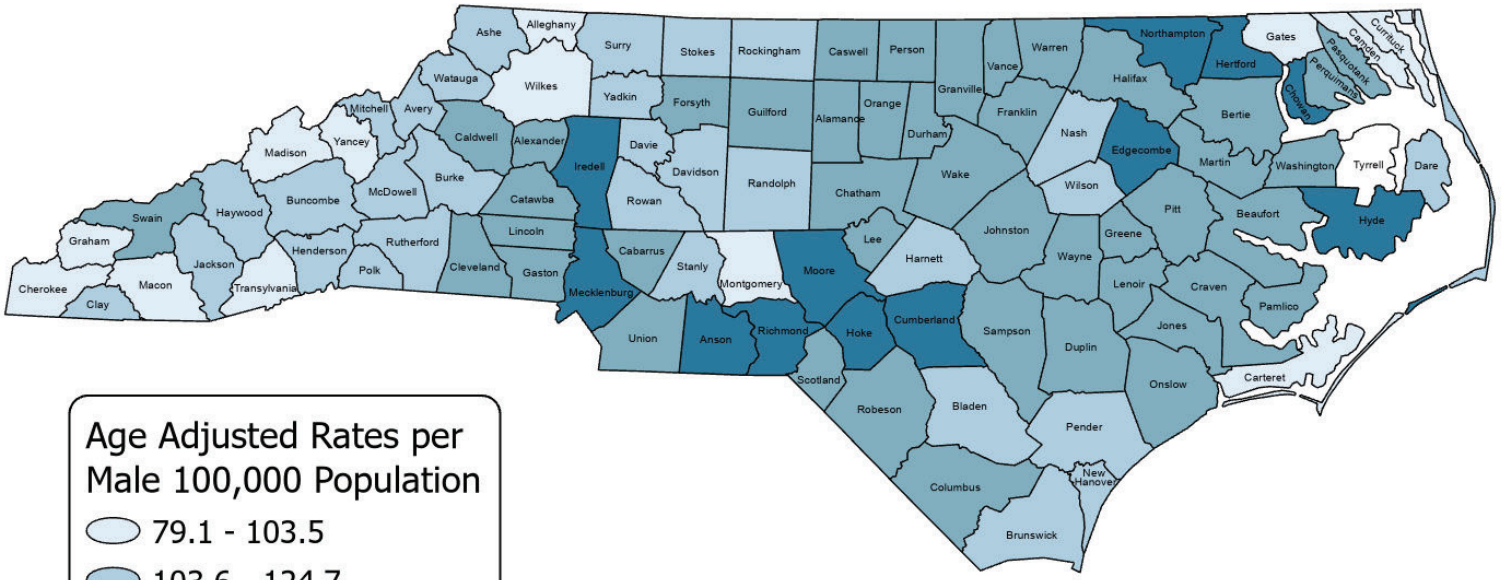
Note: Information is subject to change as files are updated.

State Center for Health Statistics

March 2025

NC DEPARTMENT OF HEALTH AND HUMAN SERVICES

North Carolina
Prostate Cancer Incidence Rates
2018 - 2022



Age Adjusted Rates per Male 100,000 Population

- 79.1 - 103.5
- 103.6 - 124.7
- 124.8 - 146.8
- 146.9 - 189.3
- Less than 16 Cases

NC Rate = 132.2

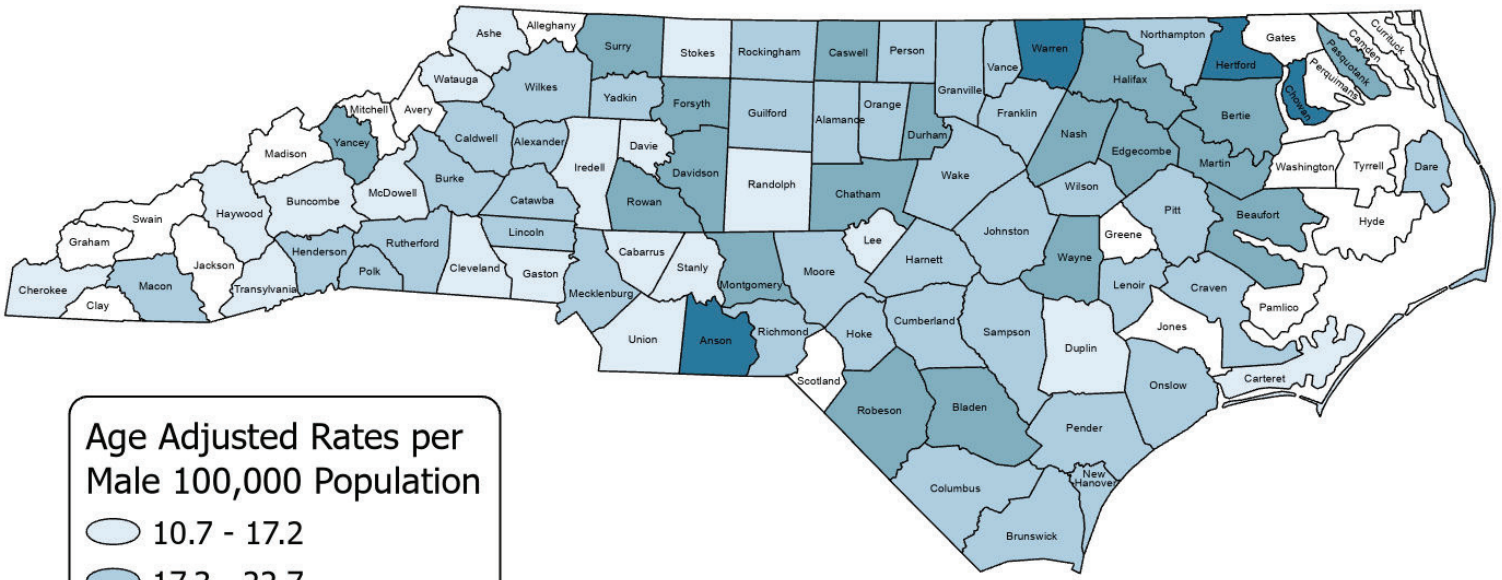
Note: Information is subject to change as files are updated.

State Center for Health Statistics

March 2025

NC DEPARTMENT OF HEALTH AND HUMAN SERVICES

North Carolina
Prostate Cancer Mortality Rates
2018 - 2022



Age Adjusted Rates per
Male 100,000 Population

- 10.7 - 17.2
- 17.3 - 22.7
- 22.8 - 29.5
- 29.6 - 41.8
- Less than 16 Deaths

NC Rate = 20.2
US Rate = 18.8

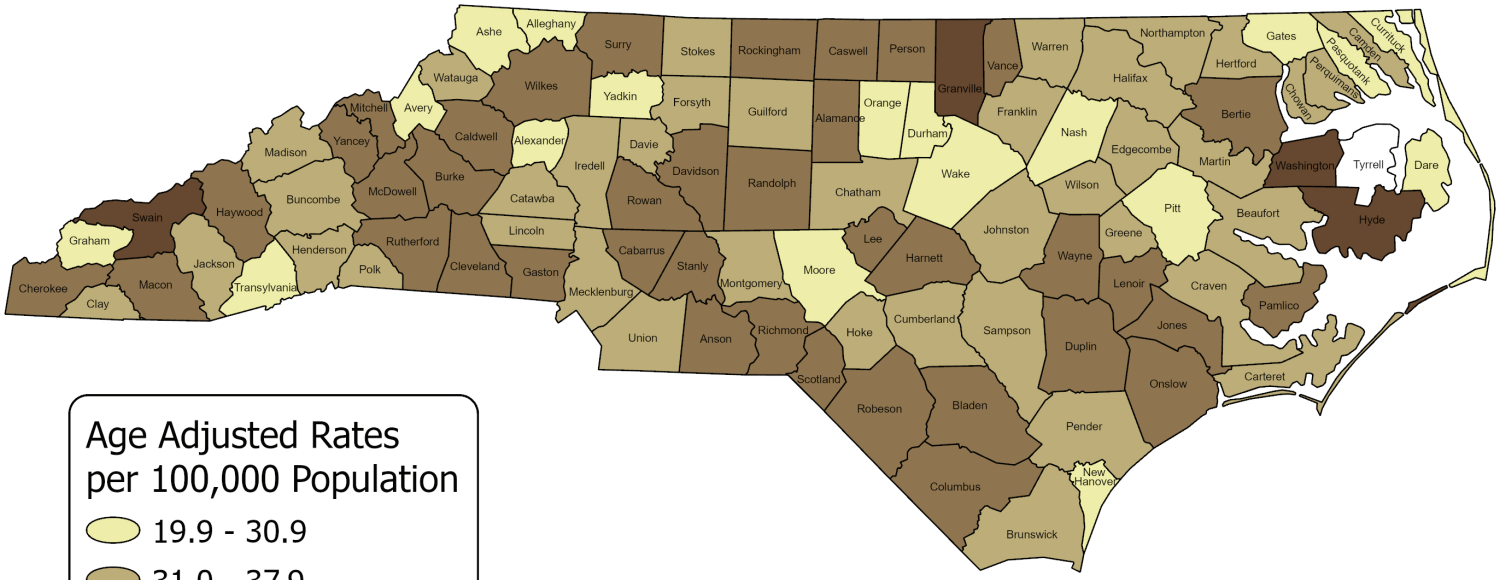
Note: Information is subject to change as files are updated.

State Center for Health Statistics

March 2025

NC DEPARTMENT OF HEALTH AND HUMAN SERVICES

North Carolina
Colorectal Cancer Incidence Rates
2018 - 2022



Age Adjusted Rates
per 100,000 Population

- 19.9 - 30.9
- 31.0 - 37.9
- 38.0 - 47.1
- 47.2 - 70.3
- Less Than 16 Cases

NC Rate = 35.5
US Rate = 37.1

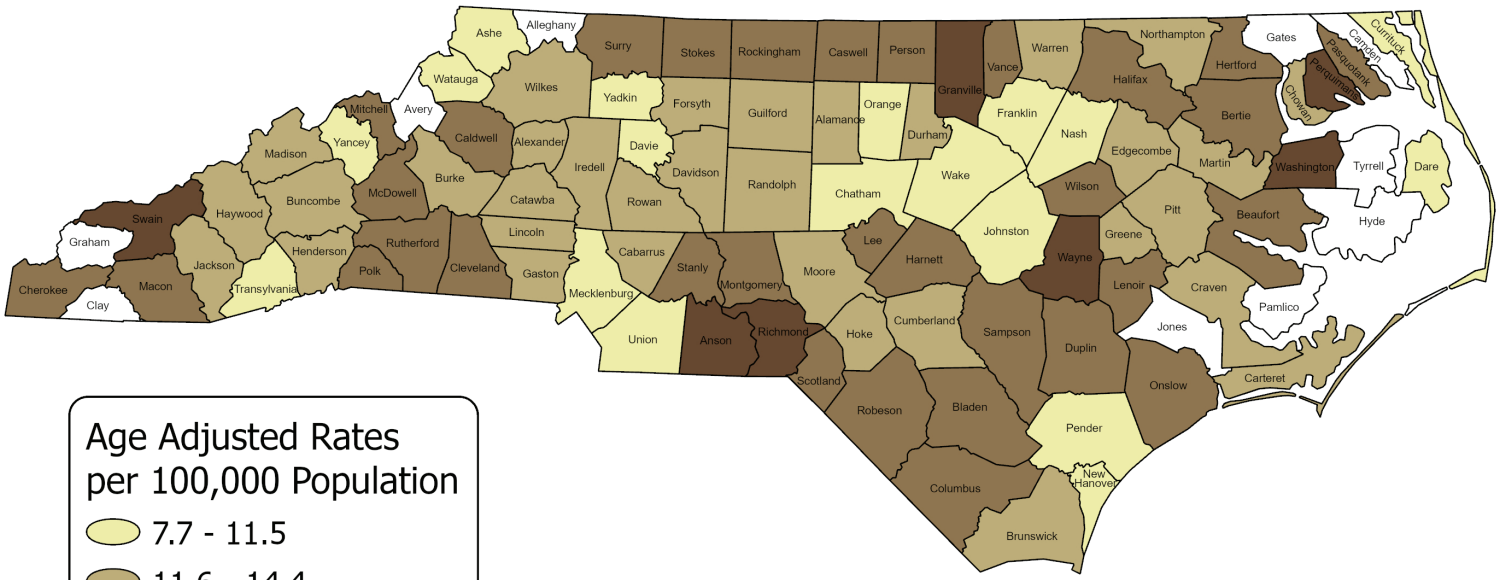
Note: Information is subject to change as files are updated.

State Center for Health Statistics

March 2025

NC DEPARTMENT OF HEALTH AND HUMAN SERVICES

North Carolina
Colon and Rectum Cancer Mortality Rates
2018 - 2022



Age Adjusted Rates
per 100,000 Population

- 7.7 - 11.5
- 11.6 - 14.4
- 14.5 - 19.0
- 19.1 - 31.5
- Less than 16 Deaths

NC Rate = 12.8
US Rate = 12.8

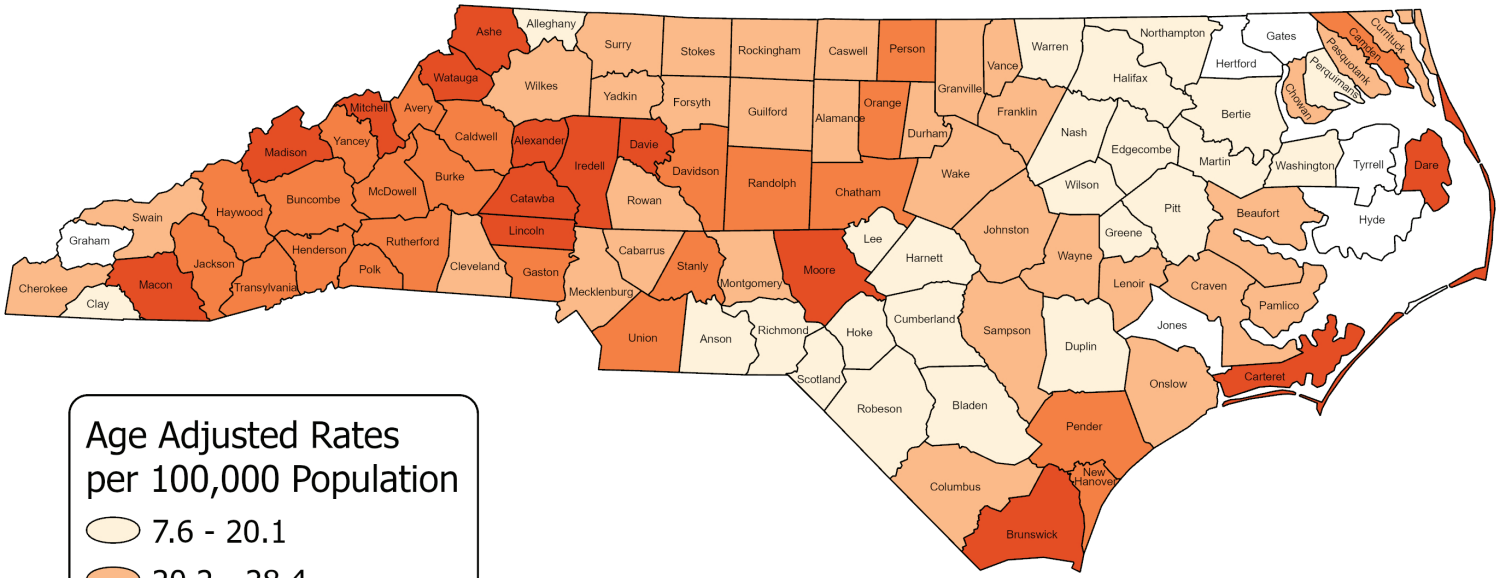
Note: Information is subject to change as files are updated.

State Center for Health Statistics

March 2025

NC DEPARTMENT OF HEALTH AND HUMAN SERVICES

North Carolina
Melanoma (Skin) Cancer Incidence Rates
2018 - 2022



Age Adjusted Rates
per 100,000 Population

- 7.6 - 20.1
- 20.2 - 28.4
- 28.5 - 36.3
- 36.4 - 51.8
- Less than 16 Cases

NC Rate = 28.0

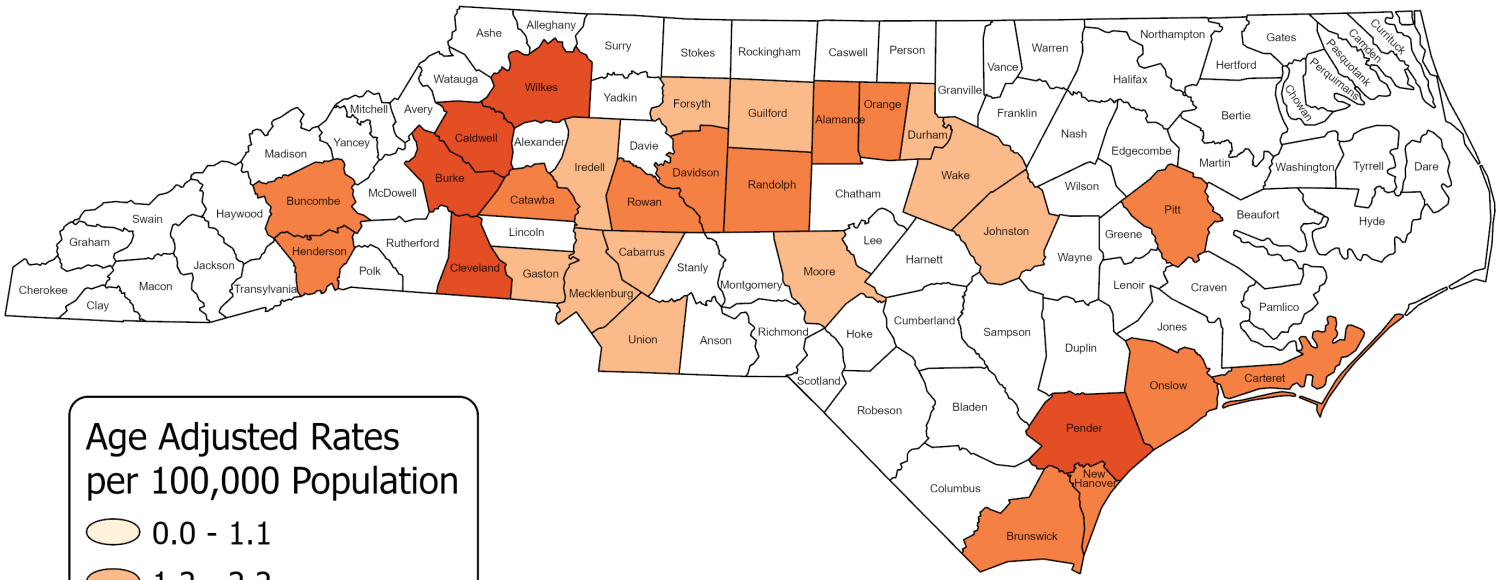
Note: Information is subject to change as files are updated.

State Center for Health Statistics

March 2025

NC DEPARTMENT OF HEALTH AND HUMAN SERVICES

North Carolina
Melanoma (Skin) Cancer Mortality Rates
2018 - 2022



Age Adjusted Rates
per 100,000 Population

- 0.0 - 1.1
- 1.2 - 2.2
- 2.3 - 3.2
- 3.3 - 4.7
- Less than 16 Deaths

NC Rate = 2.1
US Rate = 2.0

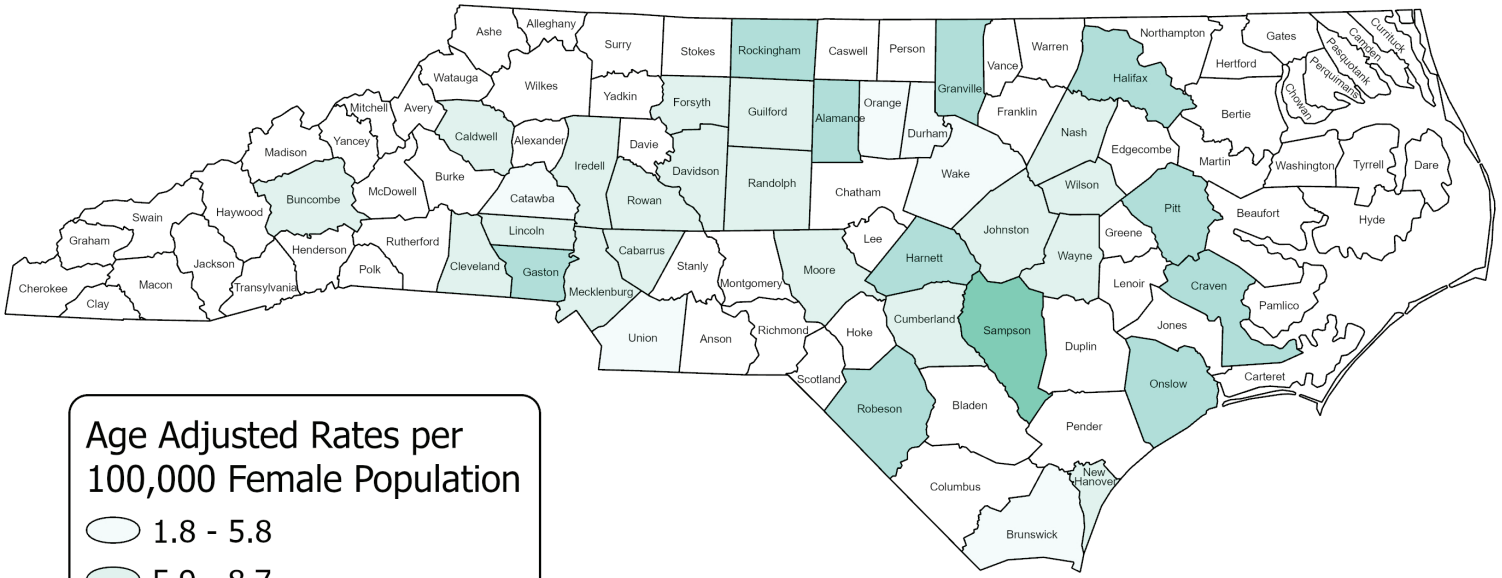
Note: Information is subject to change as files are updated.

State Center for Health Statistics

March 2025

NC DEPARTMENT OF HEALTH AND HUMAN SERVICES

North Carolina
Cervical Cancer Incidence Rates
2018 - 2022



Age Adjusted Rates per 100,000 Female Population

- 1.8 - 5.8
- 5.9 - 8.7
- 8.8 - 12.4
- 12.5 - 16.3
- Less than 16 Cases

NC Rate = 7.0

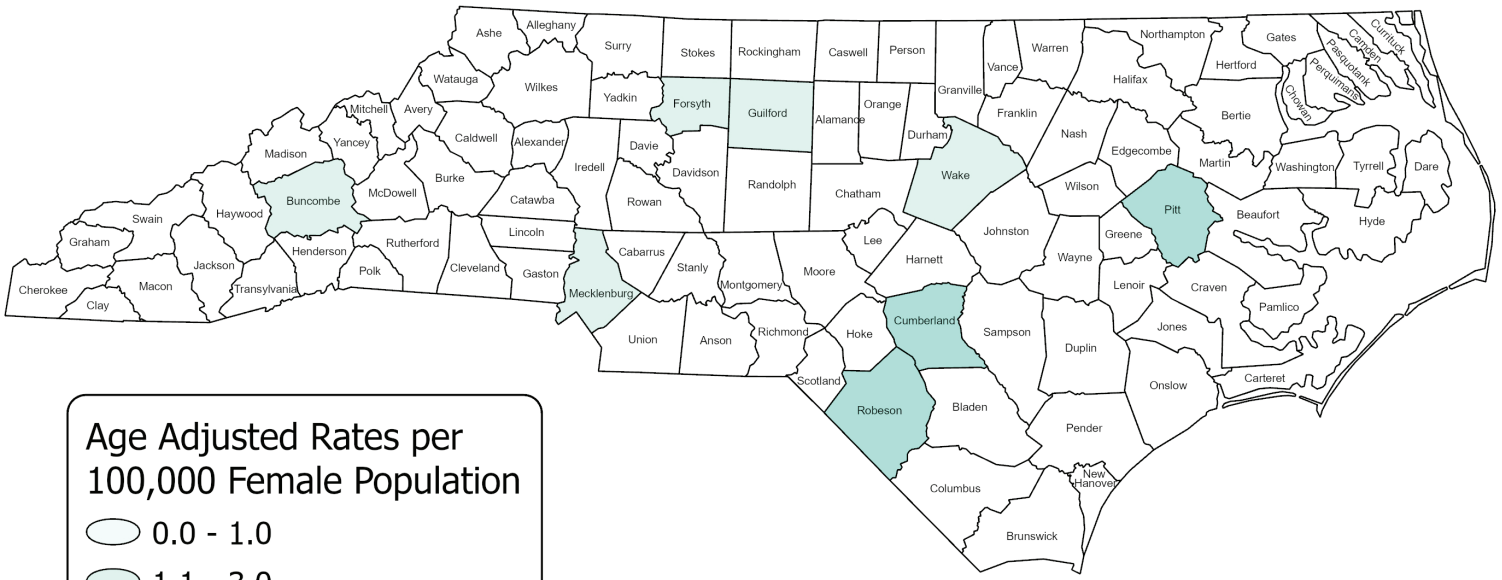
Note: Information is subject to change as files are updated.

State Center for Health Statistics

March 2025

NC DEPARTMENT OF HEALTH AND HUMAN SERVICES

North Carolina
Cervical Cancer Mortality Rates
2018 - 2022



Age Adjusted Rates per 100,000 Female Population

- 0.0 - 1.0
- 1.1 - 3.0
- 3.1 - 6.2
- 6.3 - 10.1
- Less than 16 Deaths

NC Rate = 2.0
US Rate = 2.0

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

State Center for Health Statistics

March 2025

NC DEPARTMENT OF HEALTH AND HUMAN SERVICES

Appendix H—Resources

- American Association for Cancer Research. https://www.cancerprogressreport.org/
- American Cancer Society. https://www.cancer.org
- American Indian Cancer Foundation. https://americanindiancancer.org/resources/
- AMEXCAN - Association of Mexicans in North Carolina, Inc. https://www.amexcannc.org/?lang=en
- Association of State and Territorial Health Officials (ASTHO). https://www.astho.org/
- Atrium Health Wake Forest Baptist Comprehensive Cancer Center. https://www.wakehealth.edu/
- BreastCancer.org. https://www.breastcancer.org
- Cancer Net. https://www.cancer.net/
- Centers for Disease Control and Prevention (CDC). http://www.cdc.gov
- Duke Cancer Institute. https://www.dukecancerinstitute.org/
- Dusty Joy Foundation (Lung Cancer). www.DustyJoy.org
- East Carolina University, Brody School of Medicine, Department of Public Health. https://medicine.ecu.edu/
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- National LGBT Cancer Network. https://cancer-network.org/

Screening Guidelines

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- Centers for Disease Control and Prevention. http://www.cdc.gov
- U.S. Preventive Services Task Force. https://www.uspreventiveservicestaskforce.org

Cancer Data and Surveillance

- Cancer Prevalence and Cost of Care Projections, National Institutes of Health. 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 Healthcare. https://www.dartmouthatlas.org
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- NC Tobacco Prevention and Control Branch. https://www.tobaccopreventionandcontrol.ncdhhs.gov
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Appendix I—Glossary

Age-Adjusted Rates - Age adjustment is a statistical process applied to rates of disease or other health outcomes which allows communities with different age structures to be compared. For this report, county and regional incidence and mortality rates for each respective cancer are age-adjusted.

Biological Marker - A measurable indicator of a biological process, condition, or disease. Biomarkers can be defined as substances or processes that indicate a particular disease state or physiological response to a therapeutic intervention. They can be detected and measured in various types of biological samples, such as blood, urine, tissues, or other bodily fluids.

Cancer Burden - The overall impact of cancer on a population, encompassing not just the number of new cases (incidence) and deaths (mortality), but also the wider societal and individual impact of the disease. This includes the financial costs of treatment, the emotional and psychological toll on patients and families, and the strain on health care systems.

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

Distant Stage of Diagnosis - The stage involving cancer that has spread from the original tumor to distant organs or distant lymph nodes.

Financial Toxicity - The financial burden and distress experienced by patients due to the costs associated with their medical care, particularly in serious or chronic illnesses such as cancer. This term encapsulates the economic strain that can result from expensive treatments, high out-of-pocket costs, and loss of income during treatment periods. Financial toxicity can impact patients' quality of life, treatment adherence, and overall well-being.

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

In situ - Abnormal cells are found only in the place where they first formed. They have not spread.

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

Precision Medicine - Health care that customizes medical treatment to the individual patient. Unlike the traditional "one-size-fits-all" model of medicine, precision medicine considers factors such as a person's genetic makeup, environment, lifestyle, and the specific characteristics of their disease. This personalized approach aims to improve outcomes and reduce the trial-and-error nature of prescribing treatments.

Racism - A system that assigns value and gives opportunity to people based on their skin color and the way they look.

Social Determinants of Health - The conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, quality-of-life outcomes, and risks. (Health People 2030).

Sexual and Gender Minority Populations (SGM) - An umbrella term for a highly diverse group of individuals with same-sex or -gender attractions or behaviors and those with a difference in sex development. SGM populations include, but are not limited to, individuals who identify as lesbian, gay, bisexual, transgender, queer, asexual, Two-Spirit (a term used in certain Native American tribes), and/or intersex.

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

Cancer Information

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