Chronic Disease 2022

Wake County Health and Human Services
Public Health Report

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NORTH CAROLINA Accredited Health Department 2019-2024 Local Health Department Accreditation Board

WAKE COUNTY NORTH CAROLINA

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1.0 Overview

According to the Centers for Disease Control and Prevention (CDC), chronic diseases are health conditions that last one year or more and require ongoing medical attention or limit activities of daily living or both. Chronic diseases include cancer, heart disease, stroke, Alzheimer's disease, diabetes, and other conditions. Six in ten adults in the United States (U.S.) have a chronic disease and four in ten adults have two or more [1].

Chronic diseases are the leading causes of death and disability in the U.S. [1]. About 90% of the nation's $4.1 trillion in annual health care expenditures are for individuals with chronic and mental health conditions [2]. Preventing chronic diseases or managing symptoms when prevention is not possible, can reduce these costs and improve quality of life.

Individuals can reduce their risk of chronic disease by:

- quitting smoking
- participating in regular physical activity
- avoiding too much alcohol
- eating a diet high in fruits and vegetables and low in sodium and saturated fats
- receiving routine physical checkups and screenings
- getting enough sleep

This report contains information on the burden of chronic diseases in Wake County including:

- Geography and sociodemographic composition of the county's population
- Leading causes of death attributed to chronic diseases
- Detailed analysis of the five most common types of cancer highlighting disparities between racial groups
- WCHHS Health Promotion Chronic Disease Prevention Section work to prevent chronic diseases and their health impacts

2.0 Data Sources

Data from the following sources were analyzed for the 2022 Wake County Health and Human Services (WCHHS) Public Health Chronic Disease Report:

United States Census Bureau

The Census Bureau collects and provides information about America's people and the economy of the United States. The Census Bureau's website includes data on demographic characteristics of the population (age, sex, race), employment status, marital status, income level, disability status and health insurance coverage. In this report, 2021 American Community Survey (ACS) (Census Bureau) estimates are reported for Wake County as well as North Carolina.

North Carolina (N.C.) State Center for Health Statistics

The N.C. State Center for Health Statistics is responsible for data collection, health-related research, production of reports and maintenance of a comprehensive collection of health statistics. The 2022 WCHHS Public Health Chronic Disease Report uses the leading causes of death data from the N.C. State Center for Health Statistics.

WCHHS Health Promotion Chronic Disease Prevention Section Programming and Services

In partnership with the community, the Wake County Health Promotion Chronic Disease Prevention Section provides a set of chronic disease and injury prevention and management services to populations and communities experiencing disparities. Data are collected on a quarterly basis. This report includes data from July 1-December 31, 2022.

National Youth Tobacco Survey (NYTS)

The NYTS provides nationally representative data about middle and high school youth's tobacco-related beliefs, attitudes, behaviors, and exposure to pro- and anti-tobacco influences. The latest NYTS (2021) data are utilized in this report.

Monitoring the Future

Monitoring the Future is an ongoing study of the behaviors, attitudes, and values of Americans from adolescence through adulthood. The latest Monitoring the Future (2022) data are utilized in this report.

North Carolina Youth Tobacco Survey (N.C. YTS)

The N.C. Youth Tobacco Survey (N.C. YTS) provides a critical source of public health data for understanding the scope of the tobacco problem and measuring progress toward overall goals among youth in North Carolina. The latest N.C. Youth Tobacco Survey (2019) are utilized in this report.

North Carolina Youth Risk Behavior Survey (N.C. YRBS)

The CDC's Youth Risk Behavior Surveillance System (YRBSS) monitors priority health behaviors and experiences among students across the country. The results help in understanding the factors that contribute to the leading causes of illness, death, and disability among youth and young adults. For comparison, the YRBSS provides state level data. The latest N.C. YRBS (2021) data are utilized in this report.

3.0 Geography and Sociodemographic Composition of General Population, Wake County, N.C.

Geographical Description of Wake County, N.C.

Wake County is in the northeast central region of North Carolina, where the North American Piedmont and Atlantic Coastal Plain regions meet. It is the second most populated county in North Carolina with a population of about 1.1 million people and the county population is growing more than twice as fast as the rest of the state. Wake County grows by approximately 62 people per day and added 225,000 people over the last decade [5].

Figure 1: Geographical Location of Wake County, N.C.

Demographic Composition

In 2021, the median age of people living in Wake County was 37.4 years. About half of the population (55.2%) in Wake County is between the ages of 25-64 years. Nearly one-third of the population (32.3%) is younger than 25 years old, and about 11.2% of the population is 65 years and older. The female to male ratio in Wake County is 100:96 (Table 1).

Table 1: Population Distribution by Age Group and Sex, Wake County, NC 2021

Age Group	Males N = 562,593	%	Females N = 587,611	%	Total Population N = 1,150,204	%
<15	111,472	19.8%	106,567	18.1%	218,039	19.0%
15-24	76,262	13.6%	76,192	13.0%	152,454	13.3%
25-34	81,789	14.5%	85,390	14.5%	167,179	14.5%
35-44	83,870	14.9%	87,727	14.9%	171,597	14.9%
45-54	80,495	14.3%	81,537	13.9%	162,032	14.1%
55-64	65,602	11.7%	69,222	11.8%	134,824	11.7%
65+	63,103	11.2%	80,976	13.8%	144,079	12.5%

Source: 2021 American Community Survey Estimates, United States Census Bureau[6]
Note: Percentages may not sum to 100% due to rounding.

The four largest ethnic groups in Wake County are White (Non-Hispanic) (57.1%), Black or African American (Non-Hispanic) (18.1%), Hispanic or Latino (11.4%) and Asian (8.6%) (Table 2).

Poverty, Income and Education

In 2021, the median household income for Wake County was $91,299 compared to $61,972 for North Carolina. About 9.5% of the population was below the federal poverty level, compared to 13.4% for the state (Table 3). Of those residing in Wake County, 8.9% of males and 10% of females live below the federal poverty level. When broken down by race and ethnicity, 6.8% of Non-Hispanic White, 14.2% of Non-Hispanic Black or African American, 22% of Hispanic or Latino and 6.1% of the Asian population live below the federal poverty level.

Table 2: Population Distribution by Race/Ethnicity, Wake County, NC 2021

Race/Ethnicity	Total Population *1,129,410	%
Non-Hispanic White	645,020	57.1%
Non-Hispanic Black	204,535	18.1%
Hispanic or Latino	128,241	11.4%
American Indian/Alaska Native	2,760	0.2%
Asian	96,665	8.6%
Two or more races	45,526	4.0%
Native American	453	0.04%

Source: 2021 American Community Survey Estimates, United States Census Bureau[6]
Note: Percentages may not sum to 100% due to rounding.
*This is the total including residents who identified as "other" race, which is not shown in the current table.

Table 3: Socioeconomic Characteristics of Population, Wake County and North Carolina, 2021

Characteristics	Wake County	North Carolina
Median household income	$91,299	$61,972
Average per capita income	$46,470	$35,254
Federal Poverty Level		
Individual	9.5%	13.4%
Male	8.9%	12.1%
Female	10%	14.6%
Federal Poverty Level by Age Group		
<18	10.6%	18.1%
18-64	9.4%	12.6%
≥65	7.4%	10.2%
Federal Poverty Level by Race and Ethnicity		
Non-Hispanic White	6.8%	9.7%
Non-Hispanic Black	14.2%	20.6%
Hispanic and Latino	22%	22.9%
Asian	6.1%	8.5%

Source: 2021 American Community Survey Estimates, United States Census Bureau[6]
Note: Percentages may not sum to 100% due to rounding.

More than half (56.7%) of the population aged 25 years and older in Wake County has a bachelor's degree or higher. While 13.8% of the population has a high school diploma/GED, only 6.2% of the population reported having an education less than high school (Table 4).

Marital Status, Employment and Healthcare Coverage

Table 5 shows marital status information by sex of those 15 years of age and older in Wake County. More than half (52.5%) of the population reported being married. Additionally, 11.6% of females and 7.5% of males reported being divorced, while 34% of the population has never been married, and 3.9% of the population (mostly females) reported being widowed.

Table 4: Educational Status (Age ≥25 Years) of the Population, Wake County, NC 2021

Education	Males N= 374,859	%	Females N= 404,852	%	Total Population N= 779,711	%
Less than High School	26,274	7.0%	22,167	5.5%	48,441	6.2%
High School Diploma/GED	56,694	15.1%	51,085	12.6%	107,779	13.8%
Some College, no degree	54,155	14.4%	62,818	15.5%	116,973	15.0%
Associate degree	27,373	7.3%	36,635	9.0%	64,008	8.2%
Bachelor's degree	129,442	34.5%	134,216	33.1%	263,658	33.8%
Graduate or Professional degree	80,921	21.6%	97,931	24.2%	178,852	22.9%

Table 5: Marital Status (Age ≥ 15 years) of the Population, Wake County, NC 2021

Marital Status (> 15 years or older)	Males N = 425,917	%	Females N = 451,949	%	Total Population N = 877,866	%
Married	232,582	54.6%	228,279	50.5%	460,861	52.5%
Divorced	32,125	7.5%	52,306	11.6%	84,431	9.6%
Never married	153,938	36.1%	144,281	31.9%	298,219	34.0%
Widowed	7,272	1.7%	27,083	6.0%	34,355	3.9%

Source Tables 4 and 5: 2021 American Community Survey Estimates, United States Census Bureau[6] Note: Percentages may not sum to 100% due to rounding.

Table 6 provides information on the employment status of the civilian labor force of those 16 years old and older in Wake County and North Carolina. The civilian labor force, or currently active workforce, is defined as all civilian noninstitutionalized residents who fulfill the requirements for inclusion among the employed or the unemployed. The employed of Wake County (65.5%) are defined as those who work for pay or profit at least one hour a week, or have a job but are temporarily on leave due to illness, industrial action, etc. Those that are unemployed (3.7%) are defined as people without work but are actively seeking for a job and currently available to start work [3].

Table 7 shows the percentage of population covered by health insurance compared to the state. More than half (66.2%) of the population has insurance through their employer, 10.5% of the population has Medicare, 12.5% is covered by Medicaid and 8.2% reported not having any insurance.

Table 6: Employment Status (Age ≥ 16 Years) of the Population, Wake County, NC, 2021

Employment Status	Wake County		North Carolina	
Characteristics	Total	%	Total	%
In Labor Force	634,149	69.2%	5,301,767	62.2%
Employed	600,095	65.5%	4,889,866	57.4%
Unemployed	33,535	3.7%	300,438	3.5%

Source: 2021 American Community Survey Estimates, United States Census Bureau[6]

Note: Percentages may not sum to 100% due to rounding.

Table 7: Healthcare Coverage in Wake County and North Carolina, 2021

Health Insurance Coverage	Wake County (%)	North Carolina (%)
Employer	66.2%	51.9%
Individual	NSD	NSD
Medicaid	10.5%	18.7%
Medicare	12.9%	19.2%
Non-group	15.6%	15.2%
Military/VA	2.1%	2.8%
Uninsured	8.2%	10.4%

Source: 2021 American Community Survey Estimates, United States Census Bureau[6]

Note: Percentages may not sum to 100% due to rounding.

NSD = No Statistical Data

Table 8 displays the disability status by age, race and sex in Wake County and North Carolina. Both males (8.5%) and females (8.6%) have similar percentage of disability in Wake County (13.2%) as well as the overall state (13.3%). American Indian and Alaska Natives has the highest percentage of disability in both Wake County as well as North Carolina (20% and 18.1% respectively) when compared with other racial groups. The population older than 75 years of age has the highest percentage of disability compared to all other age groups in both the county and state.

4.0 Leading Causes of Death in Wake County, N.C.

Mortality rates are regarded as accurate indicators of the overall health of a jurisdiction's population and its subgroups. They reflect quantity of life (in terms of life years gained for populations with low mortality rates and life years lost for those with high mortality rates), while links between mortality and morbidity also reflect quality of life.

In 2021, eight of the ten leading causes of death in Wake County were chronic diseases (Figure 2, page 10). As in the previous year, cancer and diseases of the heart ranked #1 and #2 respectively. While cerebrovascular disease ranked #4, Alzheimer's disease, diabetes mellitus, chronic lower respiratory diseases, nephritis, nephrotic syndrome and nephrosis, and chronic liver disease and cirrhosis ranked #6, #7, #8, #9 and #10 respectively.

Table 8: Disability Status of the Population by Age, Race and Sex, Wake County and North Carolina, 2021

Label	Wake County (%)	North Carolina (%)
Sex		
Male	8.5%	13.2%
Female	8.6%	13.3%
Race		
Non-Hispanic White	8.7%	13.8%
Non-Hispanic Black	10.7%	14.1%
American Indian and Alaska Native	20%	18.1%
Asian	4.4%	5.6%
Hispanic or Latino	6.1%	6.7%
Age		
Under 5 years	0.4%	0.7%
5-17 years	4.6%	5.7%
18-34 years	4.7%	6.7%
35-64 years	7.9%	13.5%
65-74 years	20%	25.2%
≥75	44.7%	47.9%

Source: 2021 American Community Survey 5-Year Estimates, United States Census Bureau[7]
Note: Percentages may not sum to 100% due to rounding.

There were 7,036 deaths in Wake County in 2021. The 2,085 deaths not shown in Figure 2 were from residual causes. "Residual causes" are all other causes of death not categorized here.

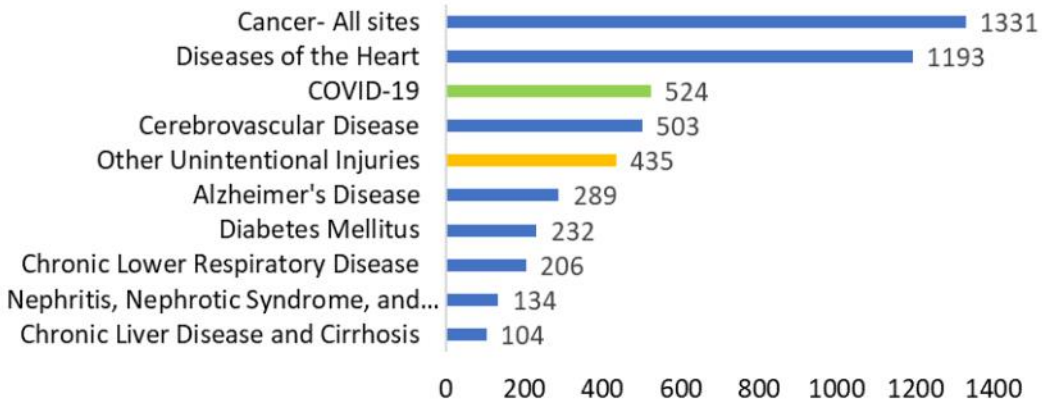
4.1 Cancer

As in previous years, cancer was the leading cause of death in Wake County for 2021. However, Wake County's all cancer mortality rate continues to fall over time (Figure 3) and has decreased over the last five years. Figure 4 (page 11) shows the 5-year average trend in all cancer mortality rates by race/ethnicity (White and African American and Hispanic) and sex in Wake County.

Overall:

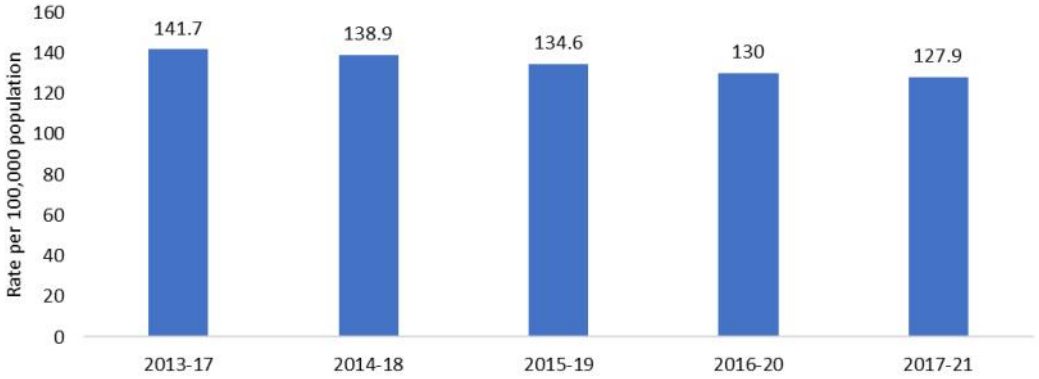
- Men continue to have higher cancer death rates than women
- African American men continue to have higher cancer death rates than all other racial groups
- African American men had the largest decrease (22%) in cancer death rate between 2013-17 and 2017-21
- Hispanic men had the largest decrease (16.6%) in cancer death rate between 2016-20 and 2017-21

Figure 2: Ten Leading Causes of Death, Wake County, 2021 (N = 4,951)



Source: Special report prepared by N.C. State Center for Health Statistics 3/24/2023.

Figure 3: All Cancer Mortality Rate, Wake County, 5-Year Average Trend



Sources: "Race/Ethnicity and Sex-Specific Age-Adjusted Death Rates". County Health Data Books 2021, 2020, 2019, 2018, and 2017, N.C. State Center for Health Statistics (N.C. SCHS). http:// www.schs.state.nc.us/data/databook/. 2017-21 data provided in N.C. SCHS special report on 3/24/2023.

4.1a Trachea/Bronchus/Lung Cancer

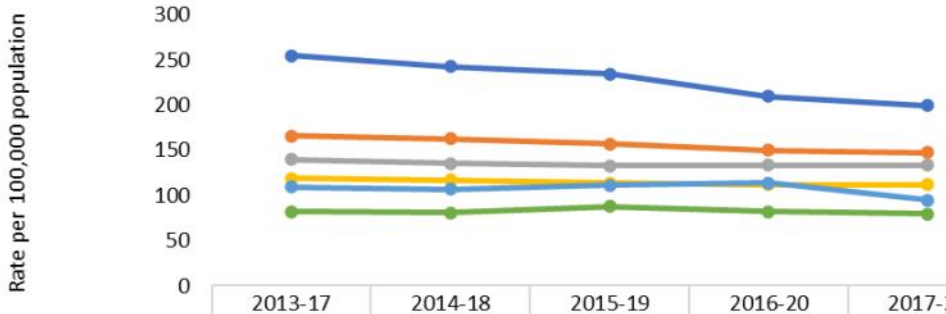
Trachea/bronchus/lung cancer remained the leading cause of cancer-related death in Wake County during 2017-21. From 2013-17 to 2017-21, the overall trachea/bronchus/lung cancer death rate decreased by 17.2% (Figure 5). Although African American men and white men had higher death rates than African American women and white women, death rates decreased for both groups of men by 22% and 24.3% respectively between 2013-17 and 2017-21.

4.1aa Tobacco Use: Smoking and Electronic Cigarettes

Smoking

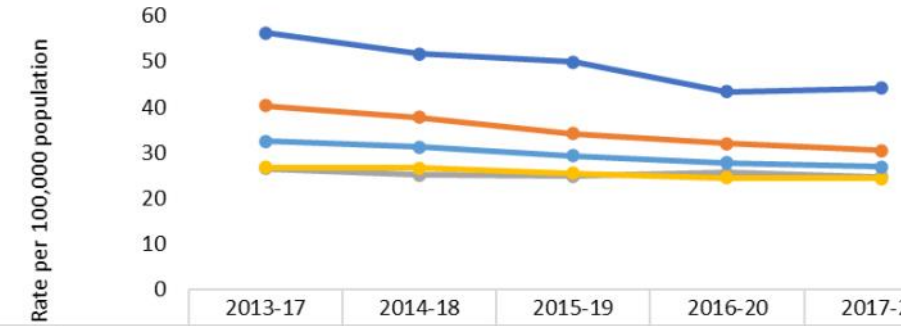
Smoking is the leading cause of preventable death and disability in the United States [9]. The 2022 County Health Rankings reported that 13% of Wake County adults smoke every day (or most days) and have smoked at least 100 cigarettes in their lifetime [8]. The percentage of adults who smoke cigarettes in Wake County is lower than that of North Carolina (19%) [8].

Figure 4: All Cancer Mortality Rates by Race/Ethnicity and Sex, Wake County, 5-Year Average Trend



	2013-17	2014-18	2015-19	2016-20	2017-21
African American Men	254.6	242.9	234.5	209.9	199.6
White Men	166	163	157	150.1	147.6
African American Women	139.8	135.3	132.6	133.5	133.7
White Women	118.8	116.9	113.7	112	111.7
Hispanic Men	109.3	106.9	111.1	113.9	95
Hispanic Women	82	80.9	88	82.1	79.7

Figure 5: Trachea, Bronchus and Lung Cancer Mortality Rates by Race and Sex, Wake County, 5-Year Average Trend



	2013-17	2014-18	2015-19	2016-20	2017-21
African American Men	56.3	51.7	49.9	43.3	44.1
White Men	40.3	37.7	34.1	32	30.5
African American Women	26.5	25.1	24.8	25.6	24.7
White Women	26.8	26.6	25.5	24.5	24.3
All	32.5	31.2	29.3	27.8	26.9

Sources Figures 4 and 5: "Race/Ethnicity and Sex-Specific Age-Adjusted Death Rates". County Health Data Books 2021, 2020, 2019, 2018, and 2017, N.C. State Center for Health Statistics. http:// www.schs.state.nc.us/data/databook/. 2017-2021 data provided in N.C. SCHS special report on 3/24/2023.

Smoking causes:

- More than twelve types of cancer
- Increased risk of cardiovascular disease
- Respiratory conditions, such as chronic obstructive pulmonary disease (COPD) and emphysema
- Increased risk of low birth weight
- Increased risk of premature death [9]

E-cigarettes are known by many different names, including vapes, vape pens, and e-hookah (Image 1). They are generally composed of a battery, a heating element, and a place to hold a liquid. When used, they produce an aerosol by heating the e-liquid solution. The aerosol then exposes users to:

- Potentially harmful substances, such as nicotine
- Ultrafine particles that can be inhaled deep into the lungs
- Flavorings such as diacetyl, a chemical linked to a serious lung disease
- Volatile organic compounds
- Cancer-causing chemicals
- Heavy metals, such as nickel, tin, and lead [10]

Bystanders are exposed to the same chemical-containing aerosol when the user exhales, also known as secondhand aerosol. E-cigarettes are not an FDA-approved cessation aid and can be modified to deliver marijuana and other drugs, as described in the CDC's E-cigarette, or vaping products visual dictionary [10].

E-cigarettes continue to be the most commonly used tobacco products by youth. In the U.S., youth are more likely to use e-cigarettes than adults.

According to the 2021 *NYTS*, around 2 million youth were estimated to be current e-cigarette users compared to 5 million in 2019 and 3.6 million in 2018 [11,12]. The U.S. has seen a decrease in e-cigarette use; however, e-cigarette use among youth continues to be a public health crisis. The 2021 *NYTS* showed that 85% of youth reported flavored e-cigarette usage [11].

Similar to the 2021 Monitoring the Future Report, conducted by the National Institutes of Health (NIH) and the National Institute on Drug Abuse (NIDA), the 2022 Monitoring the Future Report showed that nearly one in five high school seniors vaped in the past month [13,14]. While cigarette smoking among youth is down in North Carolina, there was a 1,129% increase in the use of e-cigarettes among high school students from 2011 to 2019 [15]. Over 20% of high school students from the Central Region of North Carolina, including Wake County, report currently using an e-cigarette [15].

Image 1
Examples of E-cigarettes

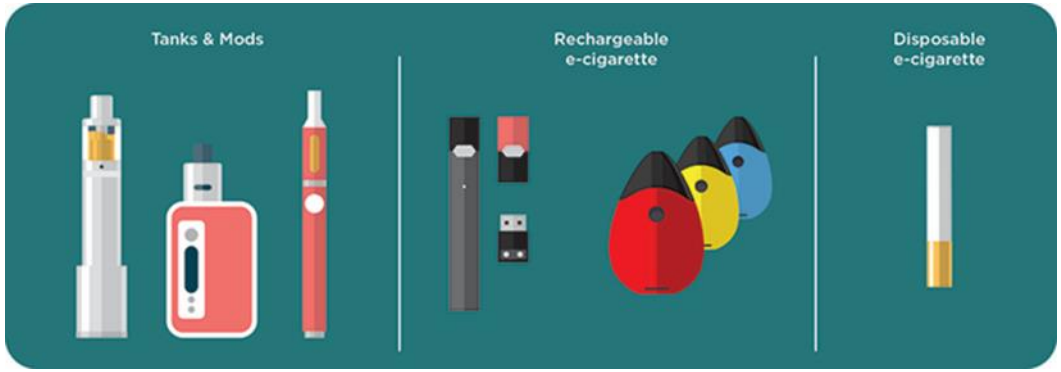


Image source: "Electronic Cigarettes" CDC. https://www.cdc.gov/tobacco/basic_information/e-cigarettes/about-e-cigarettes.html, Accessed 3/4/22

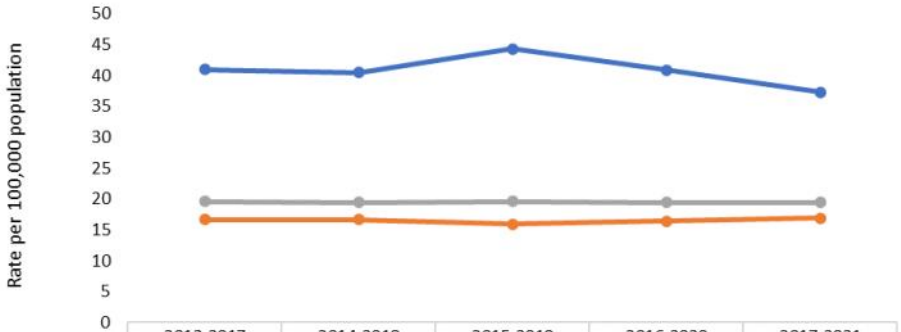
The 2021 N.C. Youth Risk Behavior Survey (YRBS) revealed that 24% of North Carolina high school students currently use an e-cigarette, whereas 7.7% of middle school students currently use an e-cigarette [17]. The percentage of high school students who currently use an e-cigarette increases with each grade level in both high school and middle school.

Tobacco-free and smoke-free policies are evidence-based strategies to prevent the initiation of smoking and other tobacco use, eliminate exposure to secondhand smoke, and help tobacco users who want to quit. On November 9, 2022, the Wake County Board of County Commissioners voted to approve a new tobacco-free ordinance. The new ordinance encompasses tobacco-free County-owned buildings, vehicles, grounds, parks, and recreation areas and newly tobacco-free public places in unincorporated areas of the county. On December 5, 2022, the Town of Fuquay-Varina voted to approve a new smoke-free/vapor-free ordinance. The new ordinance encompasses smoke/vapor-free buildings, vehicles, parks and recreation areas, and smoke-free/vapor-free grounds with designated areas.

4.1b Prostate Cancer

Prostate cancer was the second leading cause of cancer-related death in Wake County during 2017-21. Since 2015-19, the death rate for African American men remains on a decreasing trend, while the death rate for white men increased slightly (Figure 6).
A significant disparity in prostate cancer mortality persists between African American men and white men.

Figure 6: Prostate Cancer Death Rates by Race, Wake County, 5-Year Average Trend



	2013-2017	2014-2018	2015-2019	2016-2020	2017-2021
African American Men	41	40.5	44.3	40.9	37.3
White Men	16.7	16.7	15.9	16.4	16.9
All	19.6	19.5	19.6	19.5	19.5

Sources: "Race/Ethnicity and Sex-Specific Age-Adjusted Death Rates". County Health Data Books 2021, 2020, 2019, 2018, and 2017, N.C. State Center for Health Statistics. http:// www.schs.state.nc.us/data/databook/. 2017-2021 data provided in N.C. SCHS special report on 3/24/2023.

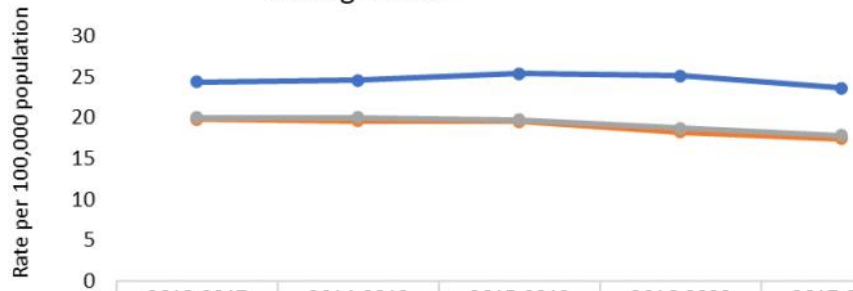
4.1c Breast Cancer

Breast cancer was the third leading cause of cancer-related death in Wake County during 2017-21. The death rates for both African American and white women decreased slightly (Figure 7). A disparity in breast cancer death rates persists between African American and white women.

4.1d Pancreatic Cancer

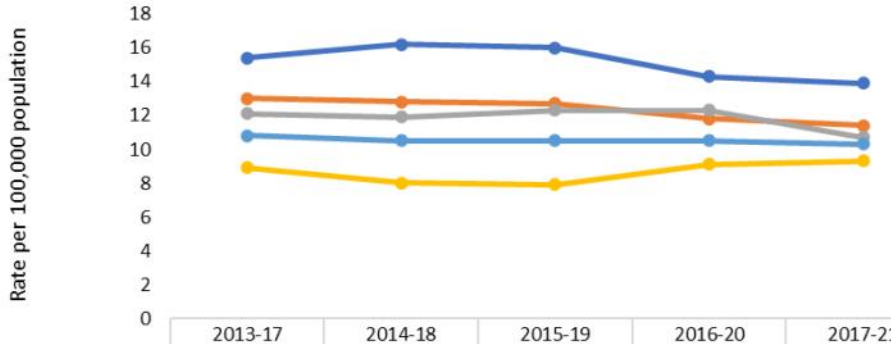
Pancreatic cancer was the fourth leading cause of cancer-related death in Wake County during 2017-21. While there was a slight decrease (2.8%) in death rates for African American men from 2016-20 to 2017-21, this group continues to show the highest death rates from pancreatic cancer (Figure 8).

Figure 7: Breast Cancer Mortality Rates by Race, Wake County, 5-Year Average Trend



	2013-2017	2014-2018	2015-2019	2016-2020	2017-2021
African American Women	24.4	24.6	25.4	25.1	23.6
White Women	19.8	19.6	19.5	18.2	17.4
All	20	20	19.7	18.7	17.8

Figure 8: Pancreatic Cancer Death Rates by Race and Sex, Wake County, 5-Year Average Trend



	2013-17	2014-18	2015-19	2016-20	2017-21
African American Men	15.4	16.2	16	14.3	13.9
White Men	13	12.8	12.7	11.8	11.4
African American Women	12.1	11.9	12.3	12.3	10.7
White Women	8.9	8	7.9	9.1	9.3
All	10.8	10.5	10.5	10.5	10.3

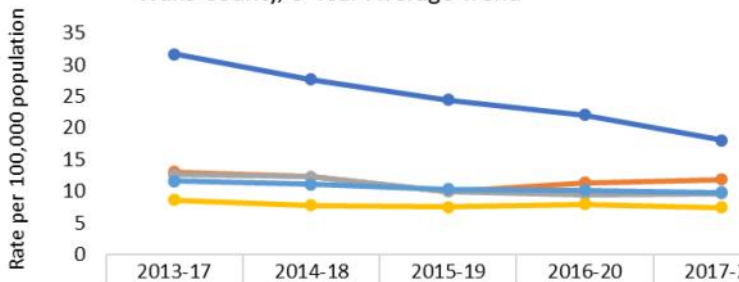
Sources Figures 7 and 8: "Race/Ethnicity and Sex-Specific Age-Adjusted Death Rates". County Health Data Books 2021, 2020, 2019, 2018, and 2017, N.C. State Center for Health Statistics (N.C. SCHS) .http:// www.schs.state.nc.us/data/databook/. 2017-2021 data provided in N.C. SCHS special report on 3/24/2023.

4.1e Colon/Rectum/Anal Cancer

Colon/rectum/anal cancer was the fifth leading cause of cancer-related death in Wake County during 2017-21. Figure 9 shows:

- A significant gap in colon/rectum/anal cancer death rates between African American men and other groups, though the African American male death rate decreased by 43% over the five-year period, 2017-21, compared to the 2013-17 five-year period.
- The death rate for African American women has continued to decline since 2013-17.
- Death rates for white men increased slightly while death rates for white women decreased slightly in 2017-21 compared to 2016-20.

Figure 9: Colon/Rectum/Anal Cancer Mortality Rates by Race and Sex, Wake County, 5-Year Average Trend

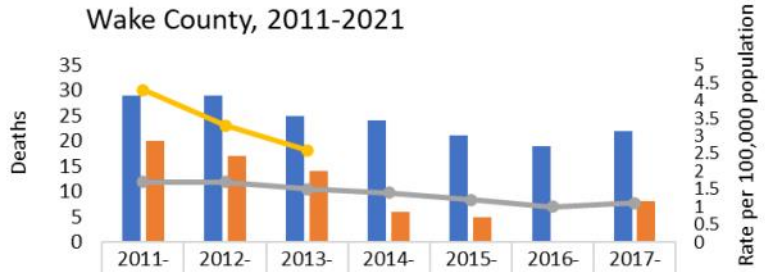


	2013-17	2014-18	2015-19	2016-20	2017-21
African American Men	31.6	27.6	24.4	22	18
White Men	13	12.3	10	11.3	11.8
African American Women	12.6	12.3	10	9.5	9.6
White Women	8.6	7.8	7.5	7.9	7.4
All	11.6	11.1	10.3	10.1	9.8

4.1f Cervical Cancer

For the fourth year in a row, the number of cervical cancer deaths in African American women remained too low to calculate a stable rate (Figure 10).

Figure 10: Cervical Cancer Mortality, White Women vs African American Women, 5-Year Average Trend, Wake County, 2011-2021



	2011-15	2012-16	2013-17	2014-18	2015-19	2016-20	2017-21
White Women Deaths	29	29	25	24	21	19	22
African American Women Deaths	20	17	14	6	5		8
White Women Death Rate	1.7	1.7	1.5	1.4	1.2	1	1.1
African American Women Death Rate	4.3	3.3	2.6				

Sources Figures 9 and 10: "Race/Ethnicity and Sex-Specific Age-Adjusted Death Rates". County Health Data Books 2021, 2020, 2019, 2018, and 2017, N.C. State Center for Health Statistics (N.C. SCHS). http:// www.schs.state.nc.us/data/databook/. 2017-2021 data provided in N.C. SCHS special report on 3/24/2023.

4.2 Heart Disease

Heart disease was again the second leading cause of death in Wake County for 2021. The term "heart disease" comprises conditions such as coronary artery disease, heart attack, arrhythmia, atrial fibrillation, heart valve disease, heart failure, and congenital heart disease. Figure 11 shows that Wake County's heart disease death rate increased slightly (1.3%) in 2017-21 compared to 2016-20.

Figure 12 shows the following heart disease mortality trends:

- Men of all racial/ethnic groups died at higher rates than women.
- Rates remained steady for the four largest population groups, yet African American men died at higher rates than white men, and African American women died at higher rates than white women.
- The death rate for Hispanic men decreased by 4.3% over the five-year period, 2017-21 compared to the 2016-20 five-year period.

From 2013-17 to 2017-21, heart attack death rates fell for men and women of both races, with African American women experiencing the largest decrease (26%). Men of both races continued to die at higher rates than women. The overall heart attack death rate fell by 16.6% in Wake County (Figure 13, page 17).

Figure 11: Heart Disease Mortality Rate, Wake County, 5-Year Average Trend

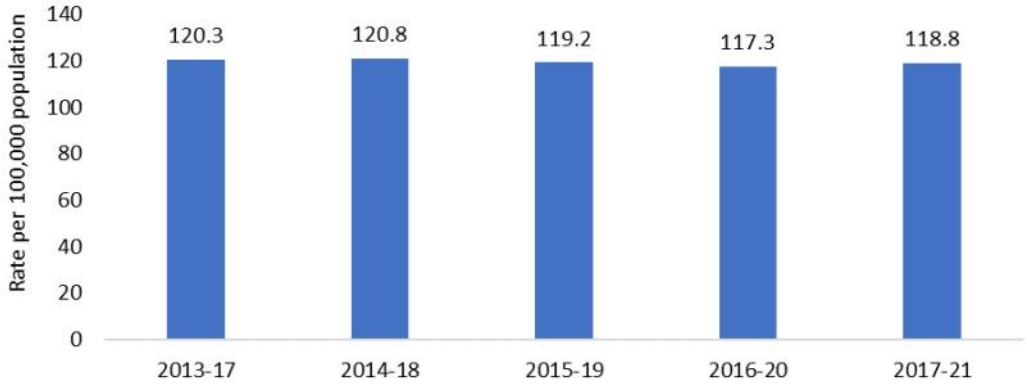
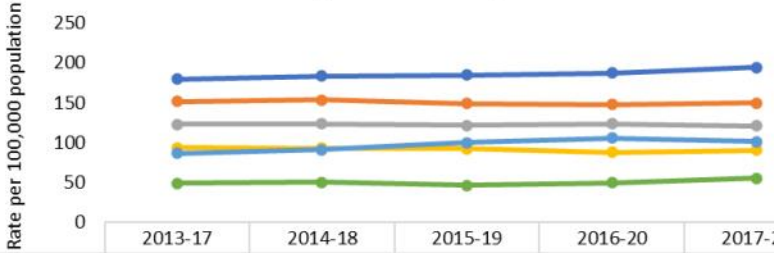


Figure 12: Heart Disease Mortality Rates by Race/Ethnicity and Sex, Wake County, 5-Year Average Trend



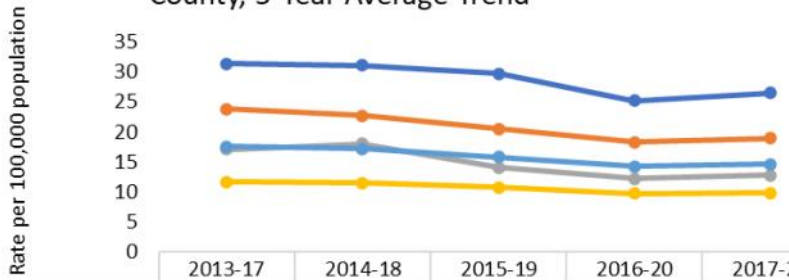
	2013-17	2014-18	2015-19	2016-20	2017-21
African American Men	179.6	183.3	184.9	187.5	194.1
White Men	151.6	153.2	149.1	147.6	149.4
African American Women	122.6	123	121.2	123.6	120.7
White Women	93	92.5	91.7	87.8	90.2
Hispanic Men	86.4	90.7	99.7	105.5	101
Hispanic Women	48.4	50.1	46	49.1	55.2

Sources Figures 11 and 12: "Race/Ethnicity and Sex-Specific Age-Adjusted Death Rates". County Health Data Books 2021, 2020, 2019, 2018, and 2017, N.C. State Center for Health Statistics (NC SCHS). http:// www.schs.state.nc.us/data/databook/. 2017-2021 data provided in N.C. SCHS special report on 3/24/2023.

4.3 Cerebrovascular Disease

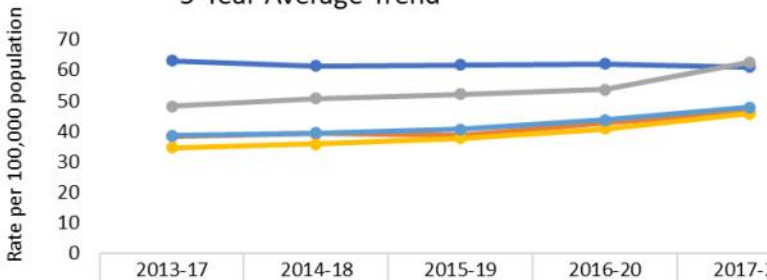
Cerebrovascular disease was the fourth leading cause of death in Wake County for 2021. The overall stroke death rate in Wake County increased by 24.1% between 2013-17 and 2017-21, and a significant racial disparity persists in the death rate between African American and white men and women (Figure 14).

Figure 13: Heart Attack Mortality Rates by Race and Sex, Wake County, 5-Year Average Trend



	2013-17	2014-18	2015-19	2016-20	2017-21
African American Men	31.4	31.1	29.7	25.2	26.5
White Men	23.8	22.7	20.5	18.3	18.9
African American Women	17.1	18	14	12.2	12.7
White Women	11.6	11.4	10.7	9.7	9.8
All	17.5	17.2	15.8	14.2	14.6

Figure 14: Stroke Mortality Rates by Race and Sex, Wake County, 5-Year Average Trend



	2013-17	2014-18	2015-19	2016-20	2017-21
African American Men	63.1	61.3	61.7	62.1	61
White Men	38.4	39.2	38.6	42.7	46.2
African American Women	48.2	50.7	52.1	53.7	62.6
White Women	34.7	35.8	37.7	40.8	45.7
All	38.6	39.4	40.6	43.8	47.9

Sources Figures 13 and 14: "Race/Ethnicity and Sex-Specific Age-Adjusted Death Rates". County Health Data Books 2021, 2020, 2019, 2018, and 2017, N.C. State Center for Health Statistics (N.C. SCHS). http:// www.schs.state.nc.us/data/databook/. 2017-2021 data provided in N.C. SCHS special report on 3/24/2023.

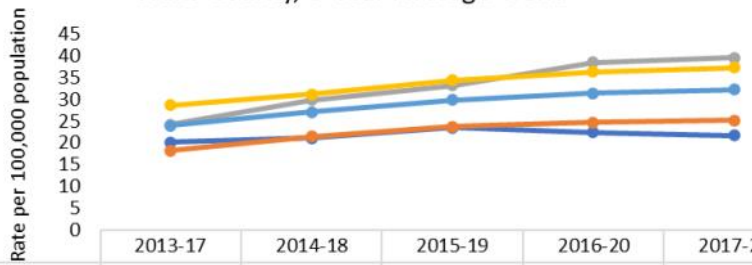
4.4 Alzheimer's Disease

Alzheimer's disease was the sixth leading cause of death in Wake County for 2021. Figure 15 shows women died at higher rates from Alzheimer's disease than men. The overall death rate increased by 34.2% in 2017-21 when compared to 2013-17.

4.5 Diabetes

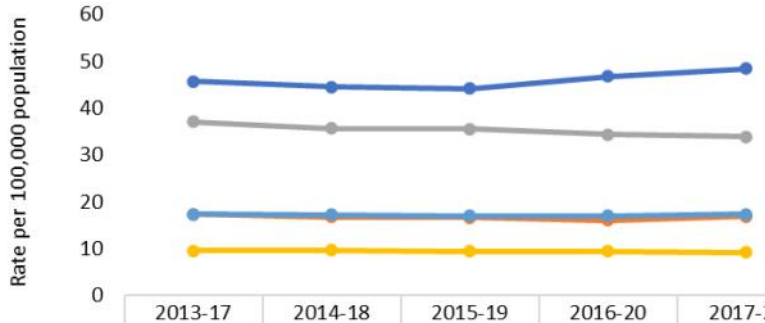
Diabetes was the seventh leading cause of death in Wake County for 2021. Figure 16 shows that the most significant and persistent death rate disparity is attributed to diabetes, when comparing African American men and women and white men and women. The overall death rate remained stable.

Figure 15: Alzheimer's Disease Mortality Rates by Race and Sex, Wake County, 5-Year Average Trend



	2013-17	2014-18	2015-19	2016-20	2017-21
African American Men	20.1	21.1	23.5	22.4	21.7
White Men	18.2	21.4	23.7	24.7	25.2
African American Women	24.2	29.9	33.2	38.5	39.6
White Women	28.6	31.2	34.4	36.3	37.3
All	24	27.1	29.8	31.4	32.2

Figure 16: Diabetes Mortality Rates by Race and Sex, Wake County, 5-Year Average Trend



	2013-17	2014-18	2015-19	2016-20	2017-21
African American Men	45.7	44.5	44.1	46.8	48.4
White Men	17.3	16.8	16.7	16.1	16.9
African American Women	37.1	35.6	35.5	34.3	33.9
White Women	9.6	9.7	9.5	9.4	9.2
All	17.4	17.2	17	17	17.4

Sources Figures 15 and 16: "Race/Ethnicity and Sex-Specific Age-Adjusted Death Rates". County Health Data Books 2021, 2020, 2019, 2018, and 2017, N.C. State Center for Health Statistics. http:// www.schs.state.nc.us/data/databook/. 2017-2021 data provided in N.C. SCHS special report on 3/24/2023.

4.6 Chronic Lower Respiratory Disease

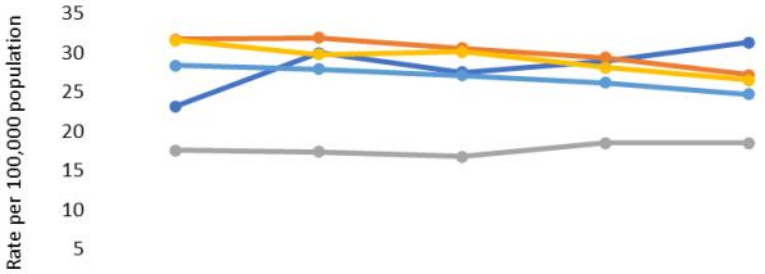
Chronic lower respiratory disease was the eighth leading cause of death in Wake County for 2021. The overall chronic respiratory disease death rate has continued to decrease year to year. Compared to 2013-17, the overall mortality rate decreased by 13% (2017-21) (Figure 17).

Unlike previous years, during 2017-21, African American men died at a higher rate than white men. Similar to previous years, white women died at a higher rate compared to African American women.

4.7 Nephritis, Nephrotic Syndrome and Nephrosis

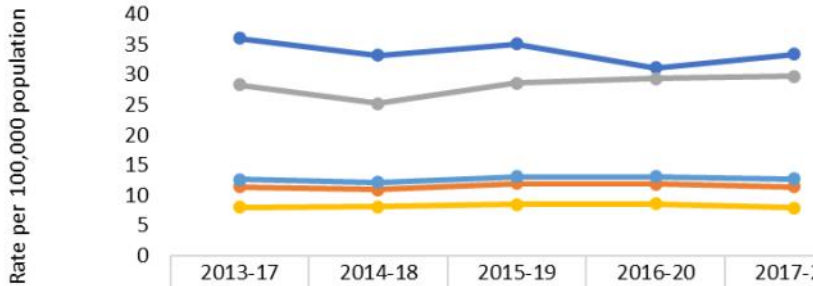
Nephritis, nephrotic syndrome, and nephrosis (kidney disease) was the nineth leading cause of death in Wake County for 2021. Figure 18 shows that there is a persistent disparity in death rates between African American men and women and white men and women. The overall mortality rate remained stable.

Figure 17: Chronic Lower Respiratory Disease Mortality Rates by Race and Sex, Wake County, 5-Year Average Trend



	2013-17	2014-18	2015-19	2016-20	2017-21
African American Men	23.2	30	27.5	29	31.3
White Men	31.7	31.9	30.6	29.4	27.2
African American Women	17.6	17.4	16.8	18.5	18.5
White Women	31.6	29.8	30.1	28.1	26.5
All	28.4	27.9	27.1	26.2	24.7

Figure 18: Kidney Disease Mortality Rates by Race and Sex, Wake County, 5-Year Average Trend



	2013-17	2014-18	2015-19	2016-20	2017-21
African American Men	36	33.2	35.1	31.1	33.4
White Men	11.4	10.9	11.9	11.8	11.4
African American Women	28.3	25.2	28.6	29.3	29.7
White Women	8	8.1	8.4	8.5	7.9
All	12.6	12.1	13.1	13.1	12.7

Sources Figures 17 and 18: "Race/Ethnicity and Sex-Specific Age-Adjusted Death Rates". County Health Data Books 2021, 2020, 2019, 2018, and 2017, N.C. State Center for Health Statistics (N.C. SCHS). http://www.schs.state.nc.us/data/databook/. 2017-2021 data provided in N.C. SCHS special report on 3/24/2023.

4.8 Chronic Liver Disease and Cirrhosis

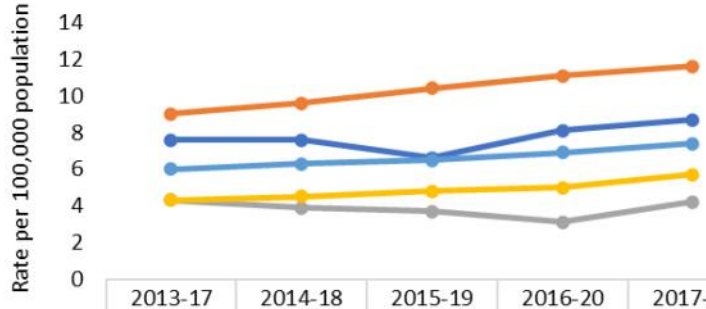
Chronic liver disease and cirrhosis was the tenth leading cause of death in Wake County for 2021. Figure 19 shows the death rate for African American women increased in 2017-21 after continuously declining for three years in a row. Men suffer higher mortality rates from chronic liver disease than women in both groups.

4.9 Mortality Data Summary

The preceding figures illustrate that all cancer rates have continued to fall for Wake County residents over the past five years. Prostate cancer was again the second leading cause of cancer related death. Alzheimer's disease was the one condition with a significant overall increase in the mortality rate, and women were most affected. Diabetes replaced chronic lower respiratory diseases as the seventh leading cause of death.

Across the leading causes of death, African American men had the highest death rates, and white women the lowest. The all-cancer death rate has decreased for all racial/ethnic groups during 2017-21. Cervical cancer deaths for African American women consistently declined over the last seven-year average trend. Unlike previous years, during 2017-21, African American men died at higher rates than white men due to chronic lower respiratory diseases.

Figure 19: Chronic Liver Disease Mortality Rates by Race and Sex, Wake County, 5-Year Average Trend



	2013-17	2014-18	2015-19	2016-20	2017-21
African American Men	7.6	7.6	6.6	8.1	8.7
White Men	9	9.6	10.4	11.1	11.6
African American Women	4.3	3.9	3.7	3.1	4.2
White Women	4.3	4.5	4.8	5	5.7
All	6	6.3	6.5	6.9	7.4

Sources: "Race/Ethnicity and Sex-Specific Age-Adjusted Death Rates". County Health Data Books 2021, 2020, 2019, 2018, and 2017, N.C. State Center for Health Statistics (N.C. SCHS). http:// www.schs.state.nc.us/data/databook/. 2017-2021 data provided in N.C. SCHS special report on 3/24/2023.

5.0 WCHHS Health Promotion Chronic Disease Prevention Section Service Matrix

Health Promotion Chronic Disease Prevention (HPCDP) Section
Public Health Division, Wake County Health and Human Services (WCHHS)

Mission: In partnership with the community, Wake County Health Promotion Chronic Disease Prevention provides a set of chronic disease and injury prevention and management services to populations and communities experiencing disparities.

Staff: County Funded: 10.50 FTE Grant Funded: 6 FTE

Programs and Services			**1st and 2nd Quarter Results 2022** (July 1, 2022—December 31, 2022)
Clinical Services	**Breast and Cervical Cancer Control Program (BCCCP)**	Wake County BCCCP provides free or low -cost breast and cervical cancer screen- ings and follow up services to eligible women in Wake County. Eligible women are: • Uninsured or underinsured, • Between the ages of 40-64 for breast screening services and 21-64 for cervical screening services, and • Have a household income at or below 250% of the federal poverty level.	• 4 cancer detected • 66 women referred for diagnostic mammograms and breast ultrasounds • 11 women were able to secure biopsy • 4 treatment for breast cancer secured • 4 Navigation only to Breast and Cervical Cancer Medicaid (BCCM) • Please note there are women diagnosed in North Carolina in Wake, Franklin, and Harnett county outside of BCCCP
	WISEWOMAN	Wake County WISEWOMAN provides free cardiovascular health screenings to the women enrolled in BCCCP. Women are screened for blood pressure, cholesterol, diabetes, and BMI. Participants receive counseling on physical activity and nutrition. Women with abnormal lab values are referred to a medical provider for treatment.	• 51 women received WISEWOMAN screening services + their first health coaching session • 82 - 2nd and 3rd health coaching sessions were completed • 12 referrals to primary care services for elevated lab levels or blood pressure
	Medical Nutrition Therapy	Nutrition counseling provided to patients of WCHHS Women's Clinic and Child Health Clinic.	• Women's Clinic: 81 clients seen; of the 34 seen for more than one visit in this time frame, 79% (27) showed positive health change.

Programs and Services			1st and 2nd Quarter Results 2022 (July 1, 2022—December 31, 2022)
Community Health Education and Physical Activity Programs	**Movin' and Groovin'**	The Health Promotion Chronic Disease Prevention Section offers a 10-week Movin' and Groovin' Community Physical Activity Program. This free program helps individuals get active and stay active! Movin' and Groovin' is open to everyone over the age of 12. Water, snacks, and door prizes are provided each week to participants. For more information regarding Movin' and Groovin', contact Elizabeth Spender-Smith, 919-250-3990.	Dates: August 18—October 6 • Fall series with an average of 25 adult participants at each session • 100% of participants who completed the evaluation reported increased physical activity and healthy eating behaviors as a result of the program
	Couch to 5K	The Health Promotion Chronic Disease Prevention Section partners with City of Raleigh's Parks and Recreation and Cultural Resources Department, to offer "Couch to 5K". Couch to 5K is a nine-week training series for anyone 12 years of age and older. For more information regarding Couch to 5K, contact Elizabeth Spender– Smith, 919-250-3990.	Dates: July1— August 3 • 12 participants • 100% of participants who completed the evaluation feel they benefited physically and plan to continue a physical fitness regimen
	Public Health Education Campaigns	The Health Promotion Chronic Disease Prevention Section provides educational information and activities to employees of Wake County regarding Breast Cancer Awareness Month, Heart Health Month, and National Nutrition Month.	• Breast Cancer Awareness Month • Heart Health Month • National Nutrition Month
	Minority Diabetes Prevention Program (MDPP)	The North Carolina Minority Diabetes Prevention Program (NC MDPP) is a free, year- long diabetes prevention program. Throughout the program, participants learn how to eat healthier, meal plan, get active and overcome barriers	**Dates: Oct 1- December 31** Attendance and weekly activity minutes for each participant was recorded at each session. Each program participant was weighed at the beginning of each session. • New cohort began on December 5, 2022, at Wakefield Missionary Baptist Church in Zebulon • 12 enrolled participants during this cohort • 5 referred to MDPP from community-based organization for diabetes education and lifestyle change session

Programs and Services			1st and 2nd Quarter Results 2022 (July 1, 2022—December 31, 2022)
Food Security and Local Food Systems	**Farmer's Markets**	Health Promotion provides technical support to farmer's markets to increase access to fresh, local food among low resource individuals. Health Promotion promotes the use of EBT at farmer's markets throughout the community.	• 13 farmer's markets in Wake County (8 accept EBT payments, WIC and Senior vouchers)
	Summer Food Service Program	The Sunnybrook meal site provided meals, along with activities, for the children.	• Sunnybrook meal site served 2,209 meals to children over 36 days

Drug Overdose Prevention Initiative	This initiative is a coordinated effort to reduce opioid overdoses through a partnership with Wake County EMS and Certified Peer Support Specialists (CPSS). Wake County partners with the NC Harm Reduction Coalition (NCHRC) which encourages individuals who use substances toward harm reduction. This initiative also coordinates trainings for Recovery Court team members and certified peer support specialists to improve participant health outcomes.		• Distributed 526 Narcan kits to agencies who serve individuals who struggle with substance use
			• Healing Transitions received funding for additional staff and supplies to enhance their work with the goal of reducing drug overdose deaths
			• Certified peer support specialists provided enhanced support to overdose survivors and individuals struggling with drug use
			• Recovery court:
			  ◦ 52 total participants served
			  ◦ 11 newly enrolled participants
			  ◦ 4 participants graduated
			  ◦ 1 substance free baby

Tobacco Prevention and Control (TPC)	The Tobacco Prevention and Control (TPC) regional project provides technical expertise to guide policy development to move forward tobacco-related policy in Wake County. TPC also provides tobacco cessation resources and professional training.		• Facilitated the Wake County Tobacco-Free Forum, on September 27th, with 20 participants, resulting in efforts to create the Wake County Tobacco-Free Coalition to move smoke-free and tobacco-free policies forward in Wake County

Programs and Services		1st and 2nd Quarter Results 2022 (July 1, 2022—December 31, 2022)

Tobacco Prevention and Control (TPC) ***continued***		• Presentations to strengthen existing Wake County Tobacco Policy to include "Public Places" and the expanded definition of "tobacco products" made to:
		  • Wake County Health and Human Services Public Health Committee
		  • Wake County Health and Human Services Board
		  • Wake County Municipal Managers Meeting
		  • Wake County Board of County Commissioners (BOC) work group meeting
		  • Wake County BOC Board Meeting October 17th
		• On November 9th, 2022, the Wake County Board of County Commissioners voted to approve a new tobacco-free ordinance. The new ordinance encompasses tobacco-free county-owned buildings, vehicles, grounds, parks and recreation areas and tobacco-free public places in unincorporated areas of the county.
		• On December 5th, 2022, the Town of Fuquay-Varina voted to approve a new smoke-free/ vapor-free ordinance. The new ordinance encompasses smoke/vapor-free buildings, vehicles, parks and recreation areas, and smoke-free/vapor-free grounds with designated areas.

Safe Routes to School (SRTS)	This initiative is a comprehensive approach to making it safer and easier for K-8 students to walk and bike to school. This is accomplished by creating and maintaining a wide variety of partnerships across different sectors with both local and regional and state-level partners.	• Executed one traffic garden in September at a school that reached approx. 100 children and parents. • Facilitated crosswalk education with approximately 100 youth at Marbles Kickoff to Kindergarten.

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7.0 Acknowledgements

Justin Arcury, NC State Center for Health Statistics
Matt Avery, NC State Center for Health Statistics
Sarah Plentl, Wake County Health and Human Services
Michelle Mulvihill, Wake County Health and Human Services
Michelle Ricci, Wake County Health and Human Services

URLs for links, in order of appearance, included in this report:

Cancer. Centers for Disease Control and Prevention https://www.cdc.gov/cancer/
Heart Disease. Centers for Disease Control and Prevention https://www.cdc.gov/heartdisease/
Stroke. Centers for Disease Control and Prevention https://www.cdc.gov/stroke/
Alzheimers Disease. Centers for Disease Control and Prevention https://www.cdc.gov/aging/aginginfo/alzheimers.htm
Diabetes. Centers for Disease Control and Prevention https://www.cdc.gov/diabetes/basics/diabetes.html