

Cancer in North Carolina:

DATA AND RESOURCE GUIDE

MAY 2024



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Acknowledgments

This Cancer in North Carolina – Data and Resource Guide was created by the North Carolina Comprehensive Cancer Control Program in collaboration with the North Carolina Advisory Committee on Cancer Coordination and Control; North Carolina State Center for Health Statistics, Central Cancer Registry; North Carolina Breast and Cervical Cancer Control Program; North Carolina WISEWOMAN Project; and cancer partners.

Editor

Edna R. Hensey, MPH, Editor: Comprehensive Cancer Control Program, Cancer Prevention and Control Branch, NCDHHS Division of Public Health

Neal Patel, MPH, Evaluator: Comprehensive Cancer Control Program, Cancer Prevention and Control Branch, NCDHHS Division of Public Health

Contributors/Reviewers

Vickie Fowler, MD, Chair: NC Advisory Committee on Cancer Coordination and Control; WakeMed Physician Practices Primary Care Oberlin (practice site)

Nadine Barrett, PhD, Co-Chair: NC Advisory Committee on Cancer Coordination and Control; Wake Forest University, School of Medicine

Deborah H. Allen, PhD, Clinical Nurse Scientist: DUHS Director of Nursing Research & EBP; Oncology Nurse Practitioner, DRAH Symptom Management Clinic; Associate Faculty, Duke Cancer Institute; Clinical Associate Faculty, Duke University School of Nursing

Doranna Anderson, BSEd., RHed., Program Consultant: Comprehensive Cancer Control Program, Cancer Prevention and Control Branch, NCDHHS Division of Public Health

Sarah Arthur, MBA, Program Manager: Comprehensive Cancer Control Program, Cancer Prevention and Control Branch, NCDHHS Division of Public Health

Dedication

Cancer in North Carolina - Data and Resource Guide is dedicated to all North Carolinians whose lives have been affected by cancer.

Ronnie A. Bell, PhD, Fred Eshelman Distinguished Professor and Chair: Division of Pharmaceutical Outcomes and Policy, Senior Advisor, UNC Lineberger Comprehensive Cancer Center

Erin Brown, MSPH, Program Coordinator: Breast and Cervical Cancer Control Program, Cancer Prevention and Control Branch, NCDHHS Division of Public Health

Ashley Curtice, MS, Director of Public Education and Communications: Tobacco Prevention & Control Branch, NCDHHS Division of Public Health

Cushanta Horton, MPH, Branch Head: Cancer Prevention and Control Branch, NCDHHS Division of Public Health

Kimberly McDonald, MD, MPH, Section Chief: Chronic Disease and Injury Section, NCDHHS Division of Public Health

Chandrika Rao, PhD, Director: Central Cancer Registry, State Center for Health Statistics, NCDHHS Division of Public Health

Fatma Simsek, MPH, Statistical Supervisor: Central Cancer Registry, State Center for Health Statistics, NCDHHS Division of Public Health

Larissa Williams, MPH, Program Coordinator: Comprehensive Cancer Control Program, Cancer Prevention and Control Branch, NCDHHS Division of Public Health



5505 Six Forks Rd • 1922 Mail Service Center • Raleigh, NC 27699
919 707 5300 main number • 919 870 4812 fax number

Dear Fellow North Carolinians:

In our fight to reduce the burden of cancer in North Carolina, the North Carolina Advisory Committee on Cancer Coordination and Control (ACCCC) is pleased to unveil *Cancer in North Carolina: Data and Resource Guide*. It is a companion resource to the North Carolina Comprehensive Cancer Control Action Plan 2020-2025 (N.C. Cancer Plan).

Cancer in North Carolina: Data and Resource Guide provides an update on progress being made regarding incidence and mortality rates for our six priority cancers (breast, cervical, colorectal, prostate, lung, and melanoma skin cancer). Additionally, it highlights the unequal burden of cancer among population groups. Cancer remains to be the second, only to heart disease, leading cause of death in North Carolina. Female Breast, Colorectal and Lung Cancer Mortality rates are higher than the national average. Since our last report *Reducing the Burden of Cancer In North Carolina*, we have lost 99,373 North Carolinians to Cancer according to the NC State Center for Health Statistics.

Everyone is vital in the fight against cancer whether you are a cancer survivor, caregiver, policymaker, employer, school staff or student, community leader, public health or healthcare professional.

Cancer in North Carolina: Data and Resource Guide along with the [North Carolina Comprehensive Cancer Control Action Plan 2020-2025](#) provide resources and steps that you can take as an individual, community member, employer, policymaker, healthcare professional and more to reduce the burden of cancer.

Join us in the fight against cancer and by adopting the *Cancer in North Carolina: Data and Resource Guide* and the [North Carolina Comprehensive Cancer Control Action Plan 2020-2025](#) into your work.

Sincerely,

Vickie Fowler, MD
Chair, NC Advisory Committee on Cancer Coordination and Control

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.



NC DEPARTMENT OF
**HEALTH AND
HUMAN SERVICES**

ROY COOPER • Governor

KODY H. KINSLEY • Secretary

MARK T. BENTON • Deputy Secretary for Health

SUSAN KANSAGRA • Assistant Secretary for Public Health, Division of Public Health

Dear North Carolinians,

The NC Cancer Prevention and Control Branch is pleased to share *Cancer in North Carolina: Data and Resource Guide* with you. It was prepared by the Comprehensive Cancer Control Program in our Branch in collaboration with the NC Breast and Cervical Cancer Control Program; NC WISEWOMAN Project; the NC State Center for Health Statistics, Central Cancer Registry, and the NC Advisory Committee on Cancer Coordination and Control.

Accurate surveillance data is critical for providers and cancer partners in identifying populations in their communities at higher risk for developing cancer. This Data and Resource Guide provides data on the status of the six priority cancers (lung, female breast, prostate, colorectal, cervical, and melanoma skin cancers) included in the *North Carolina Comprehensive Cancer Control ACTION Plan 2020-2025*. This report also contains data about where cancer risk factors are concentrated the highest, evidence-based intervention strategies, and resources.

Reducing cancer incidence and mortality rates in North Carolina continues to be a challenge. Please join the NC Cancer Prevention and Control Branch, other NC Chronic Disease Section programs, the NC Advisory Committee on Cancer Coordination and Control and cancer partners in working to reduce these rates. For more information, please contact the Cancer Branch at (919) 707-5300 or visit www.dph.ncdhhs.gov/programs/chronic-disease-and-injury/cancer-prevention-and-control-branch.

Sincerely

Cushanta Horton

Cushanta Horton, MPH
Branch Head Division of Public Health, Cancer Prevention and Control Branch
NC Department of Health and Human Services

Preface



Cancer is the second leading cause of death in our state, but the burden of cancer is not equal across all populations and counties. North Carolinians have major differences in health, healthy lifestyle resources, and medical care depending on racial/ethnic background, gender, and where they live. Cancer health disparities are driven by a complex interaction between social, lifestyle, environmental, biological, and structural racism embedded in the nation's systems of health care. Social determinants of health factors that influence health disparities include lack of/under employment, inadequate housing, food insecurity, and limited educational opportunities. People in rural areas often face major challenges in accessing health care providers, medications, transportation services, and caregivers.

Cancer in North Carolina – Data and Resource Guide was created by the North Carolina Cancer Prevention and Control Branch, Comprehensive Cancer Control Program in collaboration with the North Carolina Advisory Committee on Cancer Coordination and Control; the North Carolina State Center for Health Statistics, Central Cancer Registry; the North Carolina Breast and Cervical Cancer Control Program; and the North Carolina WISEWOMAN Program. It is a data document on the status of six priority cancers (lung, female breast, prostate, colorectal, cervical, and melanoma skin cancers) included in the *North Carolina Comprehensive Cancer Control ACTION Plan 2020-2025* (Cancer Plan). Accurate surveillance data is critical for providers and cancer partners in identifying communities at higher risk for developing cancer within their service areas. Since families and individuals experience varying degrees of cancer burden depending on where they live, this report also contains data about where risk factors are highly concentrated. Evidence-based intervention strategies and resources are included. (See Appendix A for planning cancer interventions and Appendix B for interventions and evidence-based strategies.)

The purpose of both the Cancer Plan and the Data and Resource Guide is to facilitate community providers and partners working together to develop

evidence-based strategies to reduce the incidence and mortality cancer rates in their communities. For more information on data produced in this report or for guidance on planning strategies, contact the North Carolina Comprehensive Cancer Control Program Manager by visiting the North Carolina Cancer Prevention and Control Branch website at [NCDHHS: DPH: NC Cancer Prevention and Control Branch: Contact Us](#).

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 cited unless it is web available. Cancer incidence and mortality rates are typically cited in five-year measurement periods with incidence rates typically 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 this Data and Resource Guide 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. Caution must be used when comparing data in this document to data published in *Reducing the Burden of Cancer in North Carolina*, November 2017 because the population basis may be different.

*Everyone has a part in
the fight against cancer!*

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.

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

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 when cancer has spread from the original tumor to distant organs or distant lymph nodes.

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.

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 nodes.

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The daffodil – the flower of cancer survivorship



2023 North Carolina Cancer Mortality Key Findings

10,266 people lost their lives to cancer between 2018 and 2022.

The all-cancer mortality rate **went down from 176.5 per 100,000 population** (2008-2012) to **153.1 per 100,000 population** in the five years from 2018-2022.

African Americans have higher mortality rates than other races for female breast, colorectal, and prostate cancers.

American Indians have a **higher lung cancer incidence rate** than other racial/ethnic groups.

Males tend to have **significantly higher cancer mortality rates** than females.

Colorectal mortality rate is lower than the national average.

Female breast, lung and melanoma cancer **mortality rates are higher** than the national average.

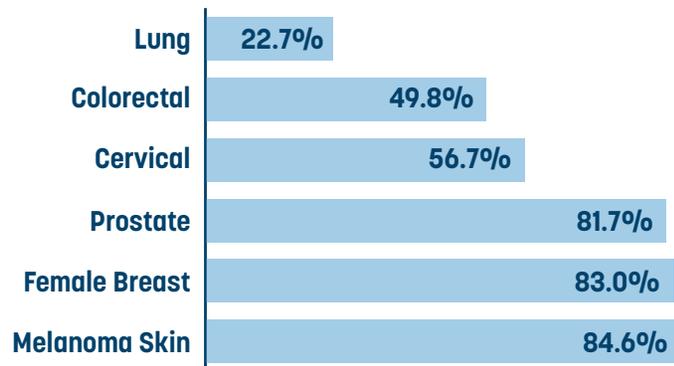
NC State Center for Health Statistics. https://schs.dph.ncdhhs.gov/data/cancer/mortality_rates.htm

Introduction

Cancer is the second leading cause of death in North Carolina after heart disease.¹ *Cancer in North Carolina – Data and Resource Guide* supports the *North Carolina Comprehensive Cancer Control ACTION Plan 2020-2025* by updating data for the six priority cancers (lung, female breast, prostate, colorectal, cervical, and melanoma skin cancers).² The Cancer Plan is a statewide blueprint to reduce North Carolinians’ cancer burden; it identifies cancer challenges and issues that affect North Carolinians; and offers cancer information, cancer fighting goals, and evidence-based strategies. The Data and Resource Guide contains surveillance data for the six North Carolina priority cancers, evidence-based strategies, cancer screening guidelines, and resources.

Even with the challenges in cancer prevention and control in North Carolina, the good news is that cumulative observed 5-year survival rates for these priority cancers have increased. Yet, we still see disproportionate survival rates between the priority cancers.³

NC CUMULATIVE OBSERVED SURVIVAL RATE BY CANCER 2017-2021



North Carolina is a large, diverse state with a population of 10,835,491 in 2023.⁴ The population is geographically divided between the Coastal Plain, Piedmont, and Appalachian Mountains. The Piedmont area has most of the urban development while the Coastal Plain and Appalachian Mountain areas are generally considered rural. The U.S. Census Bureau defines urban as an area with at least 5,000 population or 2,000 households.⁵ This urban/rural spread presents unique challenges in planning and implementing cancer prevention and control programs. The urban areas generally have a wide 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.

North Carolinians have major differences in health, healthy lifestyle resources, and medical care depending on their racial/ethnic background, gender, and where they live. According to the 2020 U.S. Census, racial/ethnic minorities make up nearly 40% of the U.S. population while racial/ethnic minorities make up about 30% of the population in North Carolina.⁴

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 this Data and Resource Guide, 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. This table shows the race/ethnicity diversity in the state.⁶

NC 2023 ESTIMATED POPULATION BY RACE/ETHNICITY

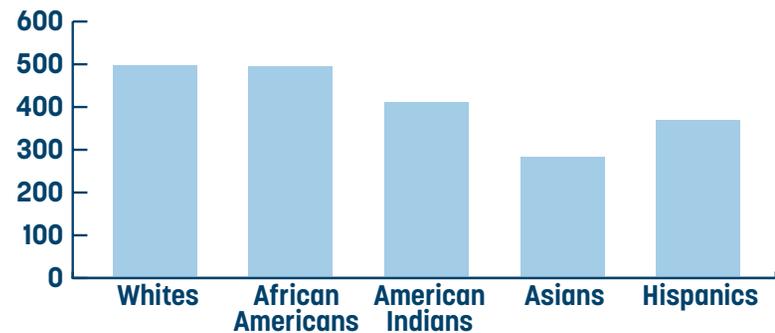
Total Population	10,835,491
Whites	69.9%
African Americans	22.2%
Hispanics	10.5%
Asians	3.6%
American Indians	1.6%

People who carry the biggest cancer burden are those experiencing inadequate or inaccessible health care, inadequate housing or food, or other aspects of poverty. This often includes people of racial/ethnic or sexual/gender minorities and people living in rural areas. Their burden is caused by complex interactions between social, lifestyle, environmental, and biological factors. These interactions are often referred to as social determinants of health. Healthy People 2030 defines social determinants of health as the conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes, and risks.⁷ These more often adversely affect racial/ethnic minorities. An extensive discussion of social determinants of health and interactive map organized by the North Carolina Association of Local Health Department Regions is available at the North Carolina State Center for Health Statistics website.⁸

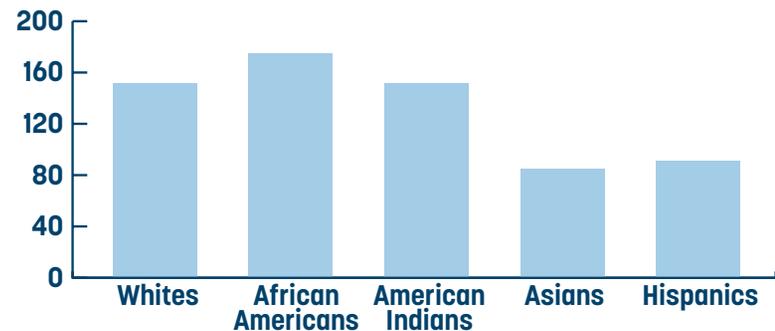
Racism makes it harder to address social determinants of health and is considered a serious public health threat. It is defined as a system that assigns value and gives opportunity to people based on their skin color and the way they look. Racism includes structural, institutional, interpersonal, and internalized racism. It contributes to cancer health disparities by limiting access to prevention, screening, care, and treatment. 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, over 50% of the white medical students and residents surveyed believed false information about how African Americans perceived pain. This belief influenced their treatment recommendations.⁹ Other factors that influence health disparities include lack of/under employment, inadequate housing, food insecurity, limited education, lack of health insurance, lack of transportation, limited income, and limited access to health care.

Cancer imposes physical, financial, and emotional tolls on patients, family, and friends, as well as health care systems across the state and nation. This is especially true for people of racial/ethnic minorities. The cost of cancer care is expected to rise as the population ages and has increased need for cancer care and treatment. The projected cost in 2030 for cancer care in the United States is \$245.6 billion. The cost estimate included medical services and prescriptions. This chart compares national expenditures for cancer care in 2015 and 2030 by cancer site.¹⁰

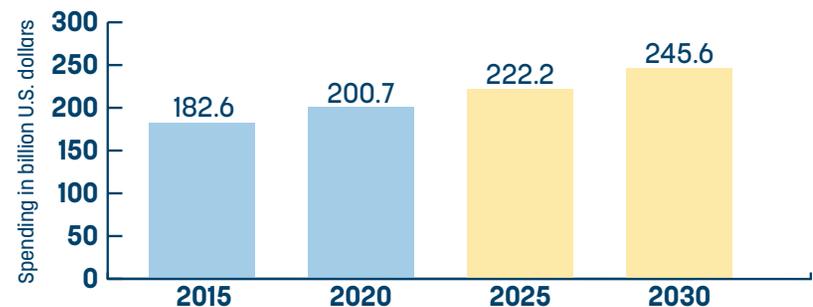
NC INCIDENCE RATE BY RACE/ETHNICITY, ALL CANCERS 2017-2021



NC MORTALITY RATE BY RACE/ETHNICITY, ALL CANCERS 2018-2022



NATIONAL CANCER COSTS IN THE UNITED STATES IN 2015 AND PROJECTIONS UNTIL 2030 (IN BILLION U.S. DOLLARS)

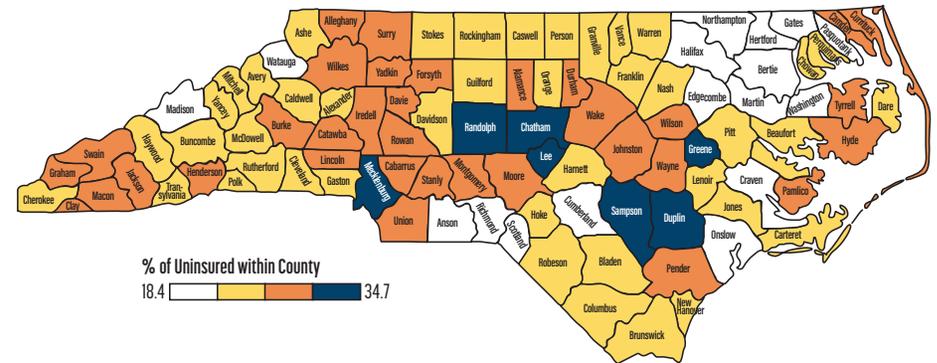


American Cancer Society; Expert(s) © Statista 2024
 Additional Information: United States; Expert(s) (Mariotto AB, et al.); 2019

Almost 13% of North Carolinians live in poverty. The median household income for North Carolina was \$66,156 in 2022, the latest figures available.⁴ The U.S. Census Bureau uses a set of money income thresholds that vary by family size and composition to determine who is living in poverty. If a family's total income is less than the family's threshold, then that family and every individual in it is considered living in poverty. Household incomes vary widely across the state with the highest income levels in the urban areas. Lower income levels often lead to lower rates of cancer screening which leads to the cancer being diagnosed at a later stage of disease. This increases the possibility of unfavorable treatment outcomes.

Lack of access to quality health care is a major problem for racial/ethnic populations. There are many people without health insurance coverage across the state as shown in this map.¹¹ United States Census Data shows that in 2021, 26.6% of North Carolinians ages 21-64, earning 250% of Federal Poverty Level or less, did not have health insurance.⁴ This may be due to lack of/under employment, limited education, and other factors. The kind of health care a person receives is directly related to the likelihood of desirable health care outcomes. Health insurance coverage makes a difference in when people seek medical care, where they get their care, and the quality of their overall care and health.

NC PERCENTAGE OF UNINSURED POPULATION BY COUNTY 2021, AGES 21-64

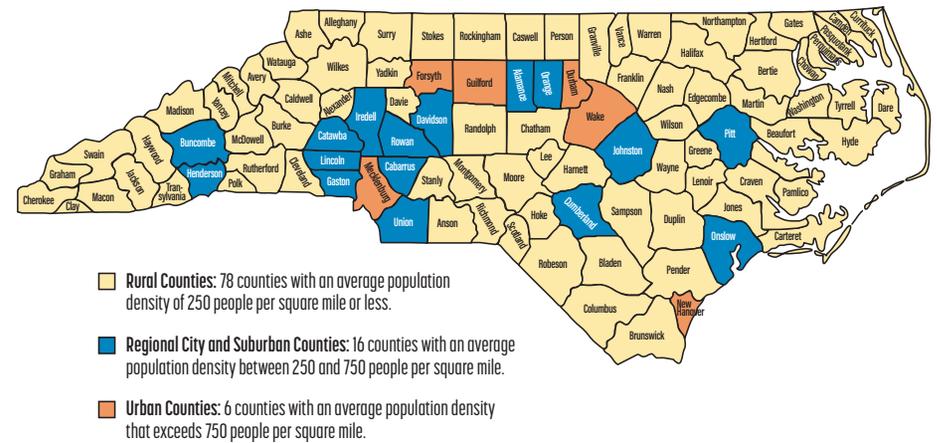


Even with health insurance, people in rural areas often face major challenges accessing health care providers, medications, transportation services, caregivers, and other supportive services. This NC Rural Center map, based on the United States 2020 Census, shows that most of the counties in North Carolina are considered rural.¹² The United States Census Bureau defines rural as an area with under 5,000 population or less than 2,000 households.⁵

NC COUNTIES WITH PERCENTAGES OF UNINSURED PATIENTS EXCEEDING 29.0% 2021, AGES 21-64

County	Percent Uninsured	County	Percent Uninsured
North Carolina	26.6%	Swain	30.6%
Duplin	34.7%	Graham	30.5%
Chatham	33.6%	Henderson	30.1%
Lee	32.3%	Macon	30.1%
Greene	31.8%	Montgomery	29.8%
Mecklenburg	31.2%	Alleghany	29.6%
Randolph	31.1%	Jackson	29.5%
Sampson	31.0%	Durham	29.4%

NC PERCENTAGE OF UNINSURED POPULATION BY COUNTY 2021, AGES 21-64



Densities calculated by the Rural Center based on the 2020 U.S. Census.

There are major health equity differences in the four North Carolina priority cancers (lung, female breast, prostate, and colorectal) that have the highest mortality rates depending on a person's racial/ethnic background. The incidence and mortality rate differences by race/ethnicity are illustrated in the chart below. In three (colorectal, female breast, and prostate) of the four most deadly cancers, African Americans have higher mortality rates than the other races. African American males have both higher prostate cancer incidence and mortality rates. Asians have the lowest female breast, colorectal, and skin cancers mortality rates.⁶

American Indians have the highest lung cancer incidence and mortality rates of any other population groups and have the highest commercial tobacco use compared to other races and ethnicities.^{13,14} Commercial and traditional tobacco are different in the way that they are planted, grown, harvested, prepared, and used. Commercial tobacco, a carcinogen, is mass produced and contains thousands of chemicals including nicotine, which is addictive. Traditional tobacco is a natural product, has no additives, and is used for ceremonial and cultural purposes. Both commercial and traditional tobacco are used by many American Indian tribes.¹⁵

NC INCIDENCE & MORTALITY CANCER RATES BY RACE/ETHNICITY PER 100,000 POPULATION, 2017-2021*

CANCER	ALL RACES/ ETHNICITIES		WHITES		AFRICAN AMERICANS		AMERICAN INDIANS		ASIANS		HISPANICS	
	Incidence	Mortality	Incidence	Mortality	Incidence	Mortality	Incidence	Mortality	Incidence	Mortality	Incidence	Mortality
Colorectal	35.3	12.6	34.8	12.1	38.1	16.1	36.1	12.7	22.8	6.4	29.6	9.3
Female Breast	174.0	20.4	175.6	19.2	177.1	26.5	128.4	15.7	118.4	8.3	140.0	12.3
Lung	62.1	38.8	64.2	40.1	60.5	38.0	75.1	49.9	28.9	19.2	29.8	15.4
Prostate	128.6	19.9	113.2	16.9	197.3	38.6	102.9	21.2	59.8	9.4	86.7	12.4
Cervical	6.9	2.0	6.5	1.8	7.0	2.8	10.3	**	4.9	**	11.2	2.5

*Melanoma skin cancer is not included because the rates for some minorities are unstable because of small numbers.

NC MORTALITY CANCER RATES BY RACE/ETHNICITY PER 100,000 POPULATION, 2018-2022*

CANCER	ALL RACES/ ETHNICITIES	WHITES	AFRICAN AMERICANS	AMERICAN INDIANS	ASIANS	HISPANICS
Colorectal	12.7	12.3	15.9	12.6	6.6	8.2
Female Breast	19.9	18.6	26.5	16.2	8.3	11.2
Lung	37.5	38.7	37.5	48.0	19.5	13.9
Prostate	20.0	16.9	39.0	21.5	9.5	11.6
Cervical	2.0	1.8	2.8	**	**	2.5
Melanoma	2.1	2.7	0.3	**	**	**

*Rates based on cases less than 16 are suppressed as they are not stable to report.



Gender makes a difference in cancer incidence and mortality rates. Both incidence and mortality cancer rates are higher among men than women for the four priority cancers with highest projected mortality (lung, prostate, colorectal, and melanoma).¹⁶ This difference is attributed to men's higher rates of cigarette smoking, heavier use of alcohol, and employment in outdoor and hazardous occupational settings with exposure to cancer-causing substances. Also, men's reluctance to seek health care leads to increased late stage diagnosis where the cancer has spread to other parts of the body and treatment is not as successful.¹⁷

NC PROJECTED NEW CASES AND DEATHS FOR PRIORITY CANCERS BY GENDER 2024¹⁸

CANCER	MALE		FEMALE	
	New Cases	Deaths	New Cases	Deaths
Lung	4,925	3,105	4,509	2,567
Female Breast			12,724	1,544
Prostate	9,094	1,207		
Colorectal	2,538	935	2,362	855
Melanoma	2,217	192	1,482	106
Cervical			418	137

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Unequal Cancer Burden Among North Carolinians

The Data and Resource Guide focuses on the five largest racial/ethnic populations in North Carolina along with sexual/gender minority (SGM) populations. The five largest population groups 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 this Data and Resource Guide, 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. The SGM populations are included because their unique experiences create challenges in preventing and treating cancer.

Cancer is one of the costliest diseases to treat.¹ Financial insecurity and lack of health insurance are two significant factors for cancer patients. Patients experiencing poverty often have lower rates of cancer screening which leads to later stage diagnosis. These patients may have other factors that impact cancer outcomes such as food insecurity, limited access to health care and medications, limited transportation, and inadequate housing.²

Non-Hispanic Whites

Almost 70% of North Carolinians (6,711,126) identify as white.² Whites tend to have a higher cancer incidence rate but lower mortality rate than African Americans. In the 2018-2022 period, whites had a cancer mortality rate of 151.5 per 100,000 population compared to African Americans rate of 174.9 per 100,000. The cancer mortality rate for American Indians was 152.3 per 100,000, Hispanics 90.8 per 100,000, and Asians 85.1 per 100,000.^{3,4} Cancers in the white population are



often detected at an earlier stage before they have spread to other parts of the body leading to more successful treatment.

Whites tend to have higher incomes, more and/or better health insurance coverage, and higher educational levels. According to the North Carolina State Center for Health Statistics, only 9.4% of white North Carolinians live in poverty in contrast to minority populations which range from 21.6% to 26.5%. Approximately 8% of whites do not have health insurance in contrast to the minority populations which range from 11.4% to 31.3%.²

Non-Hispanic African Americans

Over 2,344,300 North Carolinians identify as African American which is about 22% of the total population.² African Americans had a higher death rate for cancer overall during the 2018-2022 period with a cancer mortality rate of 174.9 per 100,000 population compared to whites with a rate of 151.5 per 100,000, American Indians at 152.3 per 100,000, Hispanics at 90.8 per 100,000 or Asians at 85.1 per 100,000. The higher cancer death rates for African Americans tend to be from colorectal, prostate, and female breast cancers.⁴ They are more likely than whites to have cancer detected at a later stage when cancer has had the opportunity to grow and spread to other parts of the body where it becomes more difficult to treat.

Almost 22% of African Americans live under the poverty line, with 11.4% living without health insurance.² This limits the amount and type of health care received, as well as quality of diet and lifestyle. Another factor that limits African Americans' health care is a mistrust in the health care system. This mistrust stems from a long history of racial bias and discrimination including the exploitation of African Americans in medical experiments.

Hispanics/Latinos

Hispanics make up the youngest population group and represent a wide diversity of cultural and ethnic origins. Over 10% or about one million North Carolinians identify as Hispanic.² Over 25% of North Carolina Hispanic population lives in or around Mecklenburg and Wake counties in the Piedmont area of the state. The Hispanic population is growing in many other counties.

Approximately 31% of Hispanics in North Carolina do not have health insurance.² Like African Americans and other minority populations, lack of health insurance and income restricts the amount and type of health care they receive. Hispanics also have many cultural factors that influence health behaviors, lifestyle choices, and health care. These include language barriers, traditional health practices, and beliefs about illness. Unfortunately, many immigrants and subsequent generations are adopting a lifestyle that increases their cancer risks such as smoking, excessive alcohol use, and an unhealthy diet.

Non-Hispanic Asians/Pacific Islanders

Asians make up 3.6% of North Carolina's population and this group is largely made up of recent immigrants.² This population is the fastest-growing racial/ethnic group in the state. It is extremely diverse, with over 20 Asian ethnicities and countries of origin represented. Asian Indians are the largest of these ethnic groups, making up over 25% of the state's Asian population; followed by Chinese (15%), Vietnamese (12%) and Filipinos (12%). There are also several smaller ethnic minority groups including the Hmong and the Montagnard from Southeast Asia. Over 12% of Asians live in poverty.⁵

The Asian population is concentrated in four large metropolitan areas: the Charlotte area; the Triangle area (Durham, Chapel Hill, Raleigh, and Cary); the Piedmont Triad area (Greensboro, High Point and Winston-Salem); and the Hickory – Lenoir – Morganton Metropolitan area. This population is rapidly spreading into other areas of the state. Lung cancer is the leading cause of death in Asians; they have the lowest overall cancer mortality rate of any population group in North Carolina.⁴

Non-Hispanic American Indians

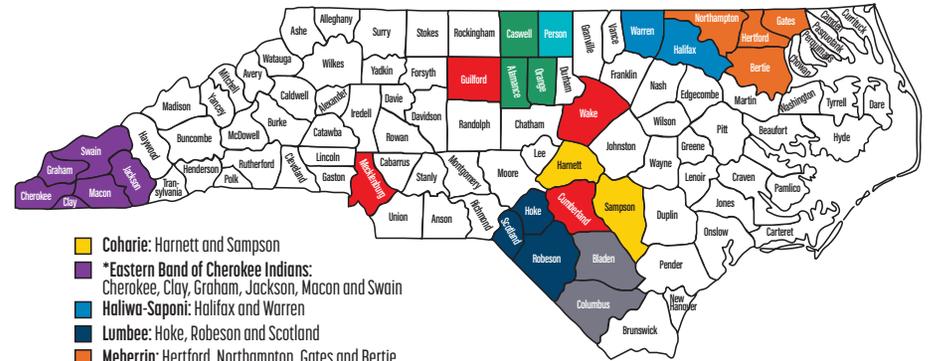
According to the North Carolina State Center for Health Statistics, 124,338 North Carolinians identified as American Indian which is about 1.2% of the total population. Over 26% of North Carolina American Indians lived in poverty in 2022.² This means that many do not have health insurance, access to regular medical care, or a healthy diet.

North Carolina has the largest American Indian population east of the Mississippi River and the eighth-largest American Indian population in the United States.⁶ Eight tribes are recognized in North Carolina. These are generally located in the west, north central, south central, and northeast parts of the state.⁷ The Eastern Band of Cherokee Indians, located in the far western part of the state, is the only federally recognized tribe so they have access to health care resources provided by the United States Department of Health and Human Services, Indian Health Service.

American Indians are more likely to be misclassified as another race than other racial groups in surveillance and vital statistics systems including cancer registries. This misclassification results in underestimation of their cancer incidence and mortality data. According to the North Carolina Office of Health Equity, cancer is the second leading cause of American Indian deaths in North Carolina. The very low rate of cancer screening often leads to later stage diagnosis and less successful outcomes. American Indian men are twice as likely to die from prostate cancer as white men. Additional information on minority health and health disparities in North Carolina is available at the North Carolina Office of Minority Health and Health Disparities.⁹

Many American Indians are heavy users of commercial tobacco which increases their risk for cancer. Commercial tobacco products are carcinogenic, are mass produced, and contain thousands of chemicals including nicotine, which is addictive. They also use traditional tobacco for ceremonial and cultural purposes. It is a natural product with no additives that differs from commercial tobacco in the way it is planted, grown, harvested, prepared, and used.⁹

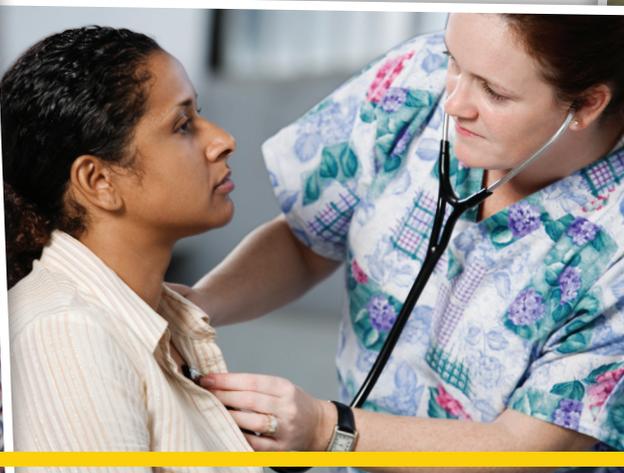
NC TRIBAL AND URBAN COMMUNITIES



- Coharie: Harnett and Sampson
- *Eastern Band of Cherokee Indians: Cherokee, Clay, Graham, Jackson, Macon and Swain
- Haliwa-Saponi: Halifax and Warren
- Lumbee: Hoke, Robeson and Scotland
- Meherrin: Hertford, Northampton, Gates and Bertie
- Occaneechi Band of Saponi Nation: Alamance, Caswell and Orange
- Sappony: Person
- Waccamaw Siouan: Bladen and Columbus
- ▲ Federally Recognized
- Urban Indian Organizations (Holding membership on the NC Commission of Indian Affairs): Cumberland County Association for Indian People, Guilford Native American Association, Metrolina Native American Association, Triangle Native American Society

Areas in color indicate counties where the eight Recognized Tribes of North Carolina reside. Counties in red (Mecklenburg, Guilford, Cumberland and Wake) Location of American Indian Associations. Numbered sections indicate 2020 Census alone population data.

Source: NC Department of Administration, NC Commission of Indian Affairs, 2020.



Sexual and Gender Minority Populations

The term sexual and gender minority (SGM) is 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 uses in certain Native American tribes), and/or intersex. An estimated 7% nationally and 4% in North Carolina identify as part of the SGM population.^{10,11}

Cancer data on SGM populations are limited; none of the large national cancer registries and surveys of cancer incidence and mortality collect data about sexual orientation or gender identity. Existing data often aggregate diverse subpopulations into one, thereby obscuring critical differences, including those with intersecting identities. The American Cancer Society published a special section on this population in its *Cancer Facts and Figures 2024*.¹⁰

Existing research shows that 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.¹² According to the American Cancer Society report, more than half of the adults in this population reported experiencing harassment and violence.¹⁰ They may avoid health care or not disclose their identity due to fear of mistreatment or past experiences with discrimination. Health care providers may lack training and understanding about the clinical needs of SGM individuals, such as what sort of cancer screenings individuals may need based on their specific circumstance. Institutional-level barriers include geographic areas that lack SGM-inclusive health care, SGM exclusion from clinical trials, and lack of health care coverage of appropriate screenings, especially for transgender people. All of which leads to less desirable health outcomes for this vulnerable population.



UNEQUAL CANCER BURDEN REFERENCES

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- ² NC State Center for Health Statistics, Central Cancer Registry. *North Carolina Resident Population Health Data by Race and Ethnicity*. June 2022. <https://schs.dph.ncdhhs.gov/schs/pdf/NCPopHealthDataByRaceEth2021-FINAL.pdf>
- ³ NC State Center for Health Statistics, Central Cancer Registry. *2017-2021 North Carolina Cancer Incidence by County for Selected Sites per 100,000 Population*. February 2024. https://schs.dph.ncdhhs.gov/data/cancer/incidence_rates.htm
- ⁴ NC State Center for Health Statistics, Central Cancer Registry. *2018-2022 North Carolina Cancer Mortality by Race and Ethnicity per 100,000 Population*. February 2024. https://schs.dph.ncdhhs.gov/data/cancer/mortality_rates.htm
- ⁵ United State Census Bureau. *Quick Facts North Carolina*. 2023. www.census.gov/quickfacts/NC
- ⁶ NCPEDIA. *American Indian Tribes in North Carolina*. 2020. www.ncpedia.org/tribes
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- ¹¹ UCLA School of Law. *Williams Institute. Adult LGBT Population in the United States*. July 2020. <https://williamsinstitute.law.ucla.edu/publications/adult-lgbt-pop-us/>.
- ¹² National LGBT Cancer Network. *The LGBT Community's Disproportionate Cancer Burden*. Retrieved July 2023. <https://cancer-network.org/cancer-information/cancer-and-the-lgbt-community/the-lgbt-communitys-disproportionate-cancer-burden/>

Priority Cancers



Lung



Female Breast



Prostate



Colorectal



Cervical



Melanoma and
Non-melanoma
Skin

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Lung Cancer

RISK FACTORS

Smoking tobacco

Secondhand smoke

Radon

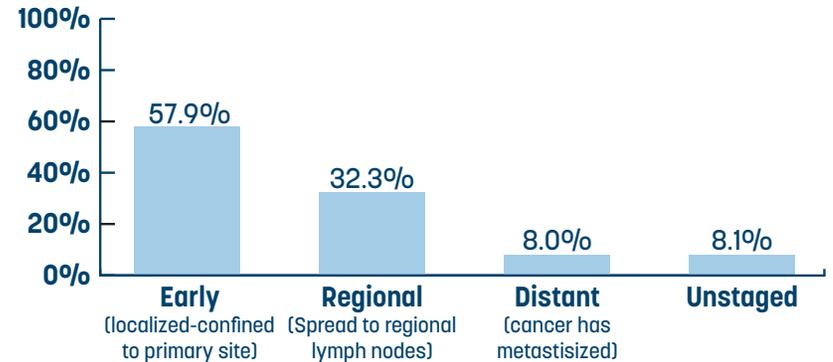
Environmental hazards (asbestos, coal dust and other substances)

Lung cancer continues to be the leading cause of cancer deaths in North Carolina. Lung cancer refers to any cancer that forms in the bronchus or lung and is usually grouped into two main types, small cell and non-small cell. These differ in growth rate as well as how they are treated. A person's risk of lung cancer may be higher if their parents, siblings, or children have had lung cancer because family members may live or work in the same space where the cancer patient was exposed to smoke, radon, and other lung cancer causing substances. The SGM populations experience a higher incidence of lung cancer and later-stage diagnosis. Transgender people are especially likely to be diagnosed with lung cancer at a later stage because of limited access to health insurance and discrimination by health care providers.¹ (See Appendix B for information on lung cancer Interventions and Evidence-based Strategies and Appendix D for lung cancer screening recommendations.)

The chart shows that early detection is directly correlated with survival and emphasizes the importance of screening to identify cancer early when it may be easier to treat. The United States Preventive Services Task Force (USPSTF) recommends yearly lung cancer screening for people who are or have been heavy smokers and who are between 50 and 80 years old.² Screening with low-dose spiral computed tomography (LDCT) can reduce lung cancer deaths.

According to the United States Centers for Disease Control and Prevention (CDC), between 80% to 90% of lung cancer cases are attributable to smoking.³ In North Carolina 25.6% of the North Carolinians who responded to the 2022 Behavioral Risk Factor Surveillance System (BRFSS) question about tobacco use, reported they now smoke cigarettes every day, 11.0% said that they smoke some days, and 63.3% reported that they did not smoke at all.⁴

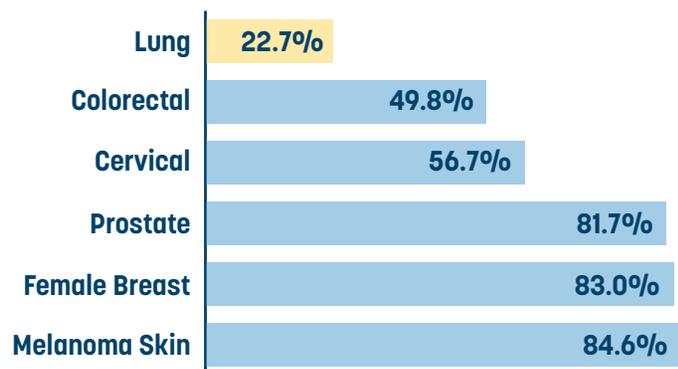
NC LUNG CANCER 5-YEAR SURVIVAL RATE BY STAGE OF DIAGNOSIS



Radon is the leading cause of lung cancer deaths among non-smokers. United States Environmental Protection Agency (EPA) estimates that nearly one out of every 15 homes in the United States has an elevated radon level.⁵ High radon levels are concentrated primarily in the western part of North Carolina; although, homes with high levels of radon have been found in every county of the state. Radon comes into the 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. Test kits can be ordered through the [North Carolina Radon Program](#) in the North Carolina Department of Health and Human Services.⁶ The risk for lung cancer increases for individuals with radon in the home who are smokers and/or who are exposed to secondhand smoke.

Lung cancer has the lowest cumulative observed survival rate of any of the six North Carolina priority cancers. From 2017-2021, the North Carolina lung cancer cumulative observed survival rate, which is the percentage of patients who would be expected to be alive five years after being diagnosed with lung cancer, was 22.7%.⁷

NC CUMULATIVE OBSERVED SURVIVAL RATE BY CANCER 2017-2021

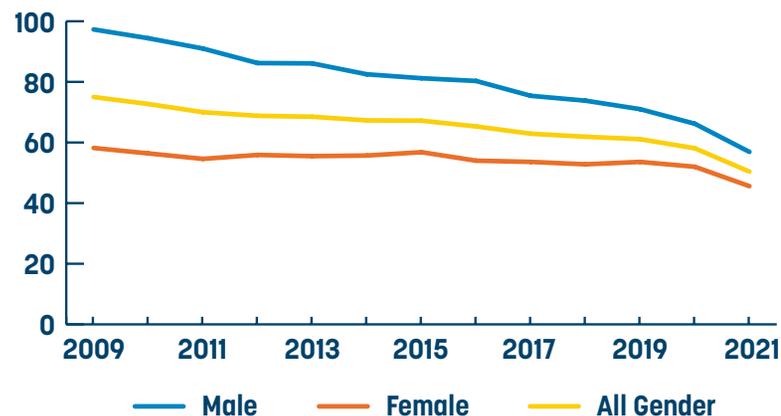


North Carolina Lung Cancer Data

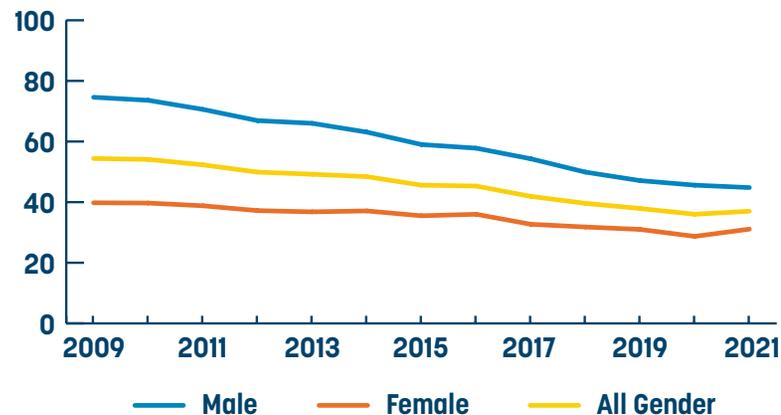
Lung cancer incidence rate in North Carolina was 62.1 per 100,000 population from 2017-2021.⁸ The chart reflects a decline in the people diagnosed with lung cancer since the 2007-2011 period when the rate was 73.9 per 100,000 population.⁹ According to the 2022 Behavioral Risk Factor Surveillance System (BRFSS), 55.6% of men and 65.0% of women interviewed have never smoked.¹⁰ North Carolina still falls behind the national lung cancer incidence rate which was 47.0 per 100,000 per population in 2020.¹¹

The lung cancer mortality rate for North Carolina has declined over time. From 2018 through 2022 the rate was 37.5 per 100,000 population.¹² North Carolina still falls behind the national lung mortality cancer rate as this national rate stood at 32.0 per 100,000 in 2020.¹¹

HISTORICAL NC LUNG CANCER INCIDENCE RATES



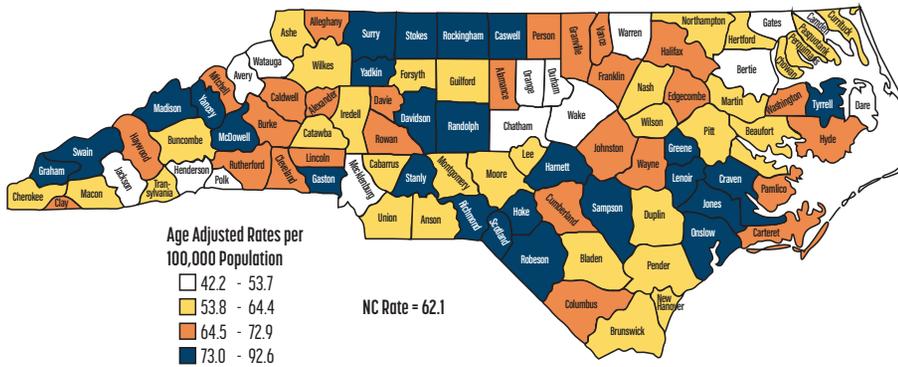
HISTORICAL NC LUNG CANCER MORTALITY RATES



Maps from the North Carolina State Center for Health Statistics show the differences in lung cancer incidence and mortality rates by county. There are many reasons for the differences in rates depending on the county. People living in rural North Carolina counties where there is a lack of access to health care – especially low-dose spiral computed tomography (LDCT) screening and lack of transportation to screening facilities - face greater challenges for getting early care. They may be unemployed or

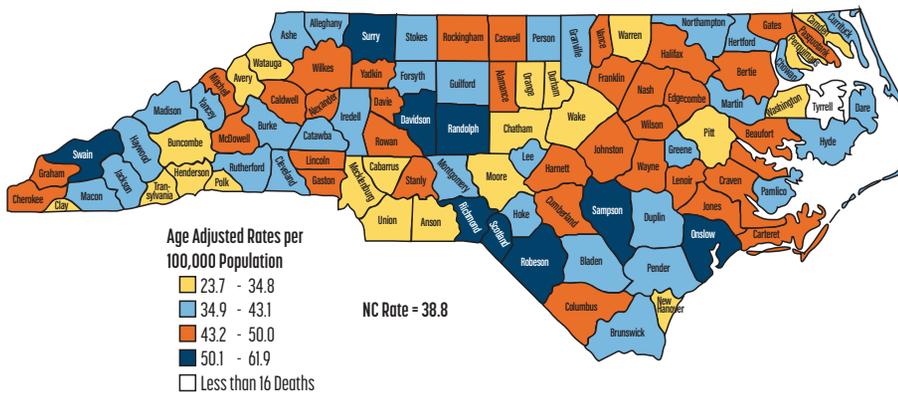
underemployed, which can lead to a lack of health insurance coverage. An inability to cover travel costs is also a problem when people must go long distances to get health care in a nearby city. In addition, some workplaces will not give employees time off with pay for them to schedule health screenings. The United States Census Bureau defines rural as an area with under 5,000 population or less than 2,000 households.¹³

NORTH CAROLINA LUNG AND BRONCHUS CANCER INCIDENCE RATES, 2017-2021



Source: State Center for Health Statistics, March 2024.

NORTH CAROLINA LUNG AND BRONCHUS CANCER MORTALITY RATES, 2017-2021



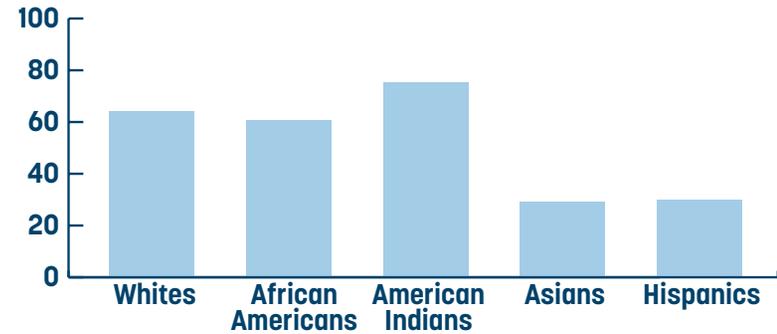
Source: State Center for Health Statistics, March 2024.

North Carolina Lung Cancer Rates by Race/Ethnicity

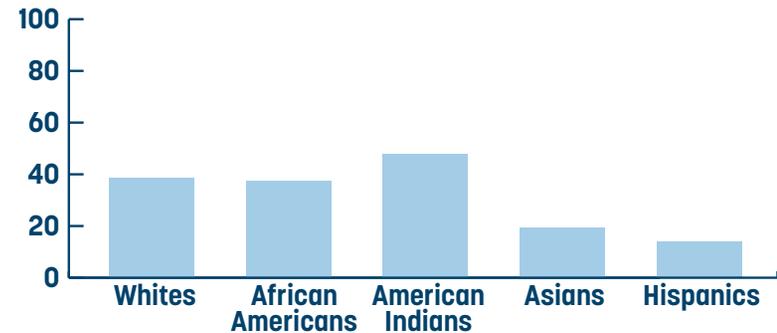
Lung cancer is one of the few cancers in which African Americans fare slightly better than whites in incidence and mortality rates. From 2017-2021, the incidence rate for African Americans was 60.5 per 100,000 population while the rate for whites was 64.2 per 100,000.⁸ The mortality rate for African Americans was 37.5 per 100,000 population while the rate for whites was 38.7 per 100,000.

Hispanics, with a lung cancer mortality rate of 13.9 per 100,000 population, fare far better than other North Carolina racial/ethnic groups in lung cancer mortality. 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.^{8,12}

NC LUNG CANCER INCIDENCE RATE BY RACE/ETHNICITY 2017-2021



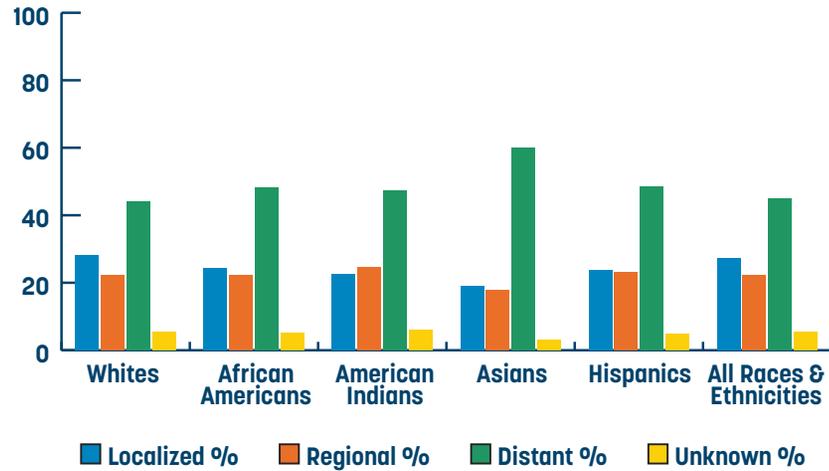
NC LUNG CANCER MORTALITY RATE BY RACE/ETHNICITY 2018-2022



North Carolina Lung Cancer Distant Stage of Diagnosis Data

Distant stage of diagnosis (cancer has spread to distant parts of the body) varies both by race/ethnicity and by county across North Carolina. According to the North Carolina State Center for Health Statistics, Asians saw a higher rate of distant stage diagnosis of lung cancer cases (60.1%) than Hispanics (48.4%), African Americans (48.1%), American Indians (47.2%), or whites (44.0%) based on 2017-2021 average rates.¹⁴ Unlike other groups, Asians are more likely to receive surgical treatment so are equally likely to survive five years compared to whites.

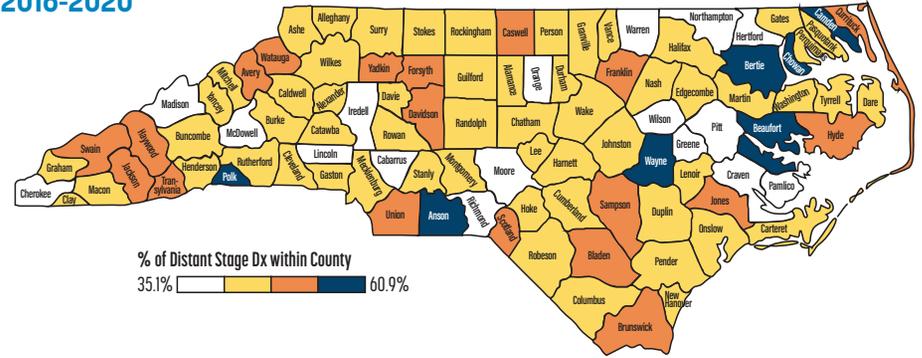
NC LUNG CANCER INCIDENCE BY RACE/ETHNICITY AND STAGE OF DIAGNOSIS, 2017-2021



Distant stage lung cancer diagnosis rates vary by county. There are many reasons for this difference in rates. People may not be aware of the availability and benefit of early detection from a low-dose spiral computed tomography (LDCT) lung cancer screening. There are several reasons that impact a person's ability to get screened for lung cancer including: lack of/under employment, lack of/inadequate health insurance, time off from

work to get screened or to attend medical appointments, and/or transportation needs. They may live in rural areas where there is a lack of access to health care, especially LDCT screenings facilities.

NC LUNG CANCER INCIDENCE BY DISTANT STAGE DIAGNOSIS (DX) BY COUNTY, 2016-2020



NC COUNTIES WITH DISTANT STAGE LUNG CANCER DIAGNOSIS EXCEEDING 50%

County	Distant Stage Diagnosis Percentage	County	Distant Stage Diagnosis Percentage
North Carolina	45.0%	Yadkin	54.2%
Bertie	60.9%	Avery	52.2%
Chowan	56.8%	Hyde	52.0%
Camden	55.9%	Franklin	51.9%
Anson	55.3%	Currituck	51.5%
Beaufort	55.1%	Bladen	51.4%
Polk	54.6%	Caswell	50.3%
Wayne	54.5%	Haywood	50.1%

North Carolina Lung Cancer Rates by Gender

Gender also makes a difference in cancer incidence and mortality rates. Both incidence and mortality cancer rates are higher among North Carolina men than North Carolina women.^{8,12} The historical charts from the North Carolina State Center for Health Statistics show that the difference in rates between men and women is gradually getting smaller and both are improving.

There may be multiple reasons for gender disparity in lung cancer incidence and mortality. Men tend to have higher rates of cigarette smoking, heavier alcohol use, and are often employed in occupations that increase cancer risk. According to the 2022 Behavioral Risk Factor Surveillance System (BRFSS) annual survey, only 55.6% of men indicated they had never smoked tobacco, in comparison to 65.0% of women; 10.2% of men indicated they smoke every day, where only 10.0% of women indicated the same.¹⁰ Many lung cancer cases among men are discovered at the distant stage compared to women.

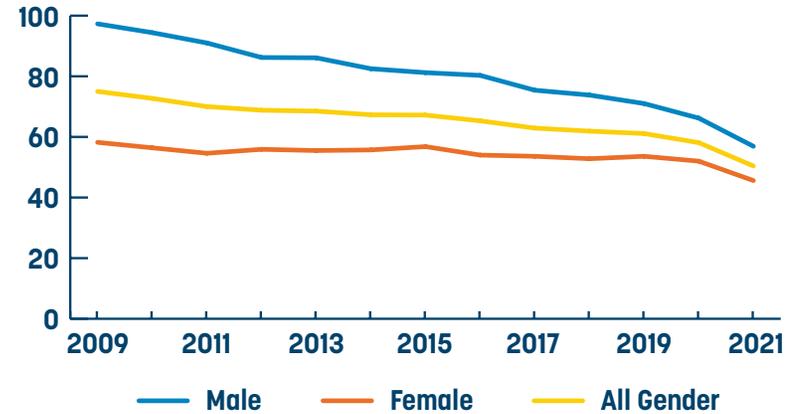
NC LUNG CANCER INCIDENCE & MORTALITY RATES BY GENDER, 2021

CANCER	MALE		FEMALE	
	Incidence	Mortality	Incidence	Mortality
Lung	66.7	44.8	51.3	31.1

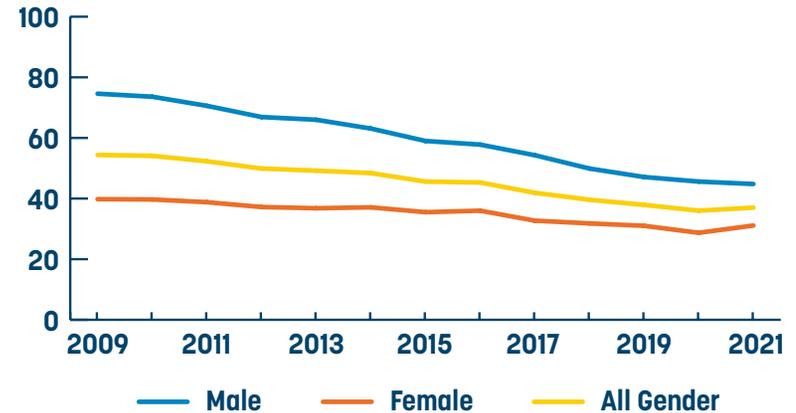
NC LUNG CANCER MORTALITY RATES BY GENDER, 2022

CANCER	MALE	FEMALE
	Mortality	Mortality
Lung	43.9	28.9

HISTORICAL NC LUNG CANCER INCIDENCE RATES



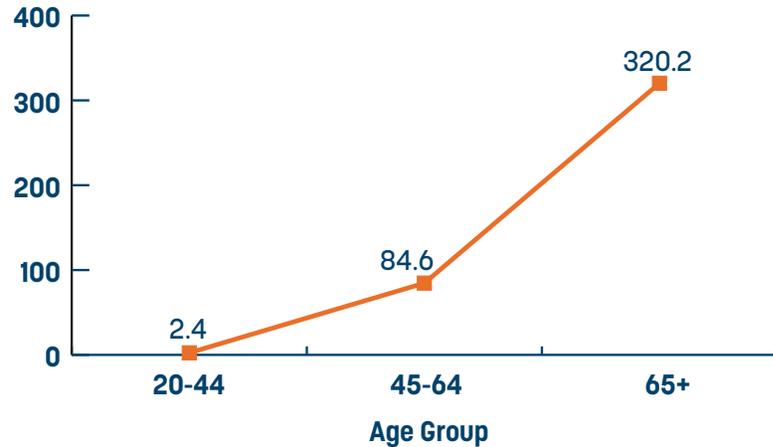
HISTORICAL NC LUNG CANCER MORTALITY RATES



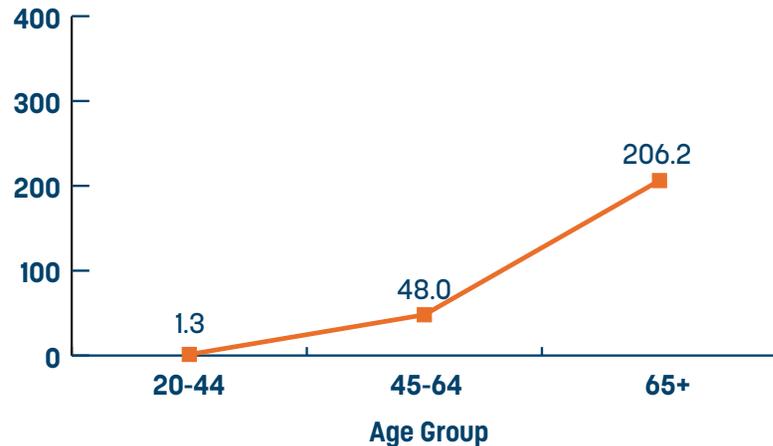
North Carolina Lung Cancer Rates by Age Group

The risk for contracting and dying from lung cancer increases greatly as one ages. North Carolinians over the age of 64 have the highest rates for lung cancer in terms of both lung cancer incidence (320.2 per 100,000) and mortality (206.2 per 100,000).^{8,12}

NC LUNG CANCER INCIDENCE RATE BY AGE GROUP, 2021



NC LUNG CANCER MORTALITY RATE BY AGE GROUP, 2021



NORTH CAROLINA LUNG CANCER STATISTICS BY COUNTY PER 100,000 POPULATION**

County	Incidence Rate ⁸ (2017-2021)	Mortality Rate ¹² (2018-2022)	Distant Stage Diagnosis % ¹⁴ (2016-2020)	Current Smoker % ¹⁵ (2020)
North Carolina	62.1	37.5	45%	17%
Alamance	72.9	45.5	42%	19%
Alexander	71.3	42.4	43%	22%
Alleghany	65.0	37.4	47%	23%
Anson	60.8	39.3	55%	23%
Ashe	55.8	35.7	48%	20%
Avery	49.2	27.4	52%	20%
Beaufort	63.5	41.5	55%	20%
Bertie	51.6	40.2	61%	25%
Bladen	61.8	43.6	51%	23%
Brunswick	62.0	37.0	49%	18%
Buncombe	58.4	30.7	42%	17%
Burke	70.6	41.3	44%	23%
Cabarrus	59.5	33.3	41%	16%
Caldwell	71.7	49.0	46%	22%
Camden	43.8	34.5	56%	19%
Carteret	72.7	42.4	44%	17%
Caswell	81.7	48.5	50%	22%
Catawba	59.8	37.9	43%	19%
Chatham	46.1	22.5	44%	15%
Cherokee	61.7	39.7	39%	22%
Chowan	56.7	34.2	57%	21%
Clay	65.4	30.1	47%	20%
Cleveland	72.0	42.6	46%	22%

County	Incidence Rate ⁸ (2017-2021)	Mortality Rate ¹² (2018-2022)	Distant Stage Diagnosis % ¹⁴ (2016-2020)	Current Smoker % ¹⁵ (2020)
Columbus	67.0	46.9	42%	23%
Craven	78.0	47.3	40%	19%
Cumberland	70.6	44.0	45%	20%
Currituck	56.1	41.9	51%	17%
Dare	51.5	36.6	49%	15%
Davidson	76.5	49.8	49%	20%
Davie	70.2	49.0	44%	19%
Duplin	59.1	39.7	42%	21%
Durham	50.4	26.8	46%	15%
Edgecombe	70.3	47.1	45%	23%
Forsyth	61.7	37.9	48%	17%
Franklin	68.1	39.8	52%	19%
Gaston	76.7	48.0	46%	20%
Gates	46.9	43.5	44%	21%
Graham	78.8	55.9	42%	23%
Granville	69.2	39.5	48%	20%
Greene	76.2	38.6	41%	23%
Guilford	60.5	35.8	45%	17%
Halifax	69.6	49.6	43%	25%
Harnett	77.1	47.0	46%	19%
Haywood	70.8	39.9	50%	19%
Henderson	53.0	31.9	47%	17%
Hertford	63.2	45.9	35%	23%
Hoke	76.0	42.4	46%	20%
Hyde	65.3	42.0	52%	23%
Iredell	63.5	37.6	39%	17%

County	Incidence Rate ⁸ (2017-2021)	Mortality Rate ¹² (2018-2022)	Distant Stage Diagnosis % ¹⁴ (2016-2020)	Current Smoker % ¹⁵ (2020)
Jackson	51.4	33.7	50%	20%
Johnston	71.3	47.0	47%	18%
Jones	79.2	42.1	50%	23%
Lee	63.2	37.5	42%	19%
Lenoir	75.3	44.5	42%	23%
Lincoln	69.9	40.2	41%	18%
Macon	55.8	34.8	48%	20%
Madison	76.2	42.5	39%	19%
Martin	62.9	44.0	42%	23%
McDowell	85.2	50.7	38%	21%
Mecklenburg	47.8	26.3	45%	14%
Mitchell	66.8	41.2	46%	20%
Montgomery	61.7	33.8	44%	21%
Moore	56.2	31.2	36%	16%
Nash	58.8	40.5	47%	20%
New Hanover	56.3	31.8	46%	16%
Northampton	60.6	44.1	38%	23%
Onslow	92.6	56.2	43%	20%
Orange	46.7	24.7	38%	13%
Pamlico	69.4	36.3	37%	20%
Pasquotank	59.3	43.1	44%	19%
Pender	62.7	41.4	45%	19%
Perquimans	64.4	37.1	43%	20%
Person	66.6	42.4	43%	20%
Pitt	57.4	35.3	40%	18%
Polk	50.3	28.4	55%	17%

County	Incidence Rate ⁸ (2017-2021)	Mortality Rate ¹² (2018-2022)	Distant Stage Diagnosis % ¹⁴ (2016-2020)	Current Smoker % ¹⁵ (2020)
Randolph	76.9	50.6	45%	21%
Richmond	85.9	58.8	41%	23%
Robeson	78.1	50.7	46%	27%
Rockingham	74.9	49.4	45%	22%
Rowan	71.6	42.4	44%	21%
Rutherford	65.5	42.1	49%	23%
Sampson	78.9	53.7	49%	22%
Scotland	82.3	55.7	50%	26%
Stanly	75.2	44.1	47%	20%
Stokes	76.2	43.3	42%	22%
Surry	80.3	54.3	48%	22%
Swain	84.3	54.7	48%	25%
Transylvania	55.8	30.2	49%	18%
Tyrrell	78.6	56.8	46%	23%
Union	56.5	31.7	48%	16%
Vance	70.5	47.0	46%	22%
Wake	48.0	25.8	46%	12%
Warren	53.7	35.3	40%	23%
Washington	65.4	35.2	43%	23%
Watauga	42.2	26.4	48%	18%
Wayne	71.7	47.1	55%	21%
Wilkes	64.2	43.4	47%	22%
Wilson	64.0	42.1	38%	22%
Yadkin	75.8	49.4	54%	22%
Yancey	82.8	44.9	43%	21%

** Rates are based on patient county of residence at diagnosis as verified by address level geocoding, otherwise as reported by medical provider.

LUNG CANCER REFERENCES

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- ¹² NC State Center for Health Statistics, Central Cancer Registry. *2018-2022 North Carolina Cancer Mortality by Race and Ethnicity per 100,000 Population*. February 2024. https://schs.dph.ncdhhs.gov/data/cancer/mortality_rates.htm
- ¹³ U.S. Census Bureau. *Urban and Rural*. September 2023. www.census.gov/programs-surveys/geography/guidance/geo-areas/urban-rural.html
- ¹⁴ NC State Center for Health Statistics, Central Cancer Registry. *2017-2021 Lung Cancer Incidence by Race/Ethnicity and Stage of Diagnosis*. March 2024. <https://schs.dph.ncdhhs.gov/data/cancer.cfm>
- ¹⁵ University of Wisconsin Population Health Institute, County Health Ranking and Roadmaps. *Adult Smoking*. 2024. www.countyhealthrankings.org/explore-health-rankings/county-health-rankings-model/health-factors/health-behaviors/tobacco-use/adult-smoking?year=2023&state=37&tab=



Female Breast Cancer

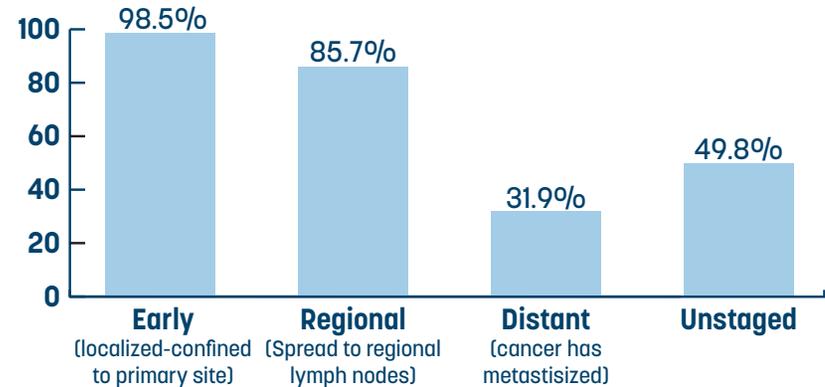
RISK FACTORS

- Being female
- Age
- Family history
- Early puberty
- Late menopause
- Obesity
- Smoking tobacco
- Alcohol abuse

Female breast cancer is the second leading cause of cancer deaths in North Carolina.¹ Female breast cancer is a malignant tumor that originates in cells in a woman's breast. While breast cancer occurs mostly in women, men can develop it and 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. The SGM populations face a disproportionate burden of 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.² (See Appendix B for information on breast cancer interventions and evidence-based strategies and Appendix D for breast cancer screening recommendations.)

Mammograms are the most effective method to detect breast cancer early before it causes symptoms or can be detected through self-breast exams. 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."³ The five-year cumulative observed survival rate (2017-2021) for female breast cancer was 83.0% for women diagnosed with early-stage breast cancer.⁴ This is the percentage of women who would be expected to be alive five years after being diagnosed with breast cancer. This chart shows that early detection is directly correlated with survival of female breast cancer and emphasizes the importance of screening.

NC FEMALE BREAST CANCER 5-YEAR SURVIVAL RATE BY STAGE OF DIAGNOSIS

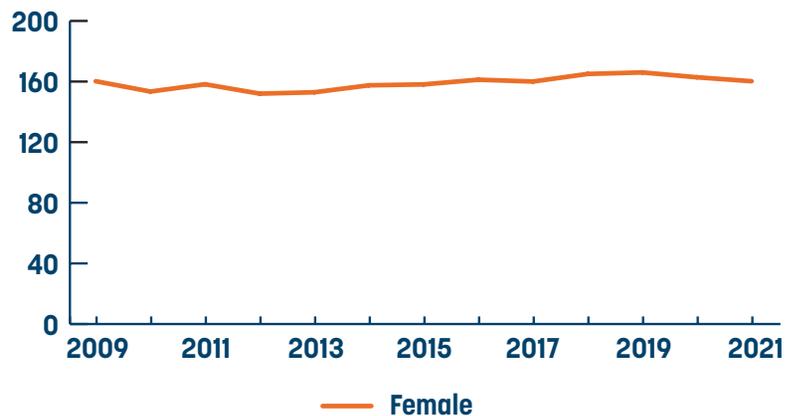


North Carolina Female Breast Cancer Data

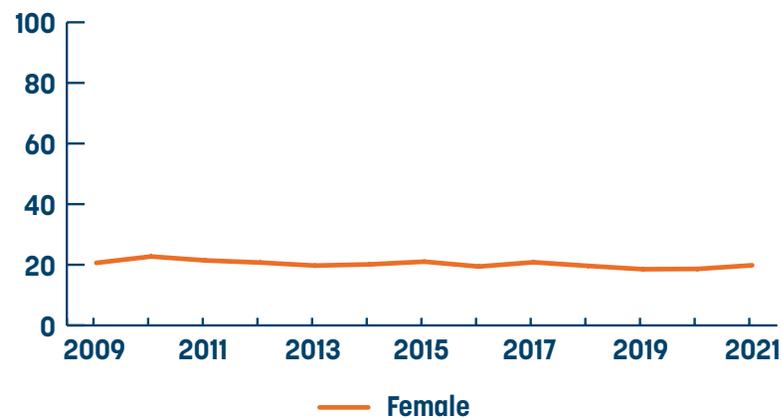
North Carolina female breast cancer incidence rates increased over the past 10 years, while mortality rates decreased. The female breast cancer incidence rate was 183.2 per 100,000 population in 2021, compared to the rate of 161.3 per 100,000 in 2011. The mortality rate decreased from 20.8 per 100,000 population in 2012 to 19.0 per 100,000 in 2022.^{1,5} Nationally, routine mammography screening in average-risk women 50 years and older has reduced the age-adjusted mortality rate from breast cancer by 34% over the past 20 years.⁶ Mortality rates for African American women are still higher than white women even though their incidence rates are similar. 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.⁷ North

Carolina incidence and mortality rates both lag the national rates. The national female breast cancer incidence rate stood at 119.2 per 100,000 in 2020, and the national female breast cancer mortality rate was 19.1 per 100,000.⁸

HISTORICAL NC CANCER INCIDENCE RATES FOR FEMALE BREAST CANCER



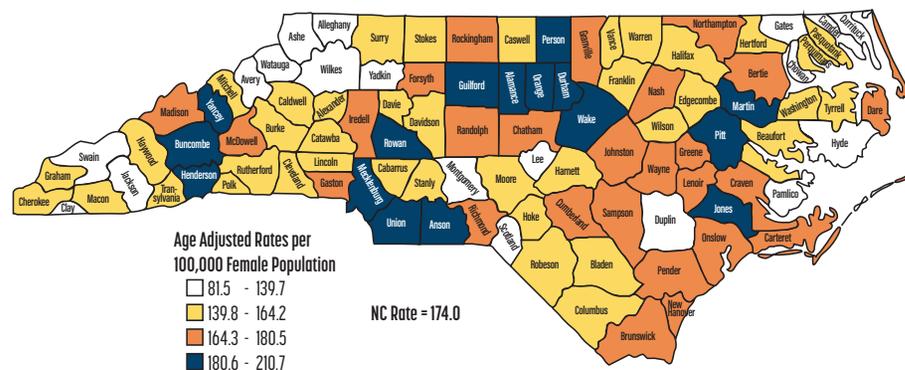
HISTORICAL NC CANCER MORTALITY RATES FOR FEMALE BREAST CANCER



The North Carolina State Center for Health Statistics maps below show the differences in female breast cancer incidence and mortality rates by county.^{1,5} There are many reasons for differences in both incidence and mortality rates in the counties. The women in rural North Carolina counties may be unemployed or underemployed with no health insurance coverage. An inability to cover travel costs is a problem when they need to travel long distances to get health care. Travel time and lack of childcare also present barriers to accessing health care. The United States Census Bureau defines rural as an area with under 5,000 population or less than 2,000 households.⁹

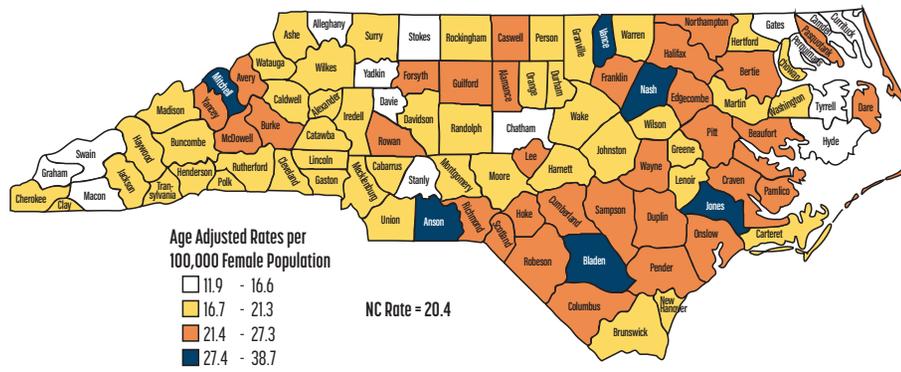
The NC Breast and Cervical Cancer Control Program helps reduce some barriers by providing free or low-cost screenings for eligible low-income women, and HPV vaccines are available from county health departments free of charge.

NORTH CAROLINA FEMALE BREAST CANCER INCIDENCE RATES, 2017-2021



Source: State Center for Health Statistics, March 2024.

NORTH CAROLINA FEMALE BREAST CANCER MORTALITY RATES, 2017-2021



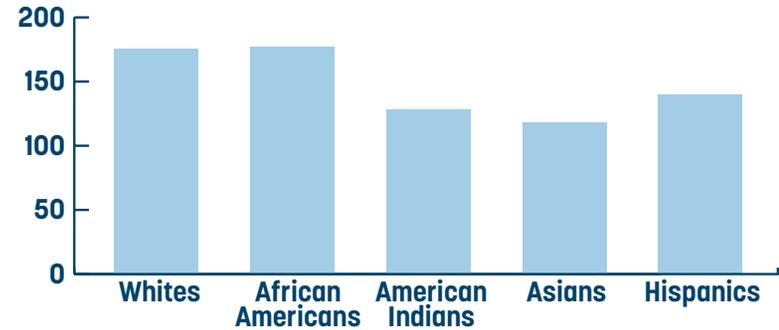
Source: State Center for Health Statistics, March 2024.

North Carolina Female Breast Cancer Rates by Race/Ethnicity

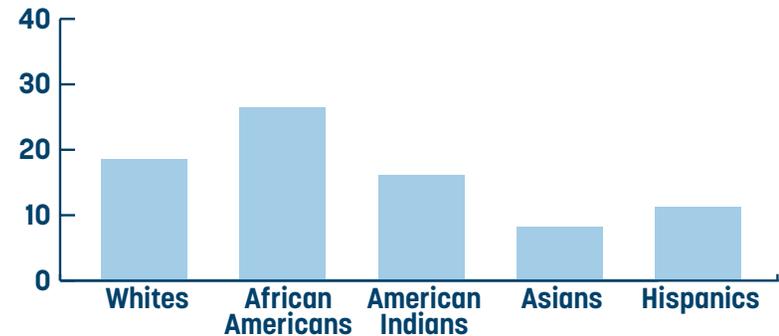
African American (177.1/100,000) and white (175.6/100,000) women have the highest incidence rates of breast cancer compared to the other three racial/ethnic groups. The rate for Hispanic women was 140.0 per 100,000 population, American Indian women 128.4 per 100,000, and Asian women 118.4 per 100,000.⁵

While white and African American women have similar incidence rates, African American women have a higher mortality rate (26.5 per 100,000). The mortality rate for white women is 18.6 per 100,000, American Indian women 16.2 per 100,000, Hispanic women 11.2 per 100,000, and Asian women 8.3 per 100,000.¹

NC FEMALE BREAST CANCER INCIDENCE RATES BY RACE/ETHNICITY, 2017-2021



NC FEMALE BREAST CANCER MORTALITY RATES BY RACE/ETHNICITY, 2018-2022

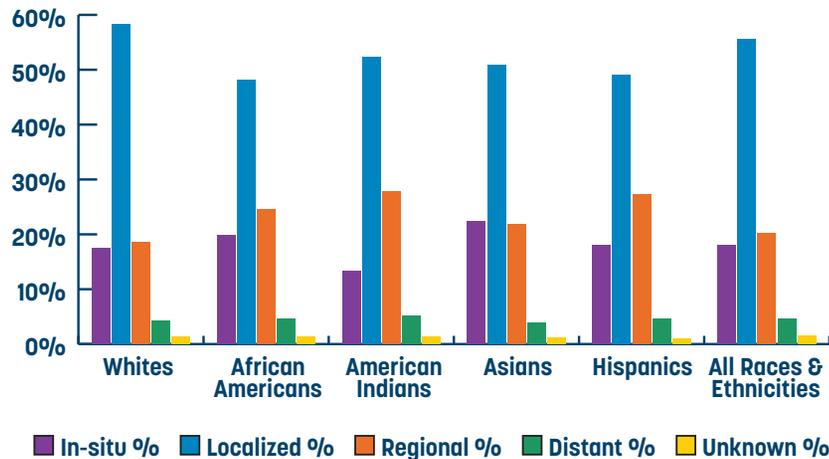


North Carolina Female Breast Cancer Distant Stage of Diagnosis Data

Distant stage of female breast cancer diagnosis (cancer spread to distant parts of the body) varies by race/ethnicity and by county across North Carolina. According to the North Carolina State Center for Health Statistics, African American women saw the highest rate of distant stage diagnosis of breast cancer cases (5.9%), followed closely by American Indian women (5.1%) based on 2017-2021 average incidence rates.¹⁰ African American

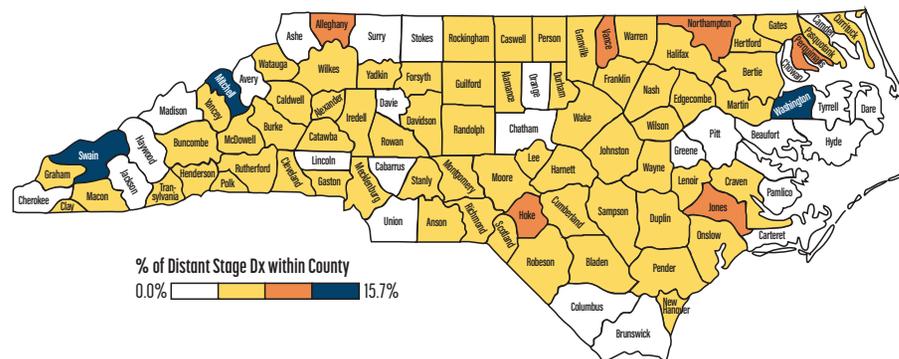
women generally have a more advanced cancer stage at diagnosis, lower treatment adherence, limited access to high-quality care, and a higher risk of developing the most aggressive subtypes of breast cancer. Lack of/under employment, lack of/inadequate health insurance, transportation availability and costs, and available childcare reduce access to early detection and treatments. These factors contribute to higher breast cancer mortality rates in both African American and American Indian women.

NC FEMALE BREAST CANCER INCIDENCE BY RACE/ETHNICITY AND STAGE OF DIAGNOSIS*, 2017-2021



The distant stage female breast cancer diagnosis rates vary by county. There are many reasons for this difference in distant stage diagnosis rates. Some women may not understand the importance of early screening so that the cancer can be diagnosed and treated before it moves into other parts of the body. They may lack employment or are under employed so they do not have health insurance or time off from work for screening appointments. They may live in rural areas where transportation and childcare are difficult to arrange and afford.

NC FEMALE BREAST CANCER INCIDENCE BY DISTANT STAGE DIAGNOSIS BY COUNTY, 2016-2020



NC COUNTIES WITH DISTANT STAGE FEMALE BREAST CANCER DIAGNOSE AT OR EXCEEDING 7% 2016-2020

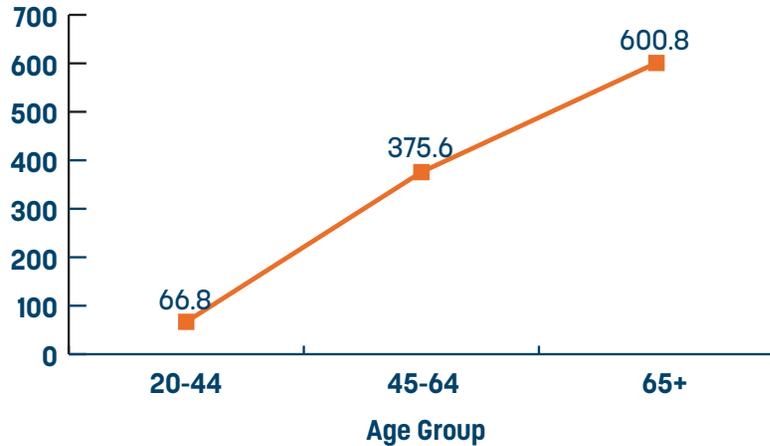
County	Distant Stage Diagnosis Percentage	County	Distant Stage Diagnosis Percentage
North Carolina	5.0%	Alleghany	8.2%
Swain	15.7%	Hoke	8.2%
Mitchell	14.6%	Rutherford	7.7%
Washington	12.0%	Yancey	7.7%
Vance	10.5%	Franklin	7.3%
Northampton	9.5%	Wilson	7.3%
Perquimans	9.2%	Scotland	7.2%
Jones	8.8%	Yadkin	7.0%

North Carolina Female Breast Cancer Rates by Age Group

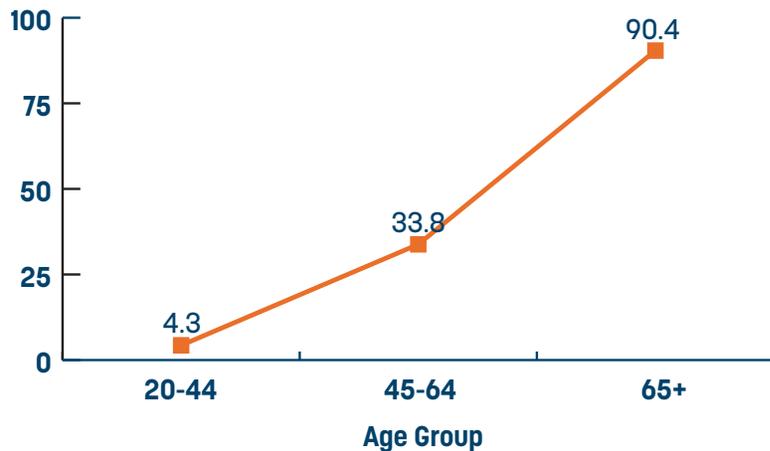
Breast cancer incidence and mortality rates increase as a women age.^{1,5} Most breast cancers are found in women who are 65 years of age or older, but breast cancer can occur in women under 45. About 9% of

all new cases of breast cancer in the United States are found in women younger than 45 years of age.¹¹ Breast cancer in younger women may be a hereditary cancer (family history of cancer), and it is often aggressive and difficult to treat.

NC FEMALE BREAST CANCER INCIDENCE RATE BY AGE GROUP, 2021



NC FEMALE BREAST CANCER MORTALITY RATE BY AGE GROUP, 2021



NORTH CAROLINA FEMALE BREAST CANCER STATISTICS BY COUNTY PER 100,000 POPULATION**

County	Incidence Rate ⁵ (2017-2021)	Mortality Rate ¹ (2018-2022)	Distant Stage Diagnosis % ¹⁰ (2016-2020)	Current Smoker % ¹² (2020)
North Carolina	174.0	19.9	5%	17%
Alamance	184.5	22.3	4%	19%
Alexander	144.2	17.0	6%	22%
Alleghany	120.7	**	8%	23%
Anson	202.8	33.6	6%	23%
Ashe	122.9	20.1	2%	20%
Avery	138.7	27.1	2%	20%
Beaufort	162.3	19.2	3%	20%
Bertie	175.9	**	4%	25%
Bladen	157.0	26.1	6%	23%
Brunswick	177.9	17.4	4%	18%
Buncombe	184.5	18.4	4%	17%
Burke	154.9	22.7	6%	23%
Cabarrus	177.4	18.4	4%	16%
Caldwell	154.1	19.8	5%	22%
Camden	115.9	**	3%	19%
Carteret	175.5	18.1	3%	17%
Caswell	151.0	**	5%	22%
Catawba	149.0	19.6	6%	19%
Chatham	178.8	16.1	2%	15%
Cherokee	148.3	15.8	4%	22%
Chowan	138.6	**	4%	21%
Clay	129.6	**	6%	20%
Cleveland	160.3	19.2	6%	22%

County	Incidence Rate ⁵ (2017-2021)	Mortality Rate ¹ (2018-2022)	Distant Stage Diagnosis % ¹⁰ (2016-2020)	Current Smoker % (2020) ¹²
Columbus	151.1	24.8	4%	23%
Craven	169.6	19.6	4%	19%
Cumberland	176.4	26.1	7%	20%
Currituck	97.3	17.8	4%	17%
Dare	165.4	20.8	4%	15%
Davidson	157.5	19.6	4%	20%
Davie	155.6	15.7	4%	19%
Duplin	134.8	23.5	6%	21%
Durham	184.8	19.7	5%	15%
Edgecombe	151.6	25.8	6%	23%
Forsyth	173.7	22.7	4%	17%
Franklin	162.1	21.0	7%	19%
Gaston	169.8	16.8	5%	20%
Gates	81.5	**	5%	21%
Graham	146.9	**	5%	23%
Granville	167.7	18.8	6%	20%
Greene	166.1	**	4%	23%
Guilford	193.5	21.6	4%	17%
Halifax	162.1	26.4	5%	25%
Harnett	158.5	20.7	6%	19%
Haywood	163.7	17.0	3%	19%
Henderson	183.6	19.3	6%	17%
Hertford	160.2	**	5%	23%
Hoke	149.1	20.0	8%	20%
Hyde	124.0	**	0%	23%
Iredell	174.1	19.6	4%	17%

County	Incidence Rate ⁵ (2017-2021)	Mortality Rate ¹ (2018-2022)	Distant Stage Diagnosis % ¹⁰ (2016-2020)	Current Smoker % (2020) ¹²
Jackson	136.5	17.5	2%	20%
Johnston	173.3	17.0	7%	18%
Jones	210.7	39.8	9%	23%
Lee	133.9	24.5	5%	19%
Lenoir	173.7	18.8	5%	23%
Lincoln	160.7	14.4	3%	18%
Macon	157.5	17.3	4%	20%
Madison	180.5	21.2	3%	19%
Martin	195.1	18.2	6%	23%
McDowell	167.5	22.1	6%	21%
Mecklenburg	190.9	18.8	4%	14%
Mitchell	159.6	39.5	15%	20%
Montgomery	130.8	**	4%	21%
Moore	164.2	21.1	4%	16%
Nash	174.1	28.1	6%	20%
New Hanover	179.5	20.2	5%	16%
Northampton	170.1	**	9%	23%
Onslow	178.8	24.4	6%	20%
Orange	191.6	18.4	4%	13%
Pamlico	135.8	**	2%	20%
Pasquotank	157.2	17.6	5%	19%
Pender	170.5	22.0	5%	19%
Perquimans	152.3	**	9%	20%
Person	188.0	19.9	7%	20%
Pitt	188.0	23.5	3%	18%
Polk	160.9	21.4	5%	17%

County	Incidence Rate ⁵ (2017-2021)	Mortality Rate ¹ (2018-2022)	Distant Stage Diagnosis % ¹⁰ (2016-2020)	Current Smoker % ¹² (2020)
Randolph	170.0	20.9	5%	21%
Richmond	147.9	24.3	5%	23%
Robeson	151.9	24.1	7%	27%
Rockingham	171.7	19.8	4%	22%
Rowan	182.8	21.4	4%	21%
Rutherford	155.9	20.8	8%	23%
Sampson	178.3	23.4	5%	22%
Scotland	131.2	23.3	7%	26%
Stanly	158.9	15.5	4%	20%
Stokes	149.9	12.3	3%	22%
Surry	149.3	17.6	3%	22%
Swain	113.4	**	16%	25%
Transylvania	153.0	18.3	5%	18%
Tyrrell	162.9	**	0%	23%
Union	195.8	17.8	3%	16%
Vance	147.4	36.8	10%	22%
Wake	189.2	16.5	4%	12%
Warren	154.1	21.9	7%	23%
Washington	155.2	**	12%	23%
Watauga	139.7	14.8	4%	18%
Wayne	176.0	24.4	6%	21%
Wilkes	132.9	18.8	4%	22%
Wilson	155.4	21.9	7%	22%
Yadkin	132.5	15.3	7%	22%
Yancey	190.4	22.6	8%	21%

**Cancer rates for cell sizes with fewer than 16 cases of cancer are suppressed as they are not stable. Cancer of the female breast includes in situ cases.

**Rates are based on patient county of residence at diagnosis as verified by address level geocoding, otherwise as reported by medical provider.

FEMALE BREAST CANCER REFERENCES

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Prostate Cancer

RISK FACTORS

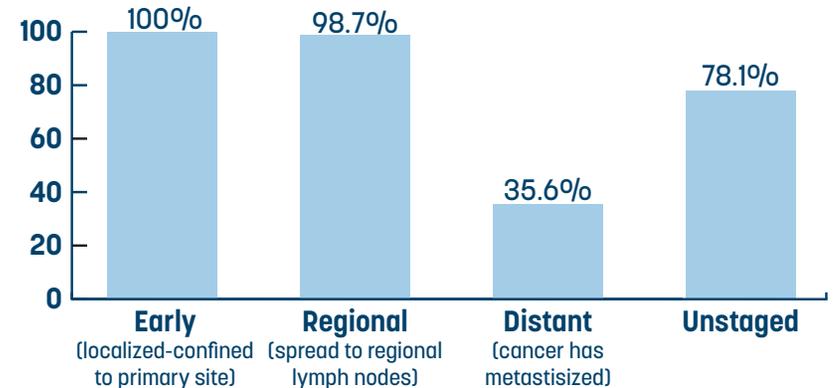
- Being male
- African American or American Indian
- Family History
- Obesity
- Smoking tobacco
- Alcohol abuse

Prostate cancer was the third leading cause of cancer deaths in North Carolina in 2021 and is the most frequently diagnosed cancer in men.^{1,2} Prostate cancer is the presence of abnormal cells and/or a tumor in the prostate gland, a part of the male reproductive system. Survival is high because many prostate cancers tend to grow slowly or not at all. The SGM populations face a disproportionate burden of cancer with both a higher incidence rate and later-stage diagnosis; and transgender people are less likely to be offered screening tests appropriate to their organs.³ (See Appendix B for information on prostate cancer interventions and evidence-based strategies and Appendix D for prostate cancer screening recommendations.)

There are no known causes of prostate cancer, but there are protective things that men can do to reduce their risk such as eating a healthy diet, stop smoking tobacco, maintaining a healthy weight, and getting enough physical activity. These lifestyle behaviors will improve overall health and potentially lower the risk of prostate and other cancers.

This chart shows that early detection is directly correlated with survival of prostate cancer and emphasizes the importance of prostate cancer screenings so that the cancer is diagnosed and treated before it has spread to other parts of the body. The prostate cancer cumulative observed survival rate during 2017-2021, the percentage of patients who would be expected to be alive five years after being diagnosed with early-stage prostate cancer, was 81.7%.⁴

NC PROSTATE CANCER 5-YEAR SURVIVAL RATE BY STAGE OF DIAGNOSIS



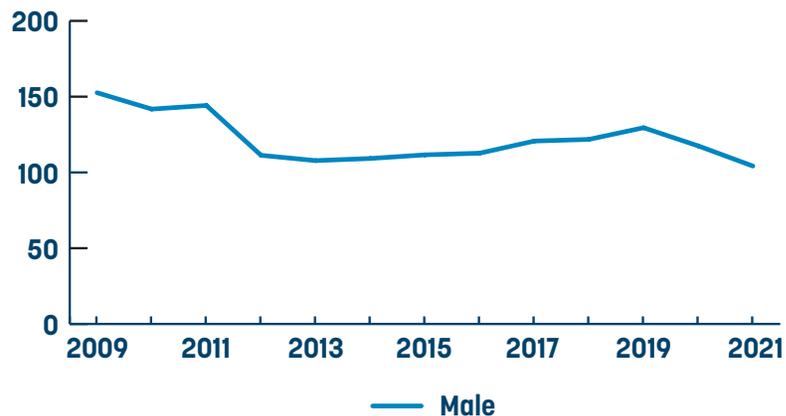
North Carolina Prostate Cancer Data

Men have a greater chance of getting prostate cancer than dying from it because diagnosis usually occurs when men are older, and the cancer tends to be slow growing. In 2012, the United States Preventive Services Taskforce changed their prostate cancer screening guidelines to encourage less prostate-specific antigen (PSA) blood testing. Following 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.⁵ North Carolina prostate cancer incidence rates reflect the changes from the national screening guidelines: the number of cases diagnosed declined, and the number of late-stage cancers increased.

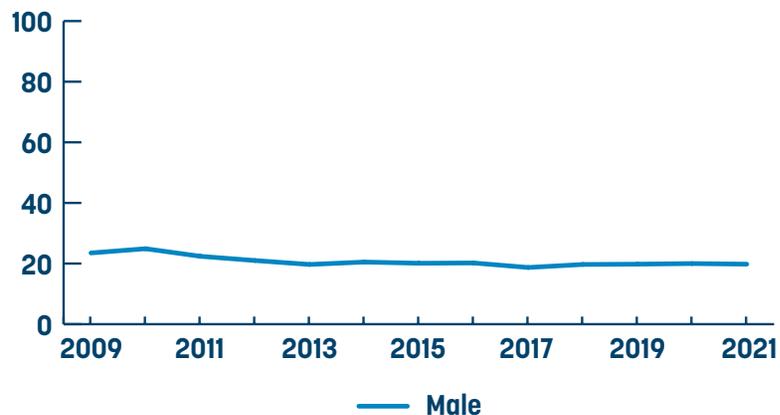
The 2020 Behavioral Risk Factor Surveillance System (BRFSS) reported that only 49.3% of the males age 40+ interviewed said that a doctor, nurse, or other health professional had EVER talked with them about the advantages

of the PSA test while 50.3% stated that they had never had a PSA test.⁶ Prostate questions were not included in the 2021 and 2022 BRFSS surveys. Confusion over guidelines, lack of/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.

HISTORICAL NC PROSTATE CANCER INCIDENCE RATES

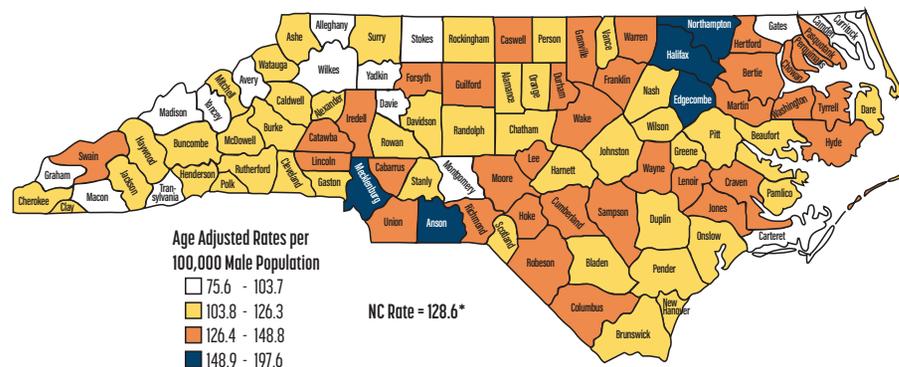


HISTORICAL NC PROSTATE CANCER MORTALITY RATES



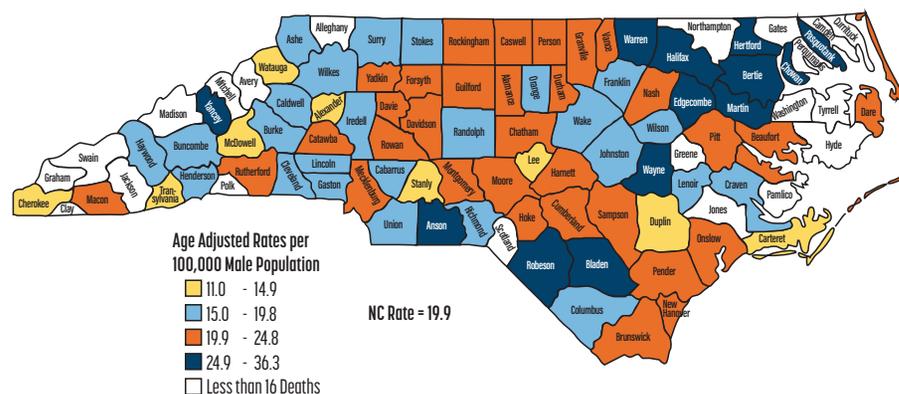
The differences in prostate cancer incidence and mortality rates by county are shown in the maps below. There are many reasons for differences in both incidence and mortality rates in a county. Residents in rural North Carolina counties may lack employment opportunities leading to a lack of insurance coverage, have long distances to travel to get health care which is a burden because of both time and costs. They may miss work which may mean time off without pay. The United State Census Bureau defines rural as an area with under 5,000 population or less than 2,000 households.⁷

NORTH CAROLINA PROSTATE CANCER INCIDENCE RATES, 2017-2021



Source: State Center for Health Statistics, March 2024.

NORTH CAROLINA PROSTATE CANCER MORTALITY RATES, 2017-2021

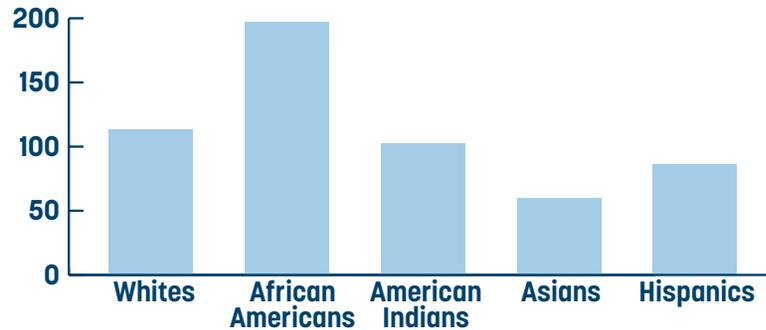


Source: State Center for Health Statistics, April 2023.

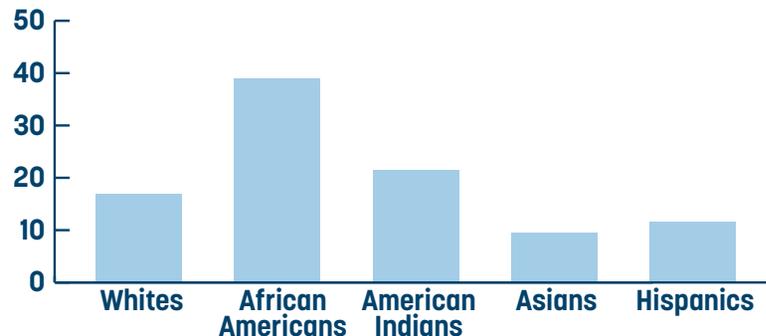
North Carolina Prostate Cancer Rates by Race/Ethnicity

African American men had the highest incidence rates of prostate cancer during the 2017-2021 period (197.3/100,000) compared to the men in other racial and ethnic groups. The rate for white men was 113.2 per 100,000 population while the rates for other groups were American Indian men 102.9 per 100,000, Hispanic men 59.8 per 100,000, and Asian men 86.7 per 100,000.² In the 2018-2022 period, African American men also had the highest mortality rate (39.0 per 100,000) followed by American Indian men (21.5 per 100,000) and white men (16.9 per 100,000). Hispanic men (11.6 per 100,000) were followed by Asian men (9.5 per 100,000).¹

NC PROSTATE CANCER INCIDENCE RATES BY RACE/ETHNICITY, 2017-2021



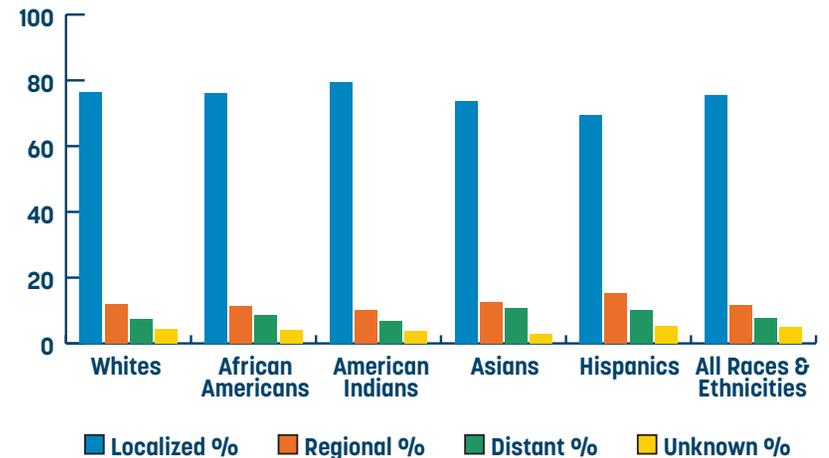
NC PROSTATE CANCER MORTALITY RATES BY RACE/ETHNICITY, 2018-2022



North Carolina Prostate Cancer Distant Stage of Diagnosis Data

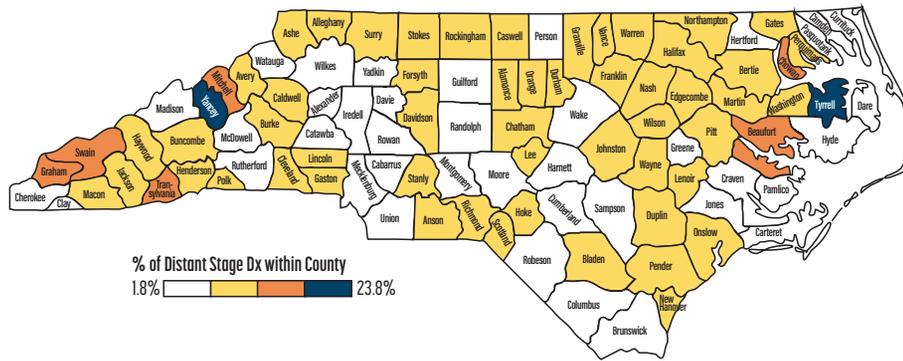
Unlike other priority cancers, distant stage of prostate cancer diagnosis (cancer spread to distant parts of the body) does not vary much by race/ethnicity (7.5% to 10.8%).⁹

NC PROSTATE CANCER INCIDENCE BY RACE/ETHNICITY AND STAGE AT DIAGNOSIS, 2017-2021



Distant stage diagnosis percentages vary from county to county. Lack of knowledge about the benefits of prostate cancer screening, inadequate access to health care, lack of health insurance, personal and cultural beliefs such as men's reluctance to seek health care, are all factors that influence men's behavior that leads to increases in distant stage of diagnosis.

NC PROSTATE CANCER INCIDENCE BY DISTANT STAGE DIAGNOSIS BY COUNTY, 2016-2020



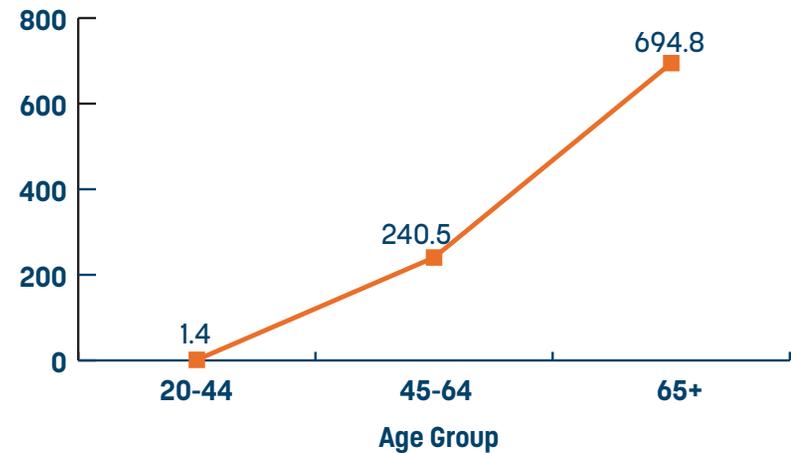
NC COUNTIES WITH DISTANT STAGE PROSTATE CANCER DIAGNOSIS EXCEEDING 11%, 2016-2020

County	Distant Stage Diagnosis Percentage	County	Distant Stage Diagnosis Percentage
North Carolina	8.0%	Chowan	13.6%
Tyrrell	23.8%	Orange	12.6%
Yancey	21.7%	Warren	12.4%
Mitchell	17.1%	Wayne	12.2%
Transylvania	16.1%	Pitt	11.6%
Beaufort	15.6%	Macon	11.6%
Swain	13.8%	Chatham	11.1%
Graham	13.6%	Ashe	11.1%

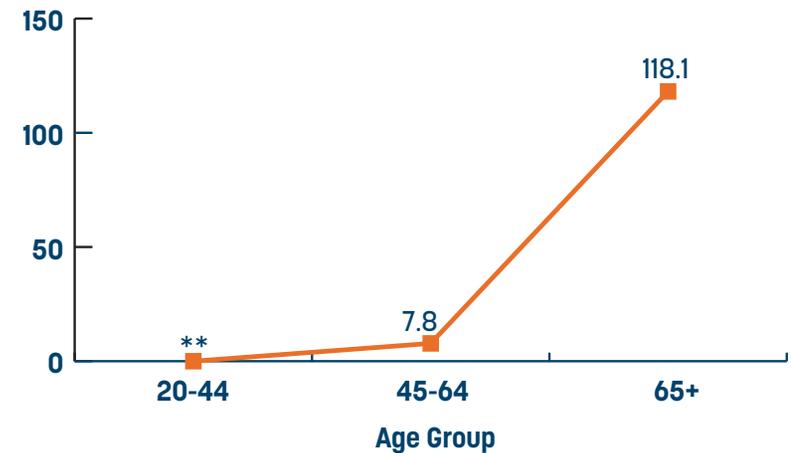
North Carolina Prostate Cancer Rates by Age Group

The risk for developing prostate cancer increases as a man ages, rising significantly from an incidence rate of 240.5 per 100,000 population in the 45-64 age range to 694.8 per 100,000 in the over 65 age group.² The prostate cancer mortality rate increases rapidly as men age past 65 years.¹

NC PROSTATE CANCER INCIDENCE RATES BY AGE GROUP, 2021



NC PROSTATE CANCER MORTALITY RATES BY AGE GROUP, 2021



NORTH CAROLINA PROSTATE CANCER STATISTICS BY COUNTY PER 100,000 POPULATION**

County	Incidence Rate ² (2017-2021)	Mortality Rate ¹ (2018-2022)	Distant Stage Diagnosis % ⁸ (2016-2020)	Current Smoker % (2020) ⁹
North Carolina	128.6	20.0	8%	17%
Alamance	121.8	21.6	9%	19%
Alexander	125.7	20.1	5%	22%
Alleghany	102.3	**	11%	23%
Anson	197.6	34.1	9%	23%
Ashe	113.9	17.3	11%	20%
Avery	103.7	**	8%	20%
Beaufort	121.4	23.6	16%	20%
Bertie	130.2	26.7	8%	25%
Bladen	111.5	25.2	7%	23%
Brunswick	109.3	19.6	6%	18%
Buncombe	117.1	15.3	9%	17%
Burke	112.8	18.4	8%	23%
Cabarrus	130.3	14.7	5%	16%
Caldwell	113.6	18.8	9%	22%
Camden	98.4	**	6%	19%
Carteret	83.7	15.2	4%	17%
Caswell	129.5	23.7	8%	22%
Catawba	132.3	20.9	4%	19%
Chatham	119.6	23.0	11%	15%
Cherokee	110.4	11.8	7%	22%
Chowan	139.2	41.7	14%	21%
Clay	121.6	**	5%	20%
Cleveland	122.2	15.6	8%	22%

County	Incidence Rate ² (2017-2021)	Mortality Rate ¹ (2018-2022)	Distant Stage Diagnosis % ⁸ (2016-2020)	Current Smoker % (2020) ⁹
Columbus	136.5	20.1	4%	23%
Craven	129.4	18.2	5%	19%
Cumberland	143.4	20.9	6%	20%
Currituck	88.8	**	4%	17%
Dare	117.3	18.5	7%	15%
Davidson	112.0	22.6	10%	20%
Davie	100.3	16.5	5%	19%
Duplin	121.2	15.1	8%	21%
Durham	136.8	22.7	9%	15%
Edgecombe	169.4	29.6	8%	23%
Forsyth	127.8	24.2	10%	17%
Franklin	128.2	19.7	9%	19%
Gaston	124.4	16.4	7%	20%
Gates	88.4	**	9%	21%
Graham	75.6	**	14%	23%
Granville	128.3	21.5	11%	20%
Greene	118.4	**	7%	23%
Guilford	140.7	20.7	7%	17%
Halifax	155.9	28.0	8%	25%
Harnett	121.9	21.9	7%	19%
Haywood	120.7	16.6	9%	19%
Henderson	113.8	19.3	8%	17%
Hertford	131.3	30.6	6%	23%
Hoke	143.9	21.0	8%	20%
Hyde	135.2	**	4%	23%
Iredell	148.8	16.7	5%	17%

County	Incidence Rate ² (2017-2021)	Mortality Rate ¹ (2018-2022)	Distant Stage Diagnosis % ⁸ (2016-2020)	Current Smoker % (2020) ⁹
Jackson	106.0	**	7%	20%
Johnston	125.3	21.2	8%	18%
Jones	147.3	**	2%	23%
Lee	140.3	16.2	7%	19%
Lenoir	138.3	22.7	8%	23%
Lincoln	130.6	19.0	7%	18%
Macon	99.7	18.4	12%	20%
Madison	100.5	**	7%	19%
Martin	135.7	24.6	9%	23%
McDowell	108.7	13.1	7%	21%
Mecklenburg	156.9	20.2	7%	14%
Mitchell	112.4	**	17%	20%
Montgomery	89.8	27.1	6%	21%
Moore	145.3	21.3	6%	16%
Nash	112.8	24.9	8%	20%
New Hanover	123.2	21.6	10%	16%
Northampton	156.6	22.5	11%	23%
Onslow	123.5	18.8	8%	20%
Orange	125.9	17.6	13%	13%
Pamlico	122.4	**	3%	20%
Pasquotank	133.4	24.3	7%	19%
Pender	124.8	19.7	9%	19%
Perquimans	128.5	**	8%	20%
Person	116.2	19.8	7%	20%
Pitt	122.1	21.0	12%	18%
Polk	115.4	18.1	10%	17%

County	Incidence Rate ² (2017-2021)	Mortality Rate ¹ (2018-2022)	Distant Stage Diagnosis % ⁸ (2016-2020)	Current Smoker % (2020) ⁹
Randolph	107.8	16.3	6%	21%
Richmond	136.0	17.6	9%	23%
Robeson	137.2	25.3	4%	27%
Rockingham	115.8	21.6	8%	22%
Rowan	114.2	24.3	6%	21%
Rutherford	123.2	20.0	4%	23%
Sampson	132.4	21.7	7%	22%
Scotland	111.5	**	10%	26%
Stanly	113.7	10.6	8%	20%
Stokes	98.8	15.9	5%	22%
Surry	106.4	23.6	8%	22%
Swain	139.2	**	14%	25%
Transylvania	99.6	14.4	16%	18%
Tyrrell	135.9	**	24%	23%
Union	139.0	16.9	5%	16%
Vance	126.3	21.6	8%	22%
Wake	138.4	19.1	7%	12%
Warren	134.8	32.5	12%	23%
Washington	136.6	**	11%	23%
Watauga	109.7	15.2	5%	18%
Wayne	142.8	28.3	12%	21%
Wilkes	82.1	19.1	7%	22%
Wilson	114.8	19.9	10%	22%
Yadkin	89.6	21.4	7%	22%
Yancey	96.7	25.0	2%	21%

**Cancer rates for cell sizes with fewer than 16 cases of cancer are suppressed as they are not stable. Cancer of the female breast includes in situ cases.
**Rates are based on patient county of residence at diagnosis as verified by address level geocoding, otherwise as reported by medical provider.



PROSTATE CANCER REFERENCES

- ¹ NC State Center for Health Statistics, Central Cancer Registry. *2018-2022 North Carolina Cancer Mortality by Race and Ethnicity per 100,000 Population*. February 2024. https://schs.dph.ncdhhs.gov/data/cancer/mortality_rates.htm
- ² NC State Center for Health Statistics, Central Cancer Registry. *2017-2021 North Carolina Cancer Incidence by County for Selected Sites per 100,000 Population*. February 2024. https://schs.dph.ncdhhs.gov/data/cancer/incidence_rates.htm
- ³ American Cancer Society, *Lesbian, Gay, Bisexual, Transgender, Queer People and Cancer Fact Sheet for Health Care Professionals*. 2023. www.cancer.org/content/dam/cancer-org/cancer-control/en/booklets-flyers/lgbtq-people-with-cancer-fact-sheet.pdf
- ⁴ NC State Center for Health Statistics, Central Cancer Registry. *2017-2021 Cumulative Observed and Relative Survival of 6 Selected Cancer Sites in North Carolina, 2023*. February 2024. <https://schs.dph.ncdhhs.gov/data/cancer.cfm>
- ⁵ Joseph Presti; Stacey Alexeeff; Brandon Horton; Stephanie Prausnitz; Andrew L. Avins. *Changes in Prostate Cancer Presentation Following the 2012 USPSTF Screening Statement: Observational Study in a Multispecialty Group Practice*, J Gen Intern Med., 2020 May; 35(5):1368-1374. <https://pubmed.ncbi.nlm.nih.gov/31820217/>
- ⁶ NC State Center for Health Statistics, *2020 BRFSS Survey Results: North Carolina, Prostate Cancer Screening*. October 2021. <https://schs.dph.ncdhhs.gov/data/brfss/2020/nc/risk/PCPSADII.html>
- ⁷ U. S. Census Bureau, *Urban and Rural*. September 2023. www.census.gov/programs-surveys/geography/guidance/geo-areas/urban-rural.html
- ⁸ NC State Center for Health Statistics, Central Cancer Registry. *2017-2021 Prostate Cancer Incidence by Race/Ethnicity and Stage of Diagnosis*. March 2024. <https://schs.dph.ncdhhs.gov/data/cancer.cfm>
- ⁹ University of Wisconsin Population Health Institute, *County Health Ranking and Roadmaps. Adult Smoking*. 2024. www.countyhealthrankings.org/explore-health-rankings/county-health-rankings-model/health-factors/health-behaviors/tobacco-use/adult-smoking?year=2023&state=37&tab=1

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Colorectal Cancer

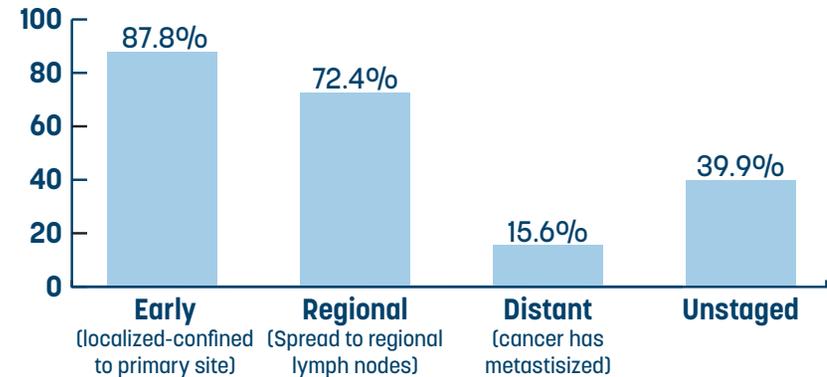
Colorectal cancer was the fourth leading cause of cancer deaths in North Carolina in 2022 (12.7 per 100,000).¹ Colorectal cancer develops in the colon and/or the rectum. While the colorectal cancer risk increases with age, lifestyle choices like maintaining a healthy weight, eating whole grains and fiber rich foods, reducing red meat consumption, and limiting alcohol can significantly reduce the overall risk of colorectal cancer. Sexual and gender minority (SGM) populations face a disproportionate burden of colorectal cancer with both a higher incidence of colorectal cancer and later-stage diagnosis. Transgender people are less likely to get screened for colorectal cancer and have a higher rate of late-stage diagnosis.² (See Appendix B for information on colorectal cancer interventions and evidence-based strategies and Appendix D for colorectal cancer screening recommendations.)

Results from the 2022 Behavioral Risk Factor Surveillance Survey (BRFSS) show that 29.6% of North Carolina adults aged 45 and older report “never having had a colonoscopy screening for colorectal cancer,” yet a colonoscopy can find polyps which can be removed before they become cancerous.³ Early detection is directly correlated with survival of colorectal cancer. This correlation emphasizes the importance of colorectal cancer screenings. Recommended screening tests include stool-based tests and/or direct visualization tests (colonoscopy, CT colonography, and flexible sigmoidoscopy).⁴ The type of test is based on risk and benefit for the individual. Early screening makes colorectal cancer mostly preventable. Between 2017-2021, the colorectal cancer cumulative observed survival rate, the percentage of patients who would be expected to be alive five years after being diagnosed with colorectal cancer, was 49.8%.⁵

RISK FACTORS

Age	Colorectal polyps	Overweight or obese	Smoking tobacco	Family history	Chronic inflammatory colon conditions
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NC COLORECTAL CANCER 5-YEAR SURVIVAL RATE BY STAGE OF DIAGNOSIS



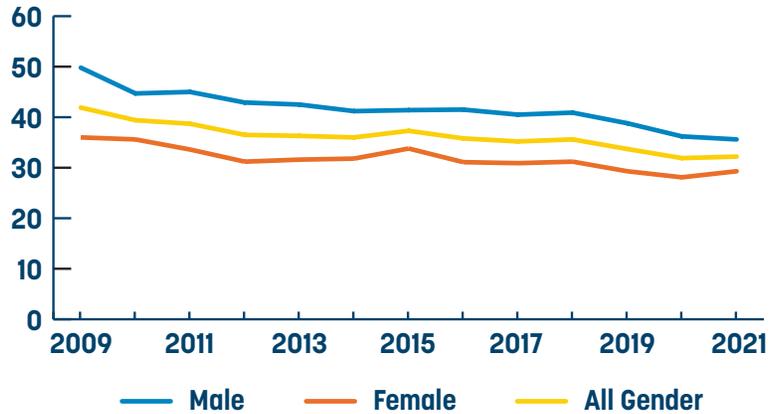
North Carolina Colorectal Cancer Data

Increase in colorectal cancer screening and changes in lifestyle behaviors are reflected in the decline of North Carolina colorectal cancer incidence and mortality rates in the past 10 years as illustrated in the incidence and mortality charts. Colorectal cancer incidence and mortality rates have been falling in older age groups in recent years, but they have been rising among younger people.^{7,1} This trend prompted a change in the national screening guidelines. The guidelines changed the recommended age to start regular colorectal cancer screening from age 50 to 45 for people at average risk of colorectal cancer.

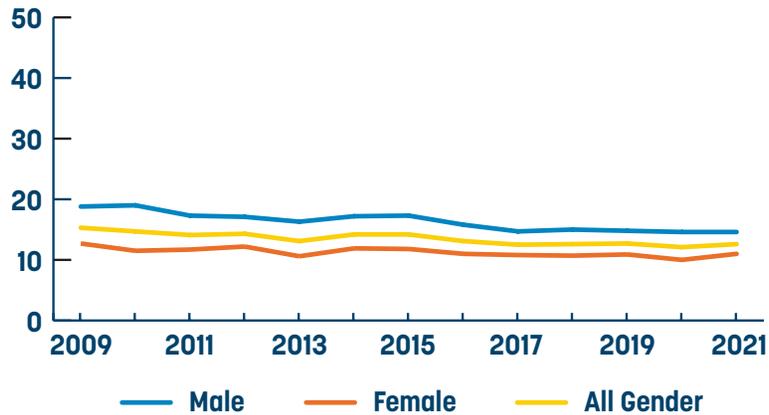
Despite higher incidence in men than in women, trends over time are very similar by sex. The colorectal cancer incidence rate dropped from 42.0 per 100,000 population during the 2007-2011 period to a rate of 35.3 per 100,000 in the 2017-2021 period.^{6,7} In 2020, the national colorectal cancer incidence rate stood at 33.0 per 100,000.⁸

From 2008-2012 and 2018-2022, the colorectal cancer mortality rate dropped from 14.8 per 100,000 population to 12.7 per 100,000.^{9,1} In 2020, the national colorectal cancer mortality rate stood at 13.0 per 100,000 population.⁸

HISTORICAL NC COLORECTAL CANCER INCIDENCE RATES



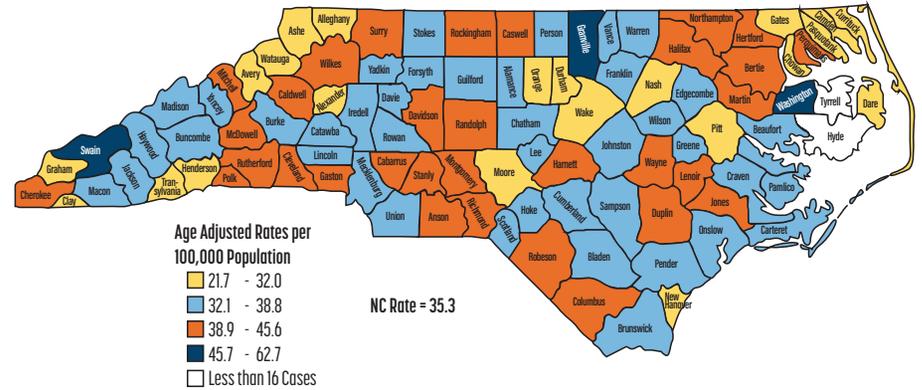
HISTORICAL NC COLORECTAL CANCER MORTALITY RATES



North Carolina colorectal cancer incidence and mortality rates vary by county. The North Carolina State Center for Health Statistics maps show the differences in these rates. The cancer mortality map shows elevated mortality rates in the northeastern part of the state. Researchers from the University of North

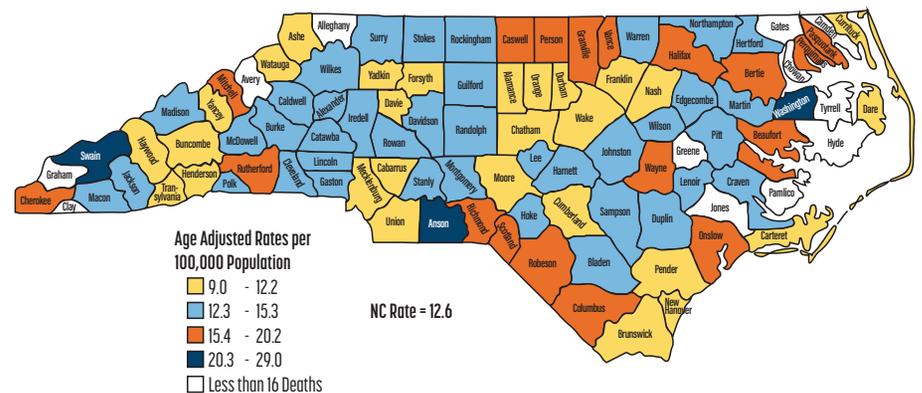
Carolina, Lineberger Comprehensive Cancer Center reported finding a cluster of 10 counties with higher rates of colorectal cancer mortality in 2019. In those 10 counties, an average of 55 people died in each county from colorectal cancer per 100,000 people, with mortality rates as high as 75 per 100,000 people. By comparison, the overall colorectal mortality rate per county for North Carolina at that time 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.¹⁰

NORTH CAROLINA COLON AND RECTUM CANCER INCIDENCE RATES, 2017-2021



Source: State Center for Health Statistics, March 2024.

NORTH CAROLINA COLON AND RECTUM CANCER MORTALITY RATES, 2017-2021



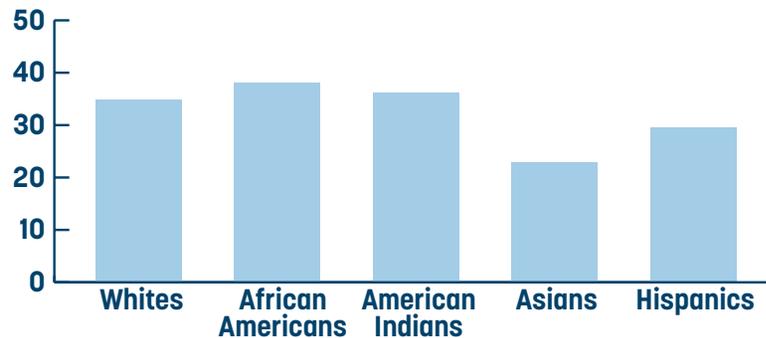
Source: State Center for Health Statistics, March 2024.

North Carolina Colorectal Cancer Rates by Race/Ethnicity

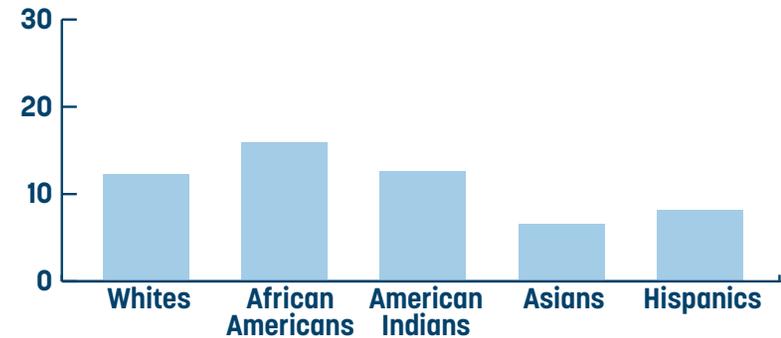
African Americans experience the greatest burden among all races/ethnicities in both colorectal cancer incidence and mortality. Some of the factors that contribute to this burden are lack of/under employment, inadequate housing, food insecurity, limited education, lack of health insurance, and limited access to health care. The 2017-2021 incidence rate for colorectal cancer for all North Carolinians stood at 35.3 per 100,000 population, while the African American colorectal cancer incidence rate was 38.1 per 100,000. The colorectal incidence rate for the other racial/ethnicities during the same period was American Indians 36.1 per 100,000, 34.8 per 100,000 population for whites, Hispanics 29.6 per 100,000, and Asian 22.8 per 100,000.⁷

The African American mortality rate for colorectal cancer was 15.9 per 100,000 population compared to whites (12.3 per 100,000), American Indians (12.6 per 100,000), Hispanics (8.2 per 100,000) and Asian (6.6 per 100,000) during the same period.¹ From 2017-2021, the Asian population had the lowest colorectal cancer incidence and mortality rates as well as the lowest colorectal cancer distant stage at diagnosis rate among all measurable racial and ethnic groups in North Carolina.¹¹

NC COLORECTAL CANCER INCIDENCE BY RACE/ETHNICITY, 2017-2021



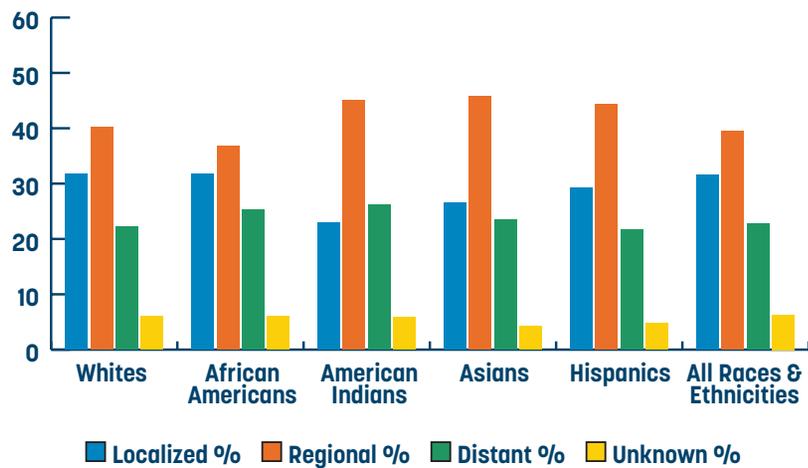
NC COLORECTAL CANCER MORTALITY BY RACE/ETHNICITY, 2018-2022



North Carolina Colorectal Cancer Distant Stage of Diagnosis Data

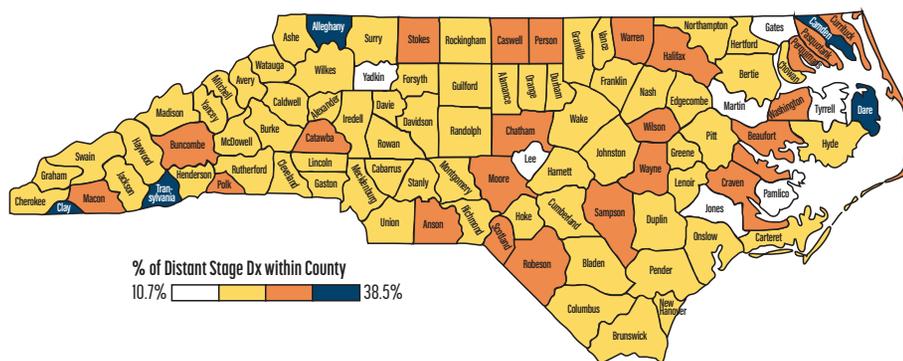
American Indians (26.1%) and African Americans (25.2%) are the two groups to have higher rates of colorectal cancer diagnosed at a distant stage.¹¹ The higher rates among both population groups may be attributed to lack of/under employment, limited or no health insurance, lack of access to healthy foods, and safe environments for physical activity. They may not be receiving health education emphasizing the importance of regular colorectal cancer screenings. The higher mortality rate in African Americans is consistent with research findings describing a more advanced cancer stage at diagnosis, lower treatment adherence, and limited access to high-quality care.¹² Hispanics have the lowest rate of colorectal cancer distant stage diagnosis (21.6%) of all the racial and ethnic groups in North Carolina. Asians have the lowest colorectal cancer incidence rate (22.8 per 100,000), and lowest mortality rate (6.6 per 100,000).¹¹

NC COLORECTAL CANCER INCIDENCE BY RACE/ETHNICITY AND STAGE AT DIAGNOSIS, 2017-2021



Distant stage diagnosis varies by county across the state with elevated rates in the 10-county cluster in the northeastern part of the state. This multiple county area was identified by researchers at the University of North Carolina, Lineberger Comprehensive Cancer Center and was discussed in the North Carolina Colorectal Cancer Data Section.¹⁰

NC COLORECTAL CANCER INCIDENCE BY DISTANT STAGE DIAGNOSIS BY COUNTY, 2016-2020



NC COUNTIES WITH DISTANT STAGE COLORECTAL CANCER DIAGNOSIS BY COUNTY EXCEEDING 25%, 2016-2020

County	Distant Stage Diagnosis Percentage	County	Distant Stage Diagnosis Percentage
North Carolina	23.0%	Anson	29.4%
Alleghany	38.5%	Warren	29.1%
Transylvania	36.7%	Stokes	28.8%
Dare	35.5%	Polk	28.3%
Clay	33.3%	Catawba	28.0%
Camden	31.8%	Washington	27.7%
Caswell	30.4%	Scotland	27.1%
Person	30.1%	Beaufort	27.0%

North Carolina Colorectal Cancer Rates by Gender

Both colorectal cancer incidence and mortality rates are higher among men than women. North Carolina men have a higher colorectal cancer incidence (39.5 per 100,000) and a higher mortality rate (15.0 per 100,000) than North Carolina women according to the latest available data.^{7,1} According to the 2022 Behavioral Risk Factor Surveillance System's (BRFSS) annual survey, only 38.1% of men indicated that they had had a colonoscopy in the past five years, compared to 40.9% for women.³ There may be multiple reasons for gender disparities in colorectal cancer incidence and mortality. Men tend to have healthier lifestyle behaviors such as higher rates of cigarette smoking and higher consumption of red meat and alcohol. Some men may also be reluctant to seek regular medical care.

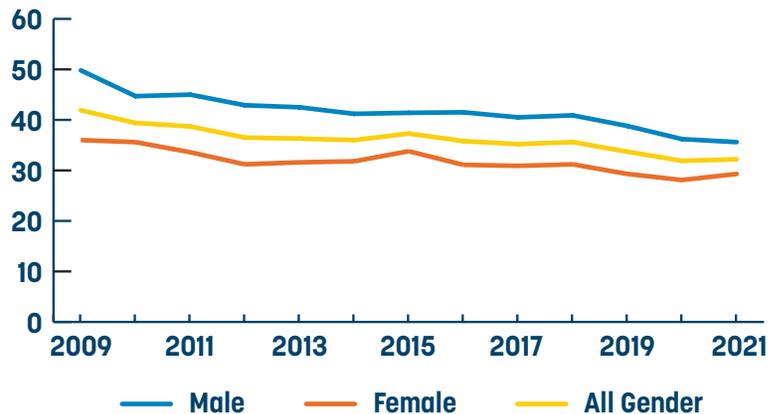
NC COLORECTAL CANCER INCIDENCE & MORTALITY RATES BY GENDER, 2021

CANCER	MALE		FEMALE	
	Incidence	Mortality	Incidence	Mortality
Colorectal	39.5	15.0	32.0	11.0

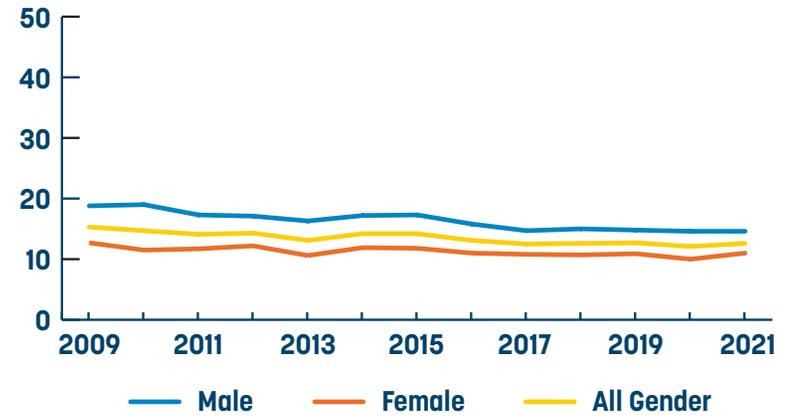
NC COLORECTAL CANCER MORTALITY RATES BY GENDER, 2022

CANCER	MALE	FEMALE
	Mortality	Mortality
Colorectal	15.0	10.9

HISTORICAL NC COLORECTAL CANCER INCIDENCE RATES



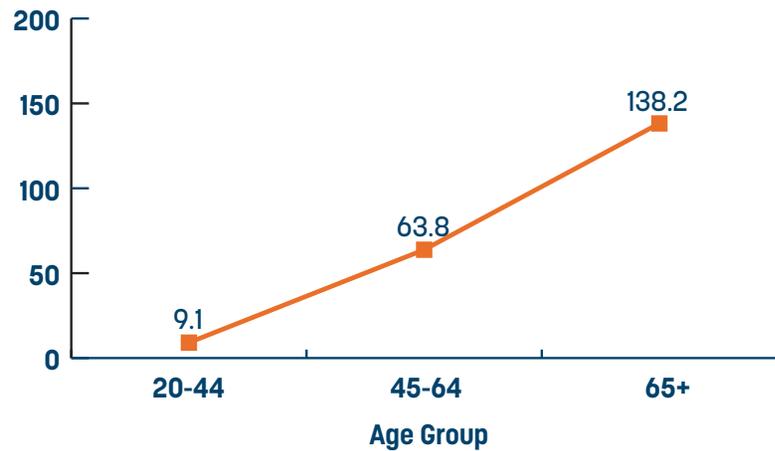
HISTORICAL NC COLORECTAL CANCER MORTALITY RATES



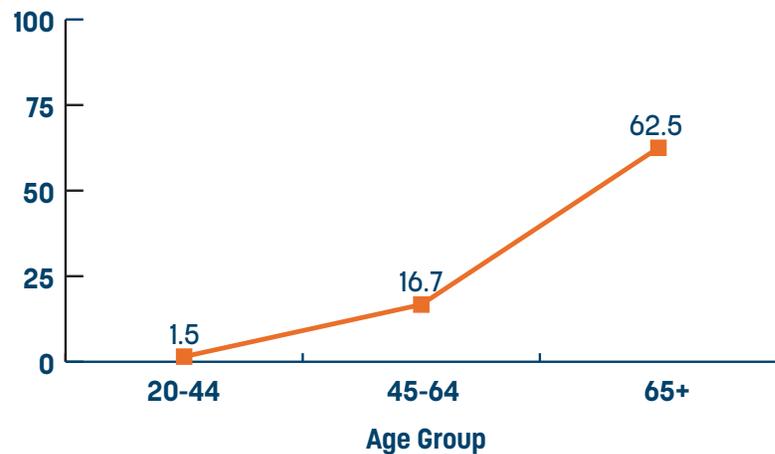
North Carolina Colorectal Cancer Rates by Age Group

The risk for developing colorectal cancer generally increases as one ages. Colorectal cancer incidence rates rise significantly from a rate of 63.8 per 100,000 population in the 45-64 age range to 138.2 per 100,000 in the 65+ age range.⁷ Colorectal cancer incidence and mortality rates have been falling in older age groups in recent years, but they have been rising among younger people. This prompted a change in the screening guidelines. The guidelines changed the recommended age to start regular colorectal cancer screening from age 50 to 45 years of age for people at average risk of colorectal cancer. Mortality rates also increase as one ages. The rate for 45-64 age group is 16.7 per 100,000 which increases to 62.5 per 100,000 in the over 65 age group.¹

NC COLORECTAL CANCER INCIDENCE RATE BY AGE GROUP, 2021



NC COLORECTAL CANCER MORTALITY RATE BY AGE GROUP, 2021



NORTH CAROLINA COLORECTAL CANCER STATISTICS BY COUNTY PER 100,000 POPULATION**

County	Incidence Rate ⁷ (2017-2021)	Mortality Rate ¹ (2018-2022)	Distant Stage Diagnosis % ¹¹ (2016-2020)	Current Smoker % ¹³ (2020)
North Carolina	35.3	12.7	23%	17%
Alamance	36.7	12.8	20%	19%
Alexander	32.0	13.8	23%	22%
Alleghany	21.7	**	38%	23%
Anson	44.4	22.5	29%	23%
Ashe	24.5	11.3	21%	20%
Avery	30.8	**	23%	20%
Beaufort	34.6	15.4	27%	20%
Bertie	44.3	15.6	20%	25%
Bladen	37.3	15.0	21%	23%
Brunswick	34.0	13.0	20%	18%
Buncombe	33.7	12.0	26%	17%
Burke	37.8	13.3	19%	23%
Cabarrus	41.9	12.4	21%	16%
Caldwell	44.1	15.3	24%	22%
Camden	29.3	**	32%	19%
Carteret	37.7	13.5	24%	17%
Caswell	40.7	17.9	30%	22%
Catawba	32.4	14.2	28%	19%
Chatham	36.2	8.0	25%	15%
Cherokee	43.7	16.5	19%	22%
Chowan	31.6	13.7	21%	21%
Clay	26.4	**	33%	20%
Cleveland	44.2	14.8	21%	22%

County	Incidence Rate ⁷ (2017-2021)	Mortality Rate ¹ (2018-2022)	Distant Stage Diagnosis % ¹¹ (2016-2020)	Current Smoker % ¹³ (2020)
Columbus	39.4	17.2	22%	23%
Craven	37.5	13.2	27%	19%
Cumberland	32.9	12.0	23%	20%
Currituck	21.8	10.3	26%	17%
Dare	24.5	11.3	36%	15%
Davidson	42.0	13.8	24%	20%
Davie	37.8	10.5	21%	19%
Duplin	41.7	15.4	22%	21%
Durham	31.4	11.6	23%	15%
Edgecombe	34.8	14.3	22%	23%
Forsyth	34.4	11.7	22%	17%
Franklin	34.9	9.8	22%	19%
Gaston	41.7	13.1	23%	20%
Gates	27.8	**	12%	21%
Graham	28.0	**	18%	23%
Granville	50.1	19.5	24%	20%
Greene	35.1	14.1	19%	23%
Guilford	34.1	12.2	23%	17%
Halifax	41.0	15.8	27%	25%
Harnett	40.1	15.3	20%	19%
Haywood	37.3	13.4	19%	19%
Henderson	30.9	12.5	19%	17%
Hertford	45.4	15.2	20%	23%
Hoke	35.0	12.3	22%	20%
Hyde	**	**	23%	23%
Iredell	35.1	12.2	20%	17%

County	Incidence Rate ⁷ (2017-2021)	Mortality Rate ¹ (2018-2022)	Distant Stage Diagnosis % ¹¹ (2016-2020)	Current Smoker % ¹³ (2020)
Jackson	35.1	11.5	23%	20%
Johnston	36.1	11.2	22%	18%
Jones	40.0	**	11%	23%
Lee	36.0	14.8	16%	19%
Lenoir	41.2	14.7	23%	23%
Lincoln	36.3	12.2	22%	18%
Macon	34.6	16.7	26%	20%
Madison	36.7	12.9	24%	19%
Martin	41.8	13.7	13%	23%
McDowell	45.6	17.0	21%	21%
Mecklenburg	34.0	11.3	23%	14%
Mitchell	44.8	15.1	17%	20%
Montgomery	37.0	14.8	23%	21%
Moore	29.4	12.0	25%	16%
Nash	29.1	9.6	24%	20%
New Hanover	29.2	10.6	20%	16%
Northampton	41.4	12.6	21%	23%
Onslow	38.6	16.0	21%	20%
Orange	29.9	10.2	23%	13%
Pamlico	38.4	**	16%	20%
Pasquotank	30.8	15.2	26%	19%
Pender	33.0	11.0	22%	19%
Perquimans	36.8	19.1	26%	20%
Person	38.7	15.8	30%	20%
Pitt	29.8	12.2	21%	18%
Polk	37.3	15.0	28%	17%

County	Incidence Rate ⁷ (2017-2021)	Mortality Rate ¹ (2018-2022)	Distant Stage Diagnosis % ¹¹ (2016-2020)	Current Smoker % ¹³ (2020)
Randolph	39.1	13.2	20%	21%
Richmond	40.0	20.3	25%	23%
Robeson	40.7	18.8	25%	27%
Rockingham	41.4	15.8	23%	22%
Rowan	36.7	12.4	22%	21%
Rutherford	40.5	14.9	22%	23%
Sampson	33.1	15.8	26%	22%
Scotland	38.8	17.1	27%	26%
Stanly	41.0	15.6	23%	20%
Stokes	37.3	15.7	29%	22%
Surry	40.6	15.4	21%	22%
Swain	62.7	23.5	23%	25%
Transylvania	26.1	7.7	37%	18%
Tyrrell	**	**	14%	23%
Union	37.4	10.8	23%	16%
Vance	36.4	17.7	20%	22%
Wake	28.8	9.5	23%	12%
Warren	36.5	12.2	29%	23%
Washington	53.8	31.5	28%	23%
Watauga	31.8	10.3	22%	18%
Wayne	41.6	19.4	25%	21%
Wilkes	40.7	13.7	21%	22%
Wilson	36.6	15.8	26%	22%
Yadkin	32.3	8.4	16%	22%
Yancey	37.8	10.1	21%	21%

**Cancer rates for cell sizes with fewer than 16 cases of cancer are suppressed as they are not stable.

**Rates are based on patient county of residence at diagnosis as verified by address level geocoding, otherwise as reported by medical provider.

COLORECTAL CANCER REFERENCES

- 1 NC State Center for Health Statistics, Central Cancer Registry. *2018-2022 North Carolina Cancer Mortality by Race and Ethnicity per 100,000 Population*. February 2024. https://schs.dph.ncdhhs.gov/data/cancer/mortality_rates.htm
- 2 American Cancer Society. *Lesbian, Gay, Bisexual, Transgender, Queer People and Cancer Fact Sheet for Health Care Professionals*. 2023. www.cancer.org/content/dam/cancer-org/cancer-control/en/booklets-flyers/lgbtq-people-with-cancer-fact-sheet.pdf
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- 4 U.S. Preventive Services Task Force, *Colorectal Cancer Screening*. May 18, 2021. www.uspreventiveservicestaskforce.org/uspstf/recommendation/colorectal-cancer-screening
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- 7 NC State Center for Health Statistics, Central Cancer Registry. *2017-2021 North Carolina Cancer Incidence by County for Selected Sites per 100,000 Population*. February 2024. https://schs.dph.ncdhhs.gov/data/cancer/incidence_rates.htm
- 8 U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. *Cancer Statistics at a Glance. Leading Cancer Cases and Deaths, All Races and Ethnicities, Male and Female*. 2020. Retrieved July 2023. <https://gis.cdc.gov/Cancer/USCS/#/AtAGlance/>
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- 10 University of North Carolina, Lineberger Comprehensive Cancer Center. *News from Lineberger, Researchers identify cluster of NC counties with higher colorectal cancer death rates*. February 18, 2019. <https://unclineberger.org/news/researchers-identify-cluster-of-higher-colorectal-cancer-death-in-northeastern-n-c-counties/>
- 11 NC State Center for Health Statistics, Central Cancer Registry. *2017-2021 Colorectal Cancer Incidence by Race/Ethnicity and Stage of Diagnosis*. March 2024. <https://schs.dph.ncdhhs.gov/data/cancer.cfm>
- 12 Hall, Kathleen. *Why Are African Americans at Greater Risk for Colorectal Cancer? U.S. News and World Report*. July 5, 2017. <https://health.usnews.com/health-care/patient-advice/articles/2017-07-05/why-are-african-americans-at-greater-risk-for-colorectal-cancer#:~:text=African-Americans%20are%20more%20likely%20to%20develop%20CRC%20at,stage%20disease%2C%20they%20have%20significantly%20worse%20survival%20rates>
- 13 University of Wisconsin Population Health Institute, County Health Ranking and Roadmaps. *Adult Smoking*. 2024. www.countyhealthrankings.org/explore-health-rankings/county-health-rankings-model/health-factors/health-behaviors/tobacco-use/adult-smoking?year=2023&state=37&tab=1



Cervical Cancer

RISK FACTORS

Having a Cervix

Having a Persistent Infection with Certain HPV Types

Smoking Tobacco

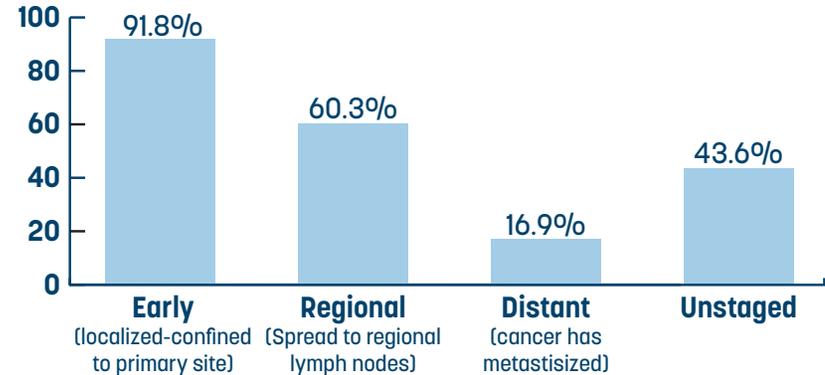
Having Multiple Sex Partners

Cervical cancer forms in tissues of the cervix and the mouth of the uterus. It was chosen as one of the North Carolina priority cancers because it can be mostly prevented through human papillomavirus (HPV) vaccinations and regular cervical cancer screenings. HPV vaccinations are recommended for children ages 9 to 12. HPV vaccines should be given before a person becomes exposed to HPV.¹ However, 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 older than 26 years of age who are not already vaccinated may decide to get the HPV vaccine after speaking with their doctor about their risk for HPV infections. The vaccine works to prevent HPV infection and prevent HPV related cancers such as cervical, vaginal, vulvar, anal, penile, and oropharyngeal cancers. It is recommended that both girls and boys receive HPV vaccinations to reduce their risk for HPV related cancers. Regular cervical cancer screenings should start at age 21. (See Appendix B for cervical cancer interventions and evidence-based strategies and Appendix D for cervical cancer screening recommendations.)

Sexual and gender minority (SGM) populations face a disproportionate burden of cancer with both a higher cervical cancer incidence and later-stage diagnosis. 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.²

The chart to the right shows that early detection is directly correlated with survival of cervical cancer and emphasizes the importance of cervical cancer screenings and points to the importance of early detection.³ The five-year cumulative observed survival rate for cervical cancer was 56.7% for cases reported from 2017-2021.

NC CERVICAL CANCER 5-YEAR SURVIVAL RATE BY STAGE OF DIAGNOSIS



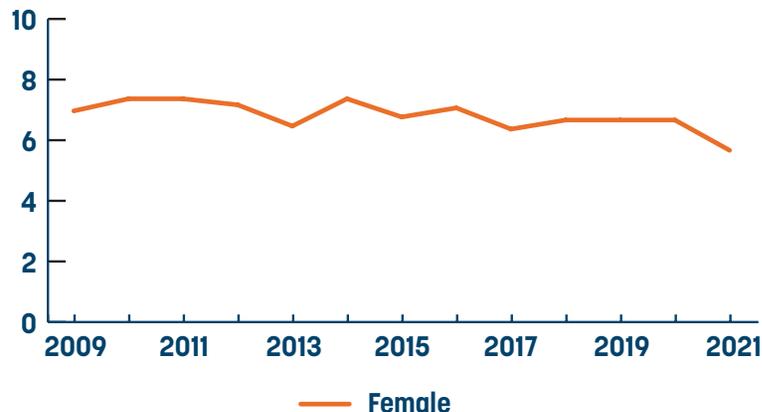
North Carolina Cervical Cancer Data

North Carolina cervical cancer incidence rates reflect the decline in cases due to increased screening and human papillomavirus (HPV) vaccinations.⁴ Yet, cervical cancer mortality rates have increased in the past few years.⁵ The change in these rates is reflected in the historical charts below.

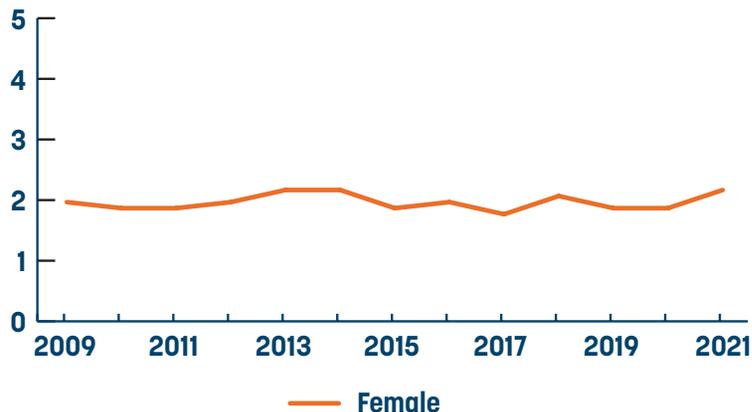
Prevention efforts need to focus on increasing the HPV vaccination rate in children and young adults (ages 9 and 26) and encouraging women over 21 to have regular Pap tests. According to the 2022 Behavior Risk Factor Surveillance System (BRFSS), 65.3% of the respondents reported that they had a cervical cancer screening test.⁶ According to the United States Centers for Disease Control and Prevention, the percentage of United States adolescents who were up to date with HPV vaccination (HPV UTD) increased from 54.2% in 2019 to 58.6% in 2020. Coverage with ≥1 dose of HPV vaccine increased from 71.5% in 2019 to 75.1% in 2020.⁷ Some parents may be hesitant to vaccinate their children due to misinformation

or fears of vaccine safety, therefore missing the optimal time for children to receive the HPV vaccine before they are exposed to HPV. North Carolina does not require the reporting of HPV vaccinations.

HISTORICAL NC CERVIX UTERI CANCER INCIDENCE RATES



HISTORICAL NC CERVIX UTERI CANCER MORTALITY RATES

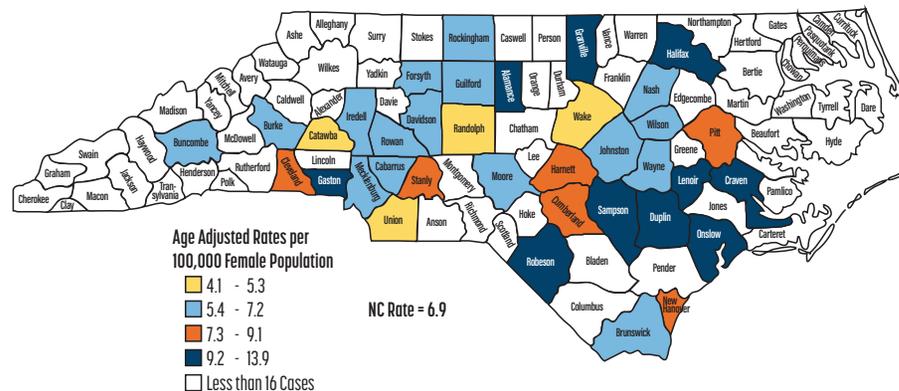


North Carolina cervical cancer incidence and mortality rates vary by county as shown in these North Carolina State Center for Health Statistics maps.^{4,5} There are many reasons for these county differences like lack of knowledge about the benefits of HPV vaccinations and cervical cancer screening tests, inadequate access to health care, lack of health insurance

to cover screening tests, and women's reluctance to have a cervical cancer screening. Additionally, parents may choose to not have their child vaccinated due to the fear of encouraging sex, concerns about vaccine, or the vaccine was not recommended by their health care provider.

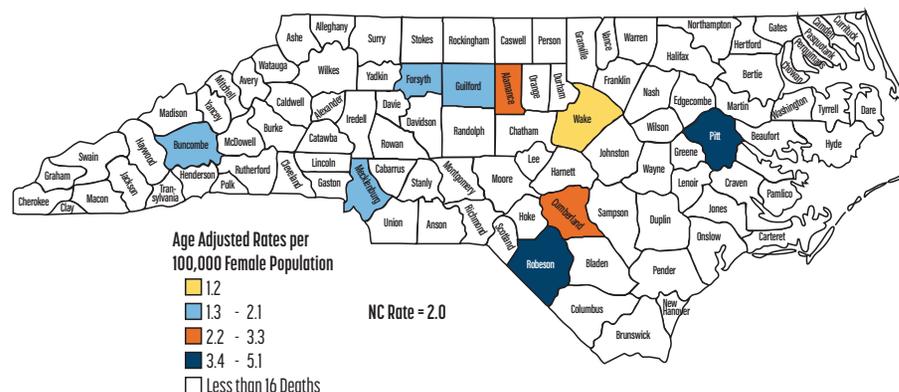
The NC Breast and Cervical Cancer Control Program helps reduce some barriers by providing free or low-cost screenings for eligible low-income women. HPV vaccines are available from county health departments free of charge.

NORTH CAROLINA CERVICAL CANCER INCIDENCE RATES, 2017-2021



Source: State Center for Health Statistics, March 2024.

NORTH CAROLINA CERVICAL CANCER MORTALITY RATES, 2017-2021



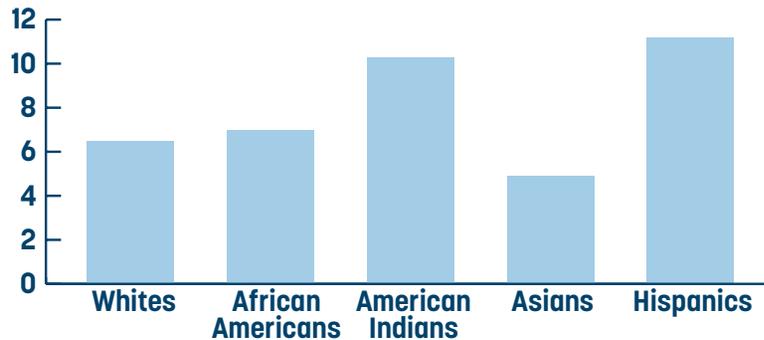
Source: State Center for Health Statistics, March 2024.

North Carolina Cervical Cancer Rates by Race/Ethnicity

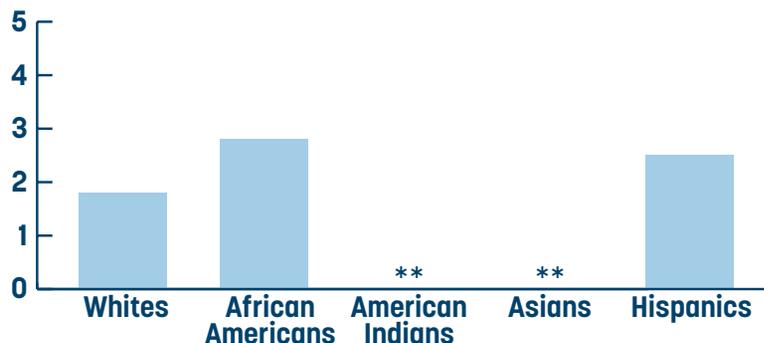
Even though cervical cancer incidence and mortality rates are small numbers, there is a clear racial/ethnic disparity in the burden of cervical cancer. Hispanics (11.2 per 100,000) have the highest incidence of cervical cancer followed by American Indians (10.3 per 100,000), African Americans (7.0 per 100,000), whites (6.5 per 100,000), and Asians (4.9 per 100,000).⁴

African American women are more likely to die from cervical cancer than other women. Their cervical cancer mortality rate is 2.8 per 100,000 population which is closely followed by the mortality rate for Hispanic women (2.5 per 100,000). White women have a mortality rate of 1.8 per 100,000. There is no information for Asians and American Indians because of the small number of cases.⁵

NC CERVICAL CANCER INCIDENCE RATES BY RACE/ETHNICITY, 2017-2021



NC CERVICAL CANCER MORTALITY RATES BY RACE/ETHNICITY, 2018-2022

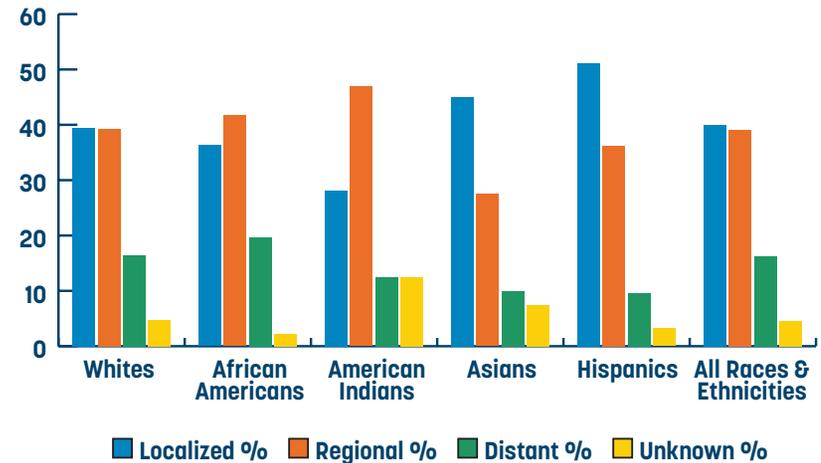


North Carolina Cervical Cancer Distant Stage of Diagnosis Data

Cervical cancer distant stage of diagnosis (cancer spread to distant parts of the body) varies by county across North Carolina.⁸ There are many reasons for this difference, including lack of awareness about benefits of early screening, lack of health insurance or time off from work for medical appointments. They may live in rural areas where transportation and childcare are difficult to find and afford. Some women may not know about the benefits of HPV vaccines or that the HPV vaccine is provided free of charge in North Carolina.

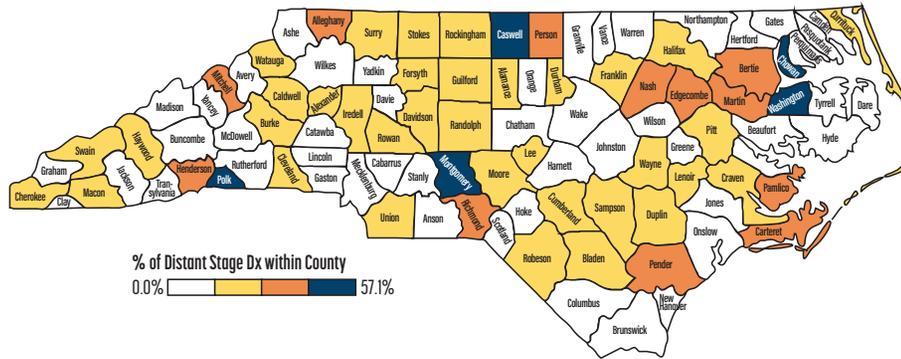
African American women have an increased risk of dying because their cancer is diagnosed at the distant stage. They may lack understanding of the value of HPV vaccination and cervical cancer screening and may not have health insurance coverage which limits access to early detection and treatments. Lower treatment adherence and limited access to quality care are also risk factors.

NC CERVICAL CANCER INCIDENCE BY RACE/ETHNICITY AND STAGE OF DIAGNOSIS, 2017-2021



This map illustrates the distant stage cervical cancer diagnosis rates by counties. The chart lists the North Carolina counties with a distant stage cervical cancer diagnosis exceeding 29%.

NC CERVICAL CANCER INCIDENCE BY DISTANT STAGE DIAGNOSIS BY COUNTY, 2016-2020



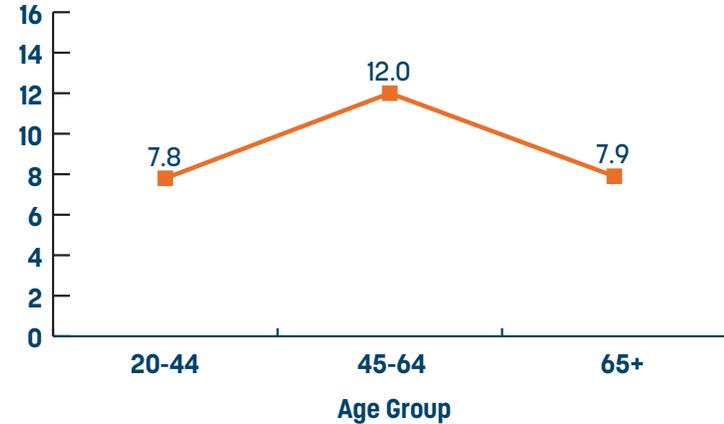
NC COUNTIES WITH DISTANT STAGE CERVICAL CANCER DIAGNOSIS EXCEEDING 29%, 2016-2020

County	Distant Stage Diagnosis Percentage	County	Distant Stage Diagnosis Percentage
North Carolina	16.0%	Pamlico	33.3%
Polk	57.1%	Henderson	33.3%
Washington	50.0%	Bertie	33.3%
Chowan	50.0%	Alleghany	33.3%
Caswell	50.0%	Pender	30.0%
Montgomery	42.9%	Martin	30.0%
Richmond	33.3%	Nash	29.4%
Person	33.3%	Carteret	29.4%

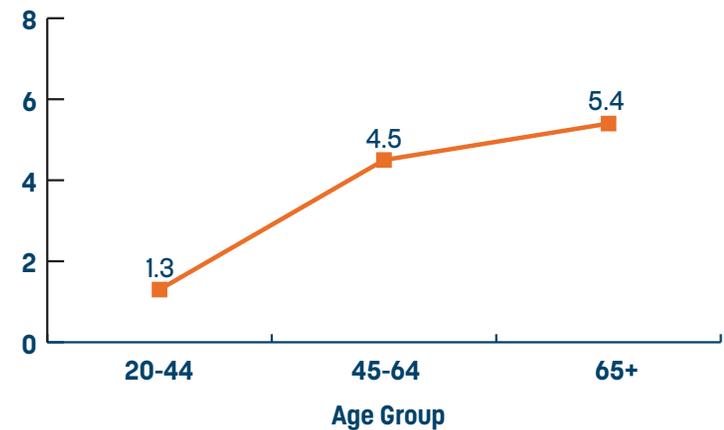
North Carolina Cervical Cancer Rates by Age Group

Cervical cancer incidence rates peak in the 45-64 age group. Cervical cancer is most frequently diagnosed cancer in women between the ages of 35 and 44 and rarely develops in women younger than 20.⁴ The mortality rate increases with age. Nationally, 20% of women with cervical cancer are diagnosed after age 65.⁹

NC CERVICAL CANCER INCIDENCE RATE BY AGE GROUP, 2021



NC CERVICAL CANCER MORTALITY RATES BY AGE GROUP, 2021



NORTH CAROLINA CERVICAL CANCER STATISTICS BY COUNTY PER 100,000 POPULATION**

County	Incidence Rate ⁴ (2017-2021)	Mortality Rate ⁵ (2018-2022)	Distant Stage Diagnosis % ⁸ (2016-2020)	Current Smoker % (2020) ¹⁰
North Carolina	6.9	2.0	16%	17%
Alamance	10.5	**	17%	19%
Alexander	**	**	22%	22%
Alleghany	**	**	33%	23%
Anson	**	0.0	**	23%
Ashe	**	**	**	20%
Avery	**	0.0	**	20%
Beaufort	**	**	10%	20%
Bertie	**	**	33%	25%
Bladen	**	**	22%	23%
Brunswick	6.3	**	11%	18%
Buncombe	6.4	1.9	13%	17%
Burke	7.1	**	17%	23%
Cabarrus	7.2	**	14%	16%
Caldwell	**	**	21%	22%
Camden	**	**	**	19%
Carteret	**	**	29%	17%
Caswell	**	**	50%	22%
Catawba	4.9	**	12%	19%
Chatham	**	**	11%	15%
Cherokee	**	0.0	25%	22%
Chowan	**	**	50%	21%
Clay	**	0.0	**	20%
Cleveland	7.7	**	26%	22%

County	Incidence Rate ⁴ (2017-2021)	Mortality Rate ⁵ (2018-2022)	Distant Stage Diagnosis % ⁸ (2016-2020)	Current Smoker % (2020) ¹⁰
Columbus	**	**	9%	23%
Craven	10.7	**	21%	19%
Cumberland	9.1	3.7	22%	20%
Currituck	**	**	17%	17%
Dare	**	**	**	15%
Davidson	7.2	**	16%	20%
Davie	**	**	**	19%
Duplin	10.9	**	14%	21%
Durham	4.5	**	16%	15%
Edgecombe	**	**	29%	23%
Forsyth	6.8	2.4	18%	17%
Franklin	**	**	20%	19%
Gaston	10.0	**	15%	20%
Gates	**	**	**	21%
Graham	**	0.0	**	23%
Granville	10.4	**	13%	20%
Greene	**	0.0	**	23%
Guilford	6.2	1.7	14%	17%
Halifax	12.6	**	25%	25%
Harnett	7.7	**	**	19%
Haywood	**	**	17%	19%
Henderson	**	**	33%	17%
Hertford	**	0.0	**	23%
Hoke	**	**	8%	20%
Hyde	**	0.0	**	23%
Iredell	6.4	**	16%	17%

County	Incidence Rate ⁴ (2017-2021)	Mortality Rate ⁵ (2018-2022)	Distant Stage Diagnosis % ⁸ (2016-2020)	Current Smoker % (2020) ¹⁰
Jackson	**	**	10%	20%
Johnston	7.0	**	7%	18%
Jones	**	0.0	**	23%
Lee	**	**	20%	19%
Lenoir	10.3	**	19%	23%
Lincoln	**	**	9%	18%
Macon	**	**	25%	20%
Madison	**	**	**	19%
Martin	**	**	30%	23%
McDowell	**	**	11%	21%
Mecklenburg	6.9	2.0	11%	14%
Mitchell	**	**	29%	20%
Montgomery	**	**	43%	21%
Moore	5.9	**	26%	16%
Nash	6.4	**	29%	20%
New Hanover	7.7	**	24%	16%
Northampton	**	**	**	23%
Onslow	11.0	**	11%	20%
Orange	5.1	0.0	4%	13%
Pamlico	**	0.0	33%	20%
Pasquotank	**	**	8%	19%
Pender	**	**	30%	19%
Perquimans	**	**	**	20%
Person	**	**	33%	20%
Pitt	7.8	3.8	24%	18%
Polk	**	**	57%	17%

County	Incidence Rate ⁴ (2017-2021)	Mortality Rate ⁵ (2018-2022)	Distant Stage Diagnosis % ⁸ (2016-2020)	Current Smoker % (2020) ¹⁰
Randolph	5.3	**	16%	21%
Richmond	**	**	33%	23%
Robeson	11.5	5.0	16%	27%
Rockingham	5.8	**	19%	22%
Rowan	7.1	**	17%	21%
Rutherford	**	**	10%	23%
Sampson	13.9	**	17%	22%
Scotland	**	**	**	26%
Stanly	8.5	**	5%	20%
Stokes	**	**	20%	22%
Surry	**	**	18%	22%
Swain	**	**	25%	25%
Transylvania	**	**	11%	18%
Tyrrell	**	0.0	**	23%
Union	5.1	**	19%	16%
Vance	**	**	**	22%
Wake	4.1	1.2	13%	12%
Warren	**	0.0	**	23%
Washington	**	0.0	50%	23%
Watauga	**	**	17%	18%
Wayne	6.8	**	26%	21%
Wilkes	**	**	**	22%
Wilson	6.7	**	7%	22%
Yadkin	**	**	**	22%
Yancey	**	**	**	21%

**Cancer rates for cell sizes with fewer than 16 cases of cancer are suppressed as they are not stable.
Rates are based on patient county of residence at diagnosis as verified by address level geocoding, otherwise as reported by medical provider.



CERVICAL CANCER REFERENCES

- ¹ Elissa Meites, MD¹; Peter G. Szilagyi, MD²; Harrell W. Chesson, PhD³; Elizabeth R. Unger, PhD, MD⁴; José R. Romero, MD⁵; Laurie. Markowitz, MD¹. *Human Papillomavirus Vaccination for Adults: Updated Recommendations of the Advisory Committee on Immunization Practices*. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Morbidity and Mortality Weekly Report (MMWR). August 16, 2019. www.cdc.gov/mmwr/volumes/68/wr/mm6832a3.htm
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- ⁴ NC State Center for Health Statistics, Central Cancer Registry. *2017-2021 North Carolina Cancer Incidence by County for Selected Sites per 100,000 Population*. February 2024. https://schs.dph.ncdhhs.gov/data/cancer/incidence_rates.htm
- ⁵ NC State Center for Health Statistics, Central Cancer Registry. *2018-2022 North Carolina Cancer Mortality by Race and Ethnicity per 100,000 Population*. February 2024. https://schs.dph.ncdhhs.gov/data/cancer/mortality_rates.htm

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- ⁸ NC State Center for Health Statistics, Central Cancer Registry. *2017-2021 Cervical Cancer Incidence by Race/Ethnicity and Stage of Diagnosis*. March 2024. <https://schs.dph.ncdhhs.gov/data/cancer.cfm>
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- ¹⁰ University of Wisconsin Population Health Institute, County Health Ranking and Roadmaps. *Adult Smoking*. 2024. www.countyhealthrankings.org/explore-health-rankings/county-health-rankings-model/health-factors/health-behaviors/tobacco-use/adult-smoking?year=2023&state=37&tab=1

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Melanoma and Non-melanoma Skin Cancer

RISK FACTORS

Exposure to Ultraviolet Radiation

Exposure to Tanning Bed or Sun Lamps

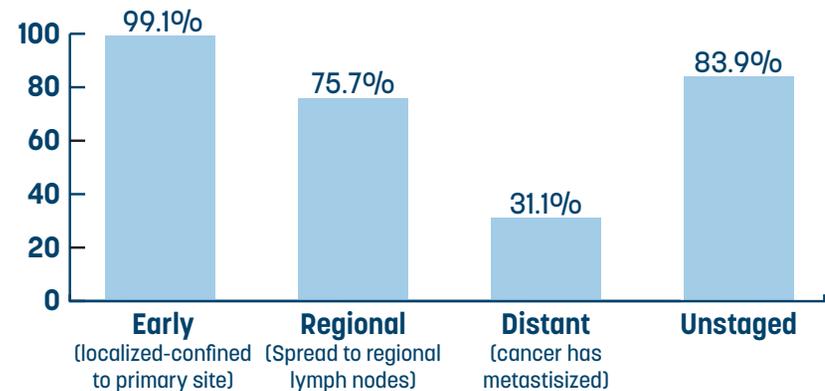
Family History

Presence of Large, Numerous Moles

Skin cancer (melanoma, basal cell, and squamous cell) is the most diagnosed cancer in North Carolina. Melanoma forms in the skin cells that make pigment. It accounts for just a small portion of the skin cancers diagnosed but is the most serious because it can spread to lymph nodes and distant organs making it difficult to control. Basal cell and squamous cell cancers are less serious types, but all skin cancers need to be identified early so that they can be treated and, in many cases, cured. Melanoma is the only skin cancer tracked by the North Carolina Central Cancer Registry, so information is not available for basal and squamous cell cancers. (See Appendix B for melanoma cancer interventions and evidence-based strategies.)

There is a strong association between increased risk of melanoma and exposure to ultraviolet (UV) light from the sun, tanning beds, and sun lamps. The risk increases as an individual uses indoor tanning beds with younger and more frequent users having a bigger risk. Sunburns in children are a clear risk factor for skin cancers later in life so it is important for parents and children to develop the habit of using sun protection regularly. This chart shows that early detection is directly correlated with survival of melanoma cancer and emphasizes the importance of regular skin cancer screenings. The cumulative observed survival rate for melanoma in 2017-2021 was 84.6%.¹

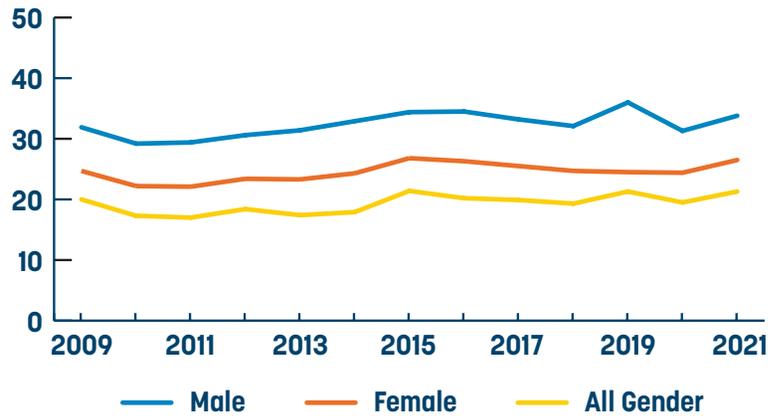
NC MELANOMA 5-YEAR RATE BY STAGE OF DIAGNOSIS



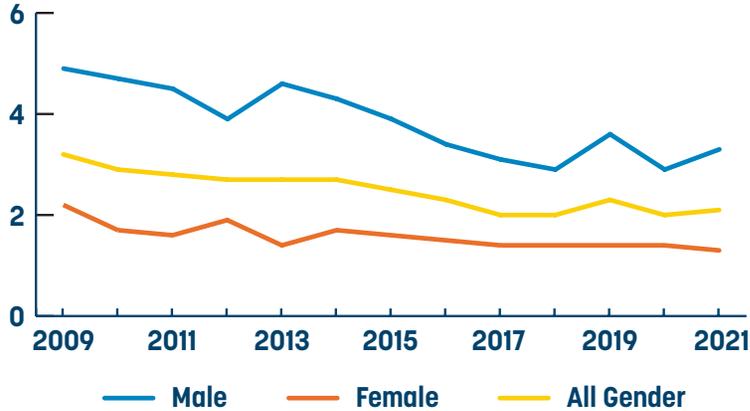
North Carolina Melanoma Skin Cancer Data

The melanoma skin cancer incidence rate in North Carolina was 26.8 per 100,000 population in the 2017-2021.² The 2018-2022 mortality rate for melanoma skin cancer in North Carolina was 2.1 per 100,000 population as compared to the 2013-2017 rate of 2.4 per 100,000.^{3,4} North Carolina did not report melanoma mortality rates until the 2013-2017 time period. North Carolina still lags the national melanoma cancer incidence and mortality rate. The 2020 national melanoma cancer incidence and mortality rates stood at 2.0 per 100,000 population.⁵

HISTORICAL NC MELANOMA INCIDENCE RATES



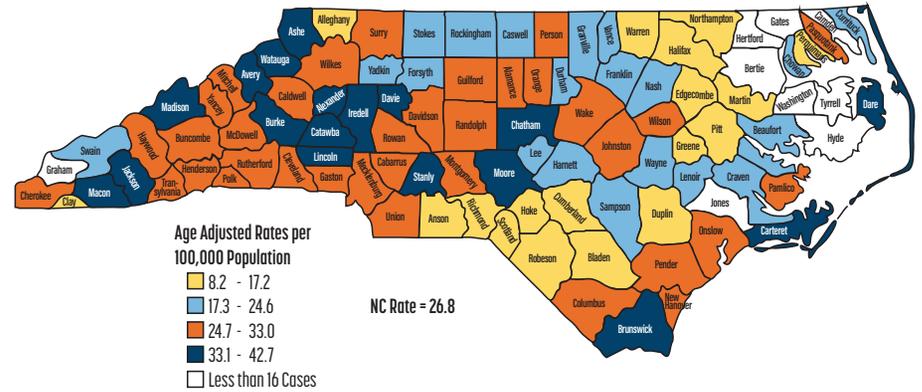
HISTORICAL NC MELANOMA CANCER MORTALITY RATES



Skin cancers are more common among people with a light (fair) skin tone but is not limited to fair skinned individuals. These North Carolina State Center for Health Statistics maps show the differences in melanoma skin cancer rates by county. The incidence map reflects the racial/ethnic population demographics with the western counties having the higher incidence rates.

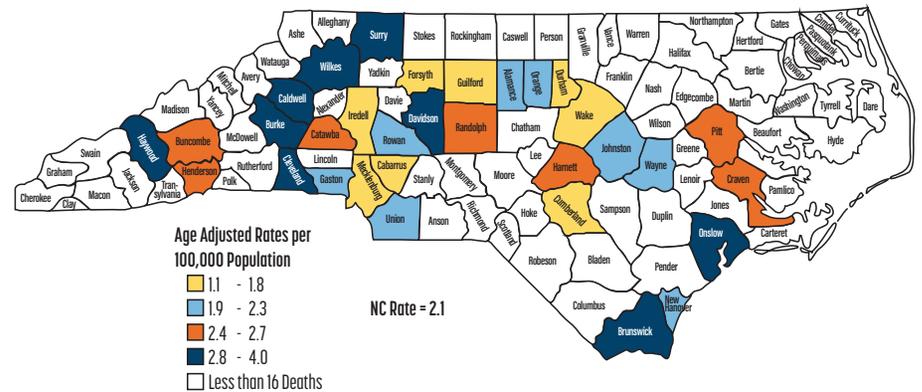
These counties have a larger percentage of the population that identify as white while the eastern counties have a larger minority population. Whites have skin cancer rates that are more than five times that of African Americans, American Indians, and Hispanics.⁵

NORTH CAROLINA MELANOMA (SKIN) CANCER INCIDENCE RATES, 2017-2021



Source: State Center for Health Statistics, March 2021.

NORTH CAROLINA MELANOMA (SKIN) CANCER MORTALITY RATES, 2017-2021



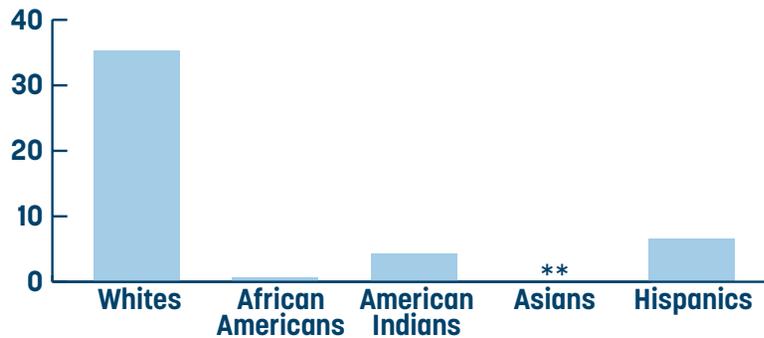
Source: State Center for Health Statistics, March 2024.

North Carolina Melanoma Skin Cancer Rates by Race/Ethnicity

White North Carolinians bear the highest burden of melanoma skin cancer. Melanoma skin cancer incidence rate for all North Carolinians was 26.8 per 100,000 population in the 2017-2021 period, while the white incidence rate was 35.3 per 100,000.² Each of the other racial and ethnic groups—African Americans, American Indians, and Hispanics—have melanoma skin cancer incidence rates less than five times that of whites. Whites also die from melanoma skin cancer at a rate 7.5 times the number of African Americans.³ Information is not available for the Asian population because of the small numbers of cases.

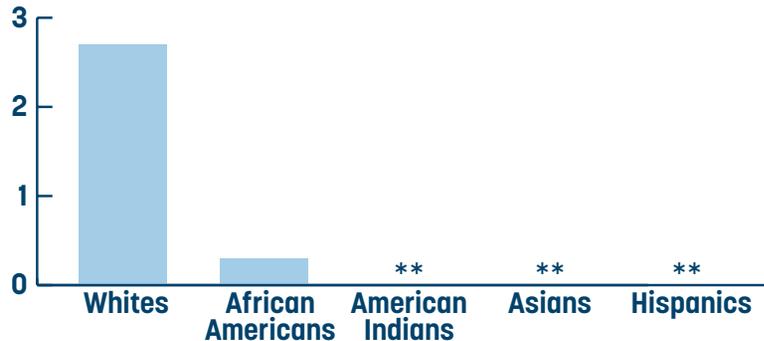
NC MELANOMA SKIN CANCER INCIDENCE BY RACE/ETHNICITY, 2017-2021

Incidence rates with fewer than 16 cases suppressed



NC MELANOMA SKIN CANCER MORTALITY BY RACE/ETHNICITY, 2018-2022

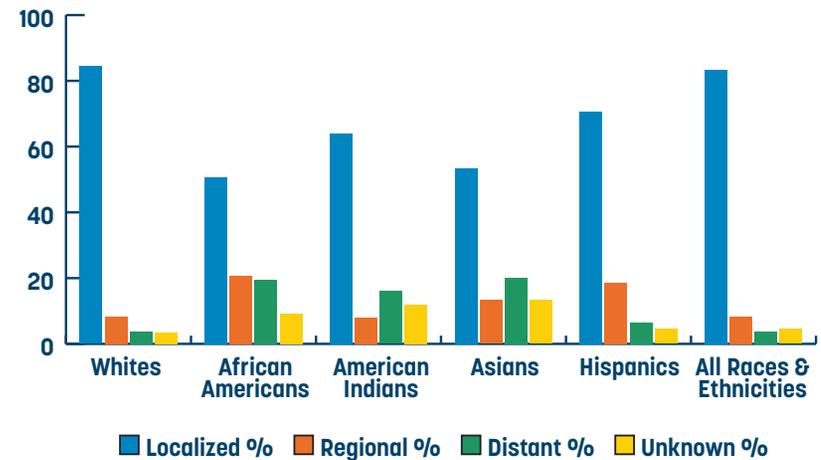
Mortality rates with fewer than 16 cases suppressed



North Carolina Melanoma Skin Cancer Distant Stage of Diagnosis Data

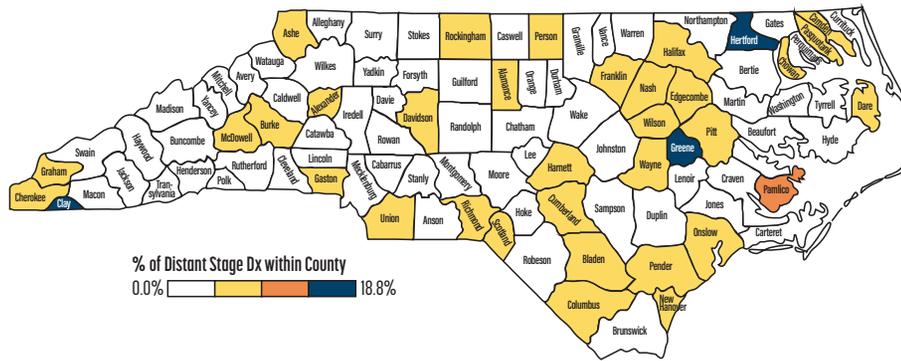
Early detection of melanoma skin cancer is key and can mean the difference between life and death. In the early stages, melanoma can be treated successfully, and survival rates are high. After the cancer spreads, survival rates drop significantly. Melanoma was diagnosed at the localized stage in over 82% of North Carolinians.⁶

NC MELANOMA INCIDENCE BY RACE/ETHNICITY AND STAGE OF DIAGNOSIS, 2017-2021



Melanoma cancer distant stage diagnosis varies by county. There are many reasons for this difference like living in a rural county with lack of health care access and/or lack of health insurance, lack of understanding of the seriousness of melanoma skin cancer, and personal beliefs such as reluctance to seek regular skin cancer screenings.

NC MELANOMA CANCER INCIDENCE BY DISTANT STAGE DIAGNOSIS BY COUNTY, 2016-2020



NC COUNTIES WITH DISTANT STAGE MELANOMA CANCER DIAGNOSIS EXCEEDING 6.5%, 2016-2020

County	Distant Stage Diagnosis Percentage	County	Distant Stage Diagnosis Percentage
North Carolina	4.0%	Bladen	8.6%
Greene	18.8%	Camden	8.3%
Clay	17.6%	Columbus	8.0%
Hertford	14.3%	Edgecombe	7.7%
Pamlico	12.5%	Alamance	7.1%
Richmond	9.1%	Franklin	6.8%
Dare	9.0%	Graham	6.7%
Wilson	8.6%	Alexander	6.6%

North Carolina Melanoma Skin Cancer Rates by Gender

Both melanoma skin cancer incidence and mortality rates are higher in men than women. The incidence rate for men was 38.2 per 100,000 population and for women 23.8 per 100,000 in 2021.² North Carolina men (3.1 per 100,000) have a higher melanoma cancer mortality rate than North Carolina women (1.2 per 100,000) according to the latest available data.³ The higher rates in men may be attributed to differences in occupational and recreational exposure to ultraviolet (UV) radiation. The historical incidence chart shows that new cases peaked in 2019, trended downward, and are slowly climbing again.

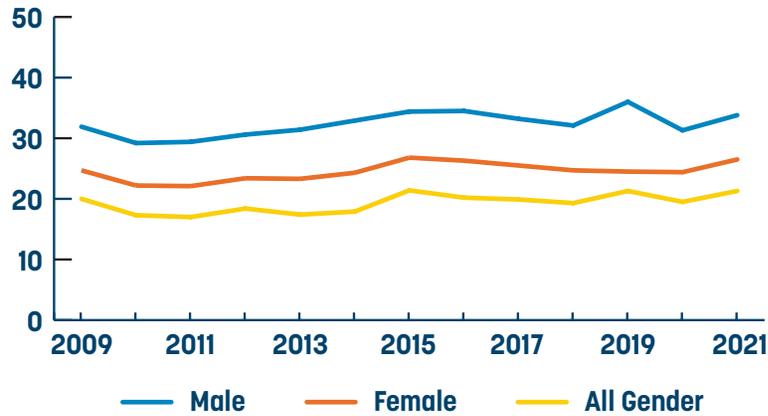
NC MELANOMA SKIN CANCER INCIDENCE & MORTALITY RATES BY GENDER, 2021

CANCER	MALE		FEMALE	
	Incidence	Mortality	Incidence	Mortality
Melanoma	38.2	3.2	23.8	1.3

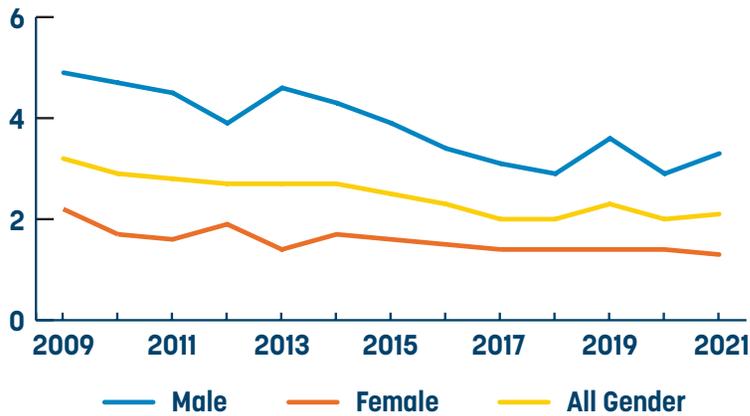
NC MELANOMA SKIN CANCER MORTALITY RATES BY GENDER, 2022

CANCER	MALE	FEMALE
	Mortality	Mortality
Melanoma	3.1	1.2

HISTORICAL NC MELANOMA INCIDENCE RATES



HISTORICAL NC MELANOMA MORTALITY RATES

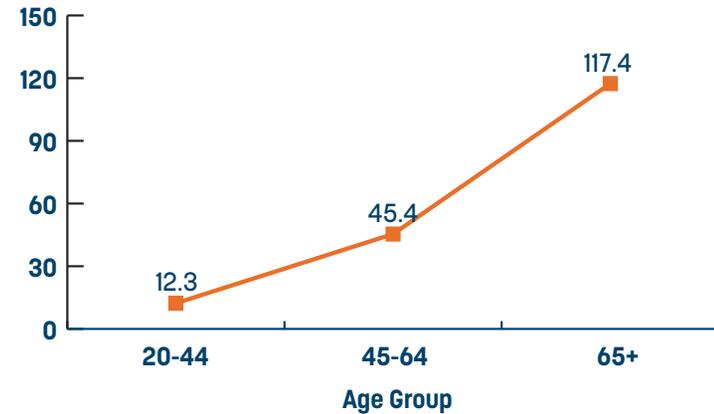


North Carolina Melanoma Skin Cancer Rates by Age Group

The risk for developing melanoma skin cancer increases with age. This increased risk reflects long term exposure to UV rays over a lifetime and is demonstrated in the incidence and mortality charts. The incidence rate of 45.4 per 100,000 population in the 45-64 age range increases to 117.4 per

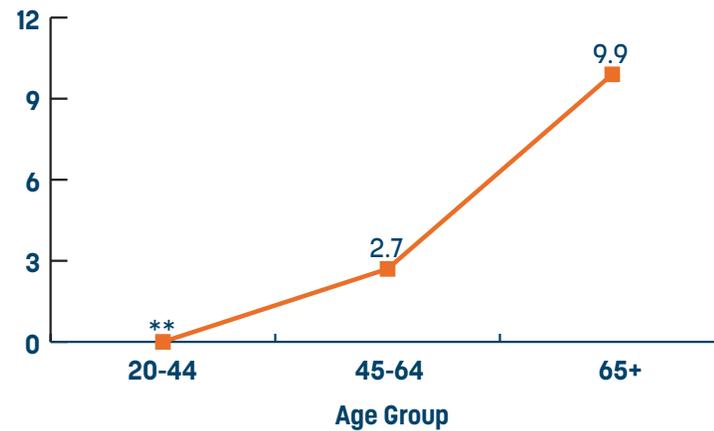
100,000 in the 65-plus age range.² The mortality rate increases from 2.7 per 100,000 for the 45-64 age range to 9.9 per 100,000 for those over 65 years of age.³

NC MELANOMA INCIDENCE RATE BY AGE GROUP, 2021



NC MELANOMA CANCER MORTALITY RATE BY AGE GROUP, 2021

Cases fewer than 16 suppressed



NORTH CAROLINA MELANOMA SKIN CANCER STATISTICS BY COUNTY PER 100,000 POPULATION**

County	Incidence Rate ² (2017-2021)	Mortality Rate ³ (2018-2022)	Distant Stage Diagnosis % ⁸ (2016-2020)
North Carolina	26.8	2.1	4%
Alamance	25.8	2.6	7%
Alexander	40.6	**	7%
Alleghany	17.2	**	4%
Anson	16.6	**	4%
Ashe	40.7	**	7%
Avery	41.1	**	2%
Beaufort	17.9	**	3%
Bertie	**	0.0	**
Bladen	16.3	**	9%
Brunswick	37.9	3.0	4%
Buncombe	31.7	2.4	3%
Burke	33.7	4.3	6%
Cabarrus	26.0	1.5	3%
Caldwell	32.6	3.5	4%
Camden	**	0.0	8%
Carteret	39.0	3.0	2%
Caswell	21.3	**	3%
Catawba	36.7	2.5	3%
Chatham	34.6	**	3%
Cherokee	28.6	**	6%
Chowan	19.5	**	6%
Clay	17.2	**	18%
Cleveland	30.3	3.8	4%

County	Incidence Rate ² (2017-2021)	Mortality Rate ³ (2018-2022)	Distant Stage Diagnosis % ⁸ (2016-2020)
Columbus	26.0	**	8%
Craven	23.4	**	1%
Cumberland	17.0	**	6%
Currituck	19.8	**	**
Dare	42.7	**	9%
Davidson	29.7	3.0	5%
Davie	36.0	**	4%
Duplin	17.0	**	**
Durham	23.1	1.3	3%
Edgecombe	13.0	**	8%
Forsyth	21.5	1.8	5%
Franklin	19.4	**	7%
Gaston	30.6	2.2	5%
Gates	**	**	**
Graham	**	**	7%
Granville	22.2	**	1%
Greene	13.1	**	9%
Guilford	28.0	2.1	3%
Halifax	13.5	**	5%
Harnett	19.2	**	5%
Haywood	28.8	**	3%
Henderson	31.5	2.7	4%
Hertford	**	**	14%
Hoke	15.4	**	3%
Hyde	**	0.0	**
Iredell	38.7	2.2	3%

County	Incidence Rate ² (2017-2021)	Mortality Rate ³ (2018-2022)	Distant Stage Diagnosis % ⁸ (2016-2020)
Jackson	35.5	**	3%
Johnston	26.3	2.0	4%
Jones	**	**	**
Lee	20.0	**	4%
Lenoir	21.7	**	3%
Lincoln	36.6	**	4%
Macon	38.6	**	1%
Madison	39.4	**	**
Martin	15.3	0.0	4%
McDowell	30.9	**	5%
Mecklenburg	25.7	1.5	3%
Mitchell	29.5	**	**
Montgomery	26.0	**	2%
Moore	40.5	2.0	3%
Nash	18.7	**	6%
New Hanover	32.5	2.5	5%
Northampton	10.4	**	5%
Onslow	25.6	2.8	6%
Orange	29.5	2.6	4%
Pamlico	25.0	**	13%
Pasquotank	26.3	**	6%
Pender	26.5	4.2	6%
Perquimans	15.3	**	4%
Person	33.0	**	5%
Pitt	14.3	2.6	6%
Polk	32.5	**	2%

County	Incidence Rate ² (2017-2021)	Mortality Rate ³ (2018-2022)	Distant Stage Diagnosis % ⁸ (2016-2020)
Randolph	29.7	2.5	9%
Richmond	16.4	**	3%
Robeson	12.5	**	3%
Rockingham	21.5	**	5%
Rowan	26.3	2.4	3%
Rutherford	30.1	**	2%
Sampson	19.7	**	1%
Scotland	13.2	**	6%
Stanly	34.4	**	4%
Stokes	24.6	**	3%
Surry	27.2	**	4%
Swain	19.1	0.0	4%
Transylvania	30.0	**	3%
Tyrrell	**	**	**
Union	30.9	1.9	5%
Vance	20.7	**	4%
Wake	26.5	1.5	4%
Warren	13.9	0.0	4%
Washington	**	**	**
Watauga	41.6	**	2%
Wayne	20.1	**	5%
Wilkes	27.0	3.5	4%
Wilson	19.1	**	9%
Yadkin	23.9	**	3%
Yancey	30.1	**	5%

**Cancer rates for cell sizes with fewer than 16 cases of cancer are suppressed as they are not stable.
Rates are based on patient county of residence at diagnosis as verified by address level geocoding, otherwise as reported by medical provider.

MELANOMA SKIN CANCER REFERENCES

- ¹ NC State Center for Health Statistics, Central Cancer Registry. *2017-2021 Cumulative Observed and Relative Survival of 6 Selected Cancer Sites in North Carolina, 2023*. February 2024. <https://schs.dph.ncdhhs.gov/data/cancer.cfm>
- ² NC State Center for Health Statistics, Central Cancer Registry. *2017-2021 North Carolina Cancer Incidence by County for Selected Sites per 100,000 Population*. February 2024. https://schs.dph.ncdhhs.gov/data/cancer/incidence_rates.htm
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- ⁴ NC State Center for Health Statistics, Central Cancer Registry. *2013-2017 North Carolina Cancer Mortality Rates by County for Selected Sites per 100,000 Population*. February 2023. https://schs.dph.ncdhhs.gov/schs/CCR/mort1317cnty_v5.pdf
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Appendices



**Maximize
Cancer
Intervention
Efforts
Planning**



**Interventions
and
Evidence-
based
Strategies**



Resources



**Cancer
Screening
Guidelines**

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Appendix A - Maximize Cancer Intervention Efforts Planning

1. Use the information in the *NC Comprehensive Control Cancer ACTION Plan 2020-2025* for Evidence-based Intervention Strategies for each of the priority cancers. www.ncdhhs.gov/nc-cancer-control-plan/open
2. Consult the NC Comprehensive Cancer Control Program for technical assistance and resource suggestions. www.dph.ncdhhs.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm
3. Use *Expand Your Horizons* workbook to increase your partners and get them more involved in your strategies. www.dph.ncdhhs.gov/chronic-disease-and-injury/cancer-prevention-and-control/expand-your-horizons-new-partners-guide/download?attachment
4. Use free educational materials available in the NC Comprehensive Cancer Control Program's *Resource Hub*. It has a wide range of materials to help in program planning and implementation. www.dph.ncdhhs.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/resourcehub.htm
5. Identify, connect with, and engage local partners, particularly local health departments, hospitals and/or cancer centers who may have resources or expertise to support targeted efforts.
6. Partner with community and faith-based organizations, governmental agencies, health care and academic institutions and others interested in health in the community.
7. Consult the community's most recent community health assessment, located either in the local health department or hospital, to determine current cancer priorities established in the service area.
8. Consult the U.S. Census for data on demographic characteristics such as race, age, and socioeconomic status to determine where targeting efforts may be most effective in the community. www.census.gov/data.html
9. Consult the U.S. Centers for Disease Control and Prevention for evidence-based intervention strategies charts. www.cdc.gov/cancer/community-resources/interventions/index.htm
10. Refer to *The Community Guide* from U.S. Centers for Disease Control and Prevention for additional recommendations for evidence-based cancer interventions. www.thecommunityguide.org/topic/cancer

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Appendix B – Interventions and Evidence-based Strategies

* Indicates Health Equity Activities

Lung Cancer

Interventions		Evidence-based Strategies			
Adopt organizational policies and practices to improve healthy behaviors.	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 businesses, governments, and organizations to adopt policies that provide health insurance coverage and time off for health care, especially health screenings.	Work with local builders and real estate companies to adopt policies to build only radon-free buildings and homes.	Encourage local building/supply stores to adopt policies/practices to assure that radon test kits are in the store along with advertisements about the availability of the kits and information on mitigation.	*Encourage businesses, governments, and organizations to adopt policies that promote QuitlineNC services to workers including the SGM populations.
Utilize multicomponent intervention to influence health behaviors.	*Target efforts in the 15 counties with the highest distant stage diagnosis, incidence, and mortality rates with initiatives about eliminating/reducing tobacco use and exposure to secondhand smoke.	*Provide/sponsor educational opportunities and outreach efforts to encourage lung cancer screening in targeted populations and communities utilizing mobile units.	*Reach out to African American and American Indian populations with messages about eliminating/reducing tobacco use and exposure to secondhand smoke.	*Partner with senior centers, senior living communities, and churches to offer programs about the benefits of lung cancer screening for previous or current smokers.	Work with local builders and real estate companies to build radon-free buildings and homes.
Develop/disseminate public education programs that stress tobacco use cessation and the importance of home radon testing.	Partner with public/private organizations to support/develop education programs about the importance of lung cancer screening for previous or current smokers including smoking cessation.	Support/develop educational programs about lung cancer risk factors which include eliminating/reducing tobacco use and exposure to secondhand smoke and testing for radon in homes and ground or well water.	*Provide/sponsor educational programs/outreach efforts about lung cancer risks and screening for targeted populations like African Americans and Native Americans.	Partner with cancer centers, senior centers, senior living communities, and churches to sponsor programs on the benefits of lung cancer screening and smoking cessation.	*Use linguistically and culturally appropriate health education materials to reach SGM populations with lung cancer risks and screening messages.

Interventions		Evidence-based Strategies			
Utilize group education and small media to increase community demand for cancer screening services.	*Partner with senior centers, senior living communities, and churches to offer programs about the benefits of lung cancer screening for previous or current smokers.	*Address high-risk populations for lung cancer, especially African American, American Indian, and SGM populations, with small media messages about eliminating/reducing tobacco use and exposure to secondhand smoke and radon.	*Conduct education programs on the importance of lung cancer screening with emphasis on the African American, American Indian, and SGM populations.	Partner with NC State Extension to offer programs about lung cancer risks and the benefits of lung cancer screening for previous or current smokers.	*Reach out to SGM populations with messaging and programs about the importance of talking to a health care provider about lung cancer screening.
Reduce barriers to increase community access to cancer screening.	*Develop partnerships with local health departments, Federally Qualified Health Centers (FQHCs), and other health care organizations to offer lung cancer screening in mobile units.	*Explore opportunities for addressing transportation barriers for low-income people (e.g., mobile units, gas cards, travel vouchers, etc.).	*Support/sponsor community programs that offer lung cancer screening in mobile units with emphasis on African American, American Indian, and SGM populations.	*Encourage providers to use lay health advisors, native language speakers, or telehealth to provide education about lung cancer risk factors, screening, and preventive health behaviors.	Encourage businesses, governments, and organizations to adopt policies that provide health insurance coverage and time off for health care.
Provider support to increase service delivery by healthcare providers.	Equip patient navigators/ community health workers with knowledge/educational resources to provide support for cancer survivors.	Train providers on how to discuss lung cancer screening guidelines using low-dose computer tomography (low-dose CT scan) with their patients.	*Develop cultural-sensitivity training for health care providers on how to communicate with patients using linguistically and culturally appropriate language.	*Encourage providers to use lay health advisors, native language speakers, or telehealth (with appropriate language) with their patients.	*Train health care professionals on the health challenges facing patients who define themselves as SGM.

Breast Cancer

Interventions		Evidence-based Strategies			
Adopt organizational policies and practices to improve healthy behaviors.	Encourage businesses, governments, and organizations to adopt policies that provide health insurance coverage and time off for health care, especially health screenings.	*Encourage businesses, governments, and organizations to offer programs on healthy lifestyles especially with African American, American Indian, and SGM populations.	Develop partnerships with local health departments and other organizations to include NC WISEWOMAN Program services with their NC Breast and Cervical Cancer Control Programs (NC BCCCCP).	Encourage businesses, governments, organizations, schools, community colleges and universities to adopt smoke free policies and/or update their tobacco policies to include new tobacco products.	*Encourage businesses, governments, and organizations to adopt policies that support breast cancer screening services to SGM populations.

Interventions		Evidence-based Strategies			
Utilize multicomponent intervention to influence health behaviors.	*Target breast cancer screening /promotion/ education efforts in the 15 counties with the highest breast cancer distant stage diagnosis, incidence, and mortality rates.	Partner with NC State Extension to offer programs about breast cancer risks and the benefits of breast cancer screening.	*Provide/sponsor outreach efforts to provide mammograms to targeted populations and communities based on distant stage diagnosis rates by utilizing mobile units.	*Maintain/cultivate traditional and non-traditional partnerships that serve the African American, Hispanic, American Indian and SGM populations to increase screening.	Provide/sponsor educational opportunities and outreach efforts to raise awareness of services like NC BCCCP and the NC WISEWOMAN Program..
Utilize group education and small media to increase community demand for cancer screening services.	*Use education/small media messages in the 20 counties with the highest distant stage diagnosis, incidence, and mortality rates.	*Identify effective outreach efforts for women at elevated breast cancer risk including those previously diagnosed with cancer and/or have relatives with breast cancer.	Identify partners to create/adopt small media campaign(s) to increase awareness of mammograms and the importance of following up with appropriate treatment.	*Use education/small media messages to reach SGM populations about the importance of breast cancer screening.	Organize cancer partners within or near counties with low breast cancer screening rates to work together to increase breast cancer screening.
Reduce barriers to increase community access to cancer screening.	*Develop partnerships with local health departments, Federally Qualified Health Centers (FQHCs), and other organizations to offer NC BCCCP/NC WISEWOMAN Program services.	*Create a referral process for eligible women to receive low/ no cost mammograms as part of NC BCCCP.	*Explore opportunities for addressing transportation barriers for low-income people (e.g., mobile units, gas cards, travel vouchers, etc.).	Encourage businesses, governments, and organizations to adopt policies that provide health insurance coverage and time off for health care, especially health screenings.	*Partner with the SGM populations to sponsor breast cancer screening, if possible, in mobile units.
Utilize client reminders.	Encourage providers to use patient and client incentives to encourage use of clinical services.	Assist providers in establishing a patient reminder process if they do not have one in place.			
Provider support to increase service delivery by healthcare providers.	Equip patient navigators/ community health workers with cultural-sensitive training and resources in supporting breast cancer survivors.	*Encourage providers to use lay health advisors, native language speakers, or telehealth to provide breast cancer risk factor education/screenings.	*Develop programs for health care professionals on the health challenges facing patients who define themselves as SGM.	*Train health care professionals on how to communicate most effectively with patients who define themselves as SGM.	Develop patient navigation protocols for providers to use to refer patients to FQHCs who do not qualify for NC BCCCP services.

Prostate Cancer

Interventions		Evidence-based Strategies			
Adopt organizational policies and practices to improve healthy behaviors.	*Sponsor/support programs on the increased risk of prostate cancer among African American men and the importance of talking to their health care provider about prostate cancer.	*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 provide health insurance coverage and time off for health care.	Encourage businesses, governments, organizations, 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 businesses, governments, and organizations to adopt policies that support prostate cancer screening to SGM populations.
Utilize multicomponent intervention to influence health behaviors.	*Encourage community partners to focus early detection and education efforts in the 15 counties that have the highest African American population along with the highest prostate cancer incidence and mortality rates.	*Provide/sponsor educational opportunities/outreach efforts to senior populations and African American men about the early signs and symptoms of prostate cancer.	*Partner with senior centers, senior living communities, and churches to offer programs about the early signs/symptoms of prostate cancer and the importance of informed decision making.	*Support/conduct messaging campaigns to increase awareness of the importance of age-appropriate prostate cancer screening for SGM populations.	Encourage community partners to plan and implement prostate cancer education/screening programs including healthy living lifestyle information.
Utilize group education and small media to increase community demand for cancer screening services.	*Focus early detection efforts in counties in the Northeast region of the state, with high African American population and high prostate cancer rates.	*Provide education programs with emphasis on senior populations and African American men about the early signs and symptoms of prostate cancer.	Conduct education programs/messaging campaigns to increase awareness of informed decision-making regarding prostate cancer treatment.	*Encourage community partners to plan and implement prostate cancer education/screening programs with emphasis on senior and African American men.	*Reach out to SGM populations about the importance of talking to a health care provider about prostate cancer screening.
Reduce barriers to increase community access to cancer screening.	Encourage businesses, governments, and organizations to adopt policies that provide health insurance coverage and time off for health care.	*Explore opportunities for addressing transportation barriers for low-income people (e.g., mobile units, gas cards, travel vouchers, etc.).	Work with partners planning colorectal screening and outreach programs to encourage them to offer prostate counseling to the male participates.	*Encourage providers to use lay health advisors, native language speakers, or tele-health to provide education about risk factors and preventive health behaviors.	*Partner with the SGM populations to organize opportunities for members to talk to a health care provider about prostate cancer screening.
Provider support to increase service delivery by healthcare providers.	Equip patient navigators and community health workers with cultural-sensitive training and resources to support their work in supporting prostate cancer survivors.	Coach providers on how to discuss prostate cancer screening guidelines with their patients.	Equip patient navigators and community health workers with cultural-sensitive training and resources to support their work in supporting breast cancer survivors.	*Develop programs for health care professionals on the health challenges facing patients who define themselves as SGM.	*Train health care professionals on how to communicate most effectively with patients who define themselves as SGM.

Colorectal Cancer

Interventions		Evidence-based Strategies			
Adopt organizational policies and practices to improve healthy behaviors.	*Encourage businesses, governments, and organizations to offer programs on nutrition and physical activity in counties with high African American populations.	*Partner with counties in NE NC 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 health insurance coverage and time off for health care, especially health screenings.	Encourage businesses, governments, organizations, schools, community colleges, and universities to adopt smoke free policies and/or update their policies to include new products.	*Encourage businesses, governments, and organizations to adopt policies that encourage colorectal cancer screening services to SGM populations.
Utilize multicomponent intervention to influence health behaviors.	*Partner with counties in northeastern NC to offer early detection and screening programs for colorectal cancer in hot spots for identified by UNC Researchers	Encourage community partners to plan/implement messaging campaigns to increase awareness of the importance of colorectal screening.	*Partner with senior centers, senior living communities, and churches to offer programs about the early signs/symptoms of colorectal cancer.	Encourage community partners to conduct colorectal cancer screening programs that include the importance of lifestyle choices in reducing colorectal cancer.	*Support/conduct messaging campaigns to increase awareness of the importance of age-appropriate colorectal cancer screening for the SGM populations.
Utilize group education and small media to increase community demand for cancer screening services.	*Provide I programs on the benefits of colorectal screenings in rural northeastern NC counties with high African American population and high colorectal cancer rates.	*Partner with senior centers, senior living communities, and churches to provide educational programs for senior populations about the benefits of screenings.	*Develop or support programs/campaigns/ screening opportunities clusters of counties with high colorectal cancer mortality rates.	Conduct messaging campaigns to increase awareness of the importance of age-appropriate colorectal cancer screening.	*Reach out to SGM populations about the importance of talking to a health care provider about prostate cancer screening.
Reduce barriers to increase community access to cancer screening.	Encourage businesses, governments, and organizations to adopt policies that provide health insurance coverage/and time off for health care , especially health screenings.	*Explore the possibility of offering colonoscopies using mobile units or of partnering with private health care providers to offer colonoscopies to disadvantaged populations.	*Develop partnerships with local health departments, Federally Qualified Health Centers (FQHCs), and other women's health care organizations to offer colorectal screening.	*Encourage providers to use lay health advisors, native language speakers, or telehealth to provide education about risk factors and preventive health behaviors.	*Explore opportunities for addressing transportation barriers for low-income people (e.g., mobile units, gas cards, travel vouchers, etc.).
Utilize client reminders.	Encourage providers to use patient and client incentives to encourage use of clinical services.	Assist providers in establishing a patient reminder process if they do not have one in place.			

Interventions		Evidence-based Strategies			
Provider support to increase service delivery by healthcare providers.	Equip patient navigators and community health workers with training and resources to support their work in supporting prostate cancer survivors.	Train providers about how to discuss colorectal cancer screening options with their patients as they decide which screening method to use.	Equip patient navigators and community health workers with culturally sensitive training and resources in supporting prostate cancer survivors especially those who define themselves as SGM.	*Encourage providers to use lay health advisors, native language speakers, or telehealth to provide education about risk factors and preventive health behaviors.	*Train health care professionals on the SGM populations' unique health challenges and how to communicate most effectively with patients who define themselves as SGM.

Cervical Cancer

Interventions		Evidence-based Strategies			
Adopt organizational policies and practices to improve healthy behaviors.	Encourage businesses, governments, and organizations to adopt policies that provide health insurance coverage and time off for health care, especially health screenings.	*Encourage businesses, governments, and organizations to offer programs for women on obesity prevention, nutrition, and physical activity.	Develop partnerships with local health departments and other organizations to include NC WISEWOMAN Program services with their NC Breast and Cervical Cancer Control Programs.	Encourage businesses, governments, organizations, schools, community colleges, and universities to adopt smoke-free policies and/or update their tobacco policies to include new tobacco products.	*Encourage businesses, governments, and organizations to adopt policies that encourage cervical cancer screening services to SGM populations
Utilize multicomponent intervention to influence health behaviors.	*Target cervical cancer screening promotion and HPV vaccination education efforts in the 15 counties with the highest distant stage cervical cancer diagnosis, incidence, and mortality rates.	*Maintain/cultivate traditional and non-traditional partnerships that serve the African American, Hispanic, American Indian and SGM populations to increase cervical cancer screening.	Encourage community partners to plan/implement messaging campaigns for parents about the importance of HPV childhood vaccinations.	*Support/conduct messaging campaigns to increase awareness of the importance of age-appropriate cervical cancer screening and HPV vaccinations for SGM populations.	Provide and/or sponsor educational opportunities and outreach efforts to raise awareness of services like NC BCCCP and NC WISEWOMAN Programs.
Utilize group education and small media to increase community demand for cancer screening services.	*Organize cancer partners to provide group education on cervical cancer screening and human papillomavirus (HPV) education in the 15 counties with the highest distant stage cervical cancer diagnosis rates.	Identify partners to incorporate cervical cancer screening education using group education and small media into their programs and materials to increase community demand for screening services.	Encourage school programs to educate parents, staff, and students about the importance of age-appropriate human papillomavirus (HPV) vaccinations.	Partner with NC State Extension to offer programs about cervical cancer risks and the benefits of cervical cancer screening and human papillomavirus (HPV) vaccinations.	*Reach out to SGM populations about the importance of cervical cancer screening and appropriate human papillomavirus (HPV) vaccinations.

Interventions		Evidence-based Strategies			
Reduce barriers to increase community access to cancer screening.	Encourage businesses, governments, and organizations to adopt policies that provide health insurance coverage and time off for health care, especially health screenings.	*Develop partnerships with local health departments, Federally Qualified Health Centers (FQHCs), and other women's health care organizations to offer cervical cancer screening and HPV vaccinations.	Encourage providers to use lay health advisors, native language speakers, or telehealth to provide education about risk factors and preventive health behaviors.	*Explore opportunities for addressing transportation barriers for low-income people (e.g., mobile units, gas cards, travel vouchers, etc.).	*Encourage businesses, governments, and organizations to adopt policies that support cervical cancer screening services and HPV vaccinations for SGM populations.
Utilize client reminders.	Encourage providers to use patient and client incentives to encourage use of clinical services.	Assist providers in establishing a patient reminder process if they do not have one in place.			
Provider support to increase service delivery by healthcare providers.	Equip patient navigators and community health workers with cultural-sensitive training and resources in supporting cervical cancer survivors.	Work with providers about how to discuss the urgency for parents to have their children get HPV vaccinations.	*Develop programs for health care professionals on the health challenges facing patients who define themselves as SGM.	*Train health care professionals on how to communicate most effectively with patients who define themselves as SGM.	*Encourage providers to use lay health advisors, native language speakers, or telehealth to provide education about risk factors and preventive health behaviors.

Melanoma Cancer

Interventions		Evidence-based Strategies			
Adopt organizational policies and practices to improve healthy behaviors.	Encourage businesses and governments to adopt policies and practices to provide employees with high sun exposure with sun protective clothing and sunscreen.	Partner with schools and childcare centers to offer programs about the importance of sun protection and to provide areas of shade in their outdoor spaces.	Encourage parks and recreational programs to adopt policies and practices that provide areas of shade in all their facilities.	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.	Encourage parks and recreational programs to adopt smoke-free policies and/or update their tobacco policies to include new tobacco products like e-cigarettes.

Interventions	Evidence-based Strategies				
Utilize group education and small media to increase community demand for cancer screening services.	*Provide education programs with emphasis on senior populations about early signs of melanoma skin cancer and the importance of skin cancer screening for all types of skin cancer, not just melanoma.	*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.	*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.	Encourage businesses and governments to promote and educate employees about sun safety at work and at home.	*Reach out to SGM populations about the importance of skin cancer screening and sun protection, especially at outdoor events.
Reduce barriers to increase community access to cancer screening.	Encourage businesses, governments, and organizations to adopt policies that provide health insurance coverage and time off for health care and health screenings.	Explore the possibility of partnering with private health care providers to offer skin cancer screening programs, especially at outdoor community events.	Encourage providers to use lay health advisors, native language speakers, or telehealth to provide education about skin cancer risk factors and preventive health behaviors.	*Explore opportunities for addressing transportation barriers for low-income people (e.g., mobile units, gas cards, travel vouchers, etc.).	*Partner with senior centers, senior living communities, and churches to offer skin cancer screening programs.
Utilize client reminders.	Encourage providers to use patient incentives and reminders to increase skin cancer screenings.	Assist providers in establishing a patient reminder process if they do not have one in place.			
Provider support to increase service delivery by healthcare providers.	Equip patient navigators and community health workers with educational resources to support their work in supporting melanoma cancer survivors.	Encourage providers to emphasize the importance of preventing sunburn with parents of young children.	Equip patient navigators/ community health workers with culturally sensitive training and resources in supporting cervical cancer survivors.	Encourage providers to use lay health advisors, native language speakers or telehealth with their patients.	*Develop programs for health care professionals on the health challenges facing patients who define themselves as SGM.

Appendix C – Resources

- American Association for Cancer Research. www.cancerprogressreport.org
- American Cancer Society. www.cancer.org
- American Indian Cancer Foundation. <https://americanindiancancer.org/resources/>
- AMEXCAN -Association of Mexicans in North Carolina, Inc. www.amexcannc.org/?lang=en
- Association of State and Territorial Health Officials (ASTHO) (Breast Cancer Disparities Online Toolkit). <https://chronicdisease.org/p12009/>
- Atrium Health Wake Forest Baptist Comprehensive Cancer Center. www.wakehealth.edu/
- BreastCancer.org. www.breastcancer.org
- Cancer Net. www.cancer.net/
- Centers for Disease Control and Prevention (CDC). www.cdc.gov
- Duke Cancer Institute. 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/>
- GW Cancer Center, George Washington University. <https://cancercenter.gwu.edu/>
- Healthy People 2030. <https://health.gov/healthypeople>
- Lung Cancer Initiative of North Carolina. <https://lungcancerinitiative.org/>
- National Association of Chronic Disease Directors, NACDD Action on Cancer. www.chronicdisease.org/page/CancerPrograms
- National Cancer Institute, National Institutes of Health. www.cancer.gov
- National Coalition for Cancer Survivorship. <https://canceradvocacy.org/>
- National LGBT Cancer Network. <https://cancer-network.org/>
- National Native Network: Keep It Sacred. <https://keepitsacred.itcmi.org/>
- NC Advisory Committee on Cancer Coordination and Control. www.dph.ncdhhs.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/acccc.htm
- NC Breast and Cervical Cancer Control Program (NC BCCCP). <https://bcccp.dph.ncdhhs.gov/>
- NCCare360. <https://nccare360.org/>
- North Carolina Comprehensive Cancer Control ACTION Plan 2020-2025. www.ncdhhs.gov/nc-cancer-control-plan/open
- NC Colorectal Roundtable (NC CRCRT). www.dph.ncdhhs.gov/nccrcrt/
- NC Community and Clinical Connections for Prevention and Health Branch. www.communityclinicalconnections.com
- NC Comprehensive Cancer Control Program. (NC CCCP). <http://publichealth.nc.gov/chronicdiseaseandinjury/cancerpreventionandcontrol/index.htm>
- NC Tobacco Prevention and Control Branch. www.tobaccopreventionandcontrol.ncdhhs.gov
- NC WISEWOMAN Program. <https://bcccp.dph.ncdhhs.gov/wisewoman.htm>
- Pretty in Pink (Breast Cancer). www.prettyinpinkfoundation.org/
- Prostate Cancer Coalition of NC. www.pccnc.org
- Southeastern American Indian Cancer Health Equity Partnership. www.saicep.org/
- Susan B. Komen North Carolina Triangle to the Coast (Breast Cancer). www.komen.org/community/north-carolina/

- Triage Cancer (Financial). www.triagecancer.org
- UNC Lineberger Comprehensive Cancer Center. <https://unclineberger.org/>
- World Health Organization. Social Determinants of Health. www.who.int
- National LGBT Cancer Network. <https://cancer-network.org/>

Screening Guidelines

- American Cancer Society. www.cancer.org
- Centers for Disease Control and Prevention. www.cdc.gov
- U.S. Preventive Services Task Force. 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. www.countyhealthrankings.org
- Dartmouth Atlas of Health Care. www.dartmouthatlas.org
- Evidence-Based Cancer Control Program (EBCCP) <https://ebccp.cancercontrol.cancer.gov/index.do>
- National Program of Cancer Registries (NPCR). www.cdc.gov/cancer/npcr/index.htm
- NC State Center for Health Statistics, Cancer. <https://schs.dph.ncdhhs.gov/data/cancer.cfm>
- SEER (Surveillance, Epidemiology, and End Results Program). <http://seer.cancer.gov>

Evidence-Based Intervention Strategies

- CDC, The Community Guide. www.thecommunityguide.org
- CDC, Nutrition. www.cdc.gov/nutrition/index.html
- CDC, Office of Smoking and Health. www.cdc.gov/tobacco/about/osh/index.htm
- Eat Smart Move More NC. www.EatSmartMoveMoreNC.com
- Evidence-Based Cancer Control Program (EBCCP) <https://ebccp.cancercontrol.cancer.gov/index.do>
- GW Cancer Center, George Washington University. <https://cancercenter.gwu.edu/>
- Healthy People 2030. www.healthypeople.gov/sites/default/files/ObjectivesPublicComment508.pdf
- National Comprehensive Cancer Control Program Library of Indicators and Data Sources: Primary Prevention Indicators and Evidence-Based Strategies. www.cdc.gov/cancer/ncccp/index.htm
- NC Community and Clinical Connections for Prevention and Health Branch. www.communityclinicalconnections.com
- NC Institute of Medicine. <http://nciom.org/>
- NC Radon Program. www.ncdhhs.gov/divisions/health-service-regulation/north-carolina-radon-program
- NC Tobacco Free Schools Initiative. <https://nctobaccofreeschools.dph.ncdhhs.gov/>
- NC Tobacco Prevention and Control Branch. www.tobaccopreventionandcontrol.ncdhhs.gov
- NC WISEWOMAN Program. <http://bcccp.ncdhhs.gov/wisewoman.htm>
- QuitlineNC.com. <https://quitlinenc.dph.ncdhhs.gov/>
- U.S. Preventive Services Task Force (USPSTF). www.uspreventiveservicestaskforce.org/

Appendix D - Cancer Screening Guidelines

U.S. Preventive Services Task force (USPSTF) guidelines are listed below. Detailed screening information is available from: USPSTF - www.uspreventiveservices.org/uspstf/topic_search_results?topic_status=P, Centers for Disease Control and Prevention (CDC) (www.cdc.gov/cancer/dcpc/prevention/screening.htm), American Cancer Society (www.cancer.org/cancer.html), and American Lung Association (www.lung.org/).

Lung Cancer Guidelines	Colon Cancer Guidelines	Breast Cancer Guidelines	Prostate Cancer Guidelines	Cervical Cancer Guidelines
<p>USPSTF recommends:</p> <ul style="list-style-type: none"> • Low-dose spiral computed tomography (LDCT) scans annually for current or former smokers aged 50 to 80 years with ≥ 20 pack-year smoking history (an average of a pack per day for 20 years), who either currently smoke or have quit within the past 15 years and who are in relatively good health. 	<p>USPSTF recommends:</p> <ul style="list-style-type: none"> • Colorectal cancer screening in adults aged 45 to 75 years. • Selective screening for ages 76 to 85 years considering patients' overall health and prior screening history. <p>Recommended Screening tests and intervals are:</p> <ul style="list-style-type: none"> • Guaiac fecal occult blood test (FIT) test yearly • Stool DNA-FIT test every 1 or 3 years • Computed tomography colonography test every 5 years • Flexible sigmoidoscopy every 5 years • Flexible sigmoidoscopy every 10 years + FIT • Colonoscopy should be done every 10 years. 	<p>USPSTF recommends:</p> <ul style="list-style-type: none"> • Women aged 40 to 74 have a mammograph screening every two years. 	<p>USPSTF recommends:</p> <ul style="list-style-type: none"> • Men aged 55 to 69 years should discuss prostate cancer screening with their health care provider (Informed Decision Making). 	<p>USPSTF recommends:</p> <ul style="list-style-type: none"> • Cervical cancer screening every 3 years with cervical cytology in women aged 21 to 29 years. • For women aged 30 to 65 years, every 3 years with cervical cytology, every 5 years with high-risk human papillomavirus (hrHPV) testing alone, or every 5 years with hrHPV testing in combination with cytology (co-testing). • Human papillomavirus (HPV) co-testing should begin after age 30 and be repeated every 5 years.

Note: USPSTF states that there is insufficient evidence to assess the value of skin cancer screening.

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Cancer Information

NC Department of Health and Human Services
Division of Public Health
Cancer Prevention and Control Branch
5505 Six Forks Road, Raleigh, NC 27609
(Office) 919-707-5300 • (Fax) 919-870-4812
<https://nccancer.dph.ncdhhs.gov/>



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