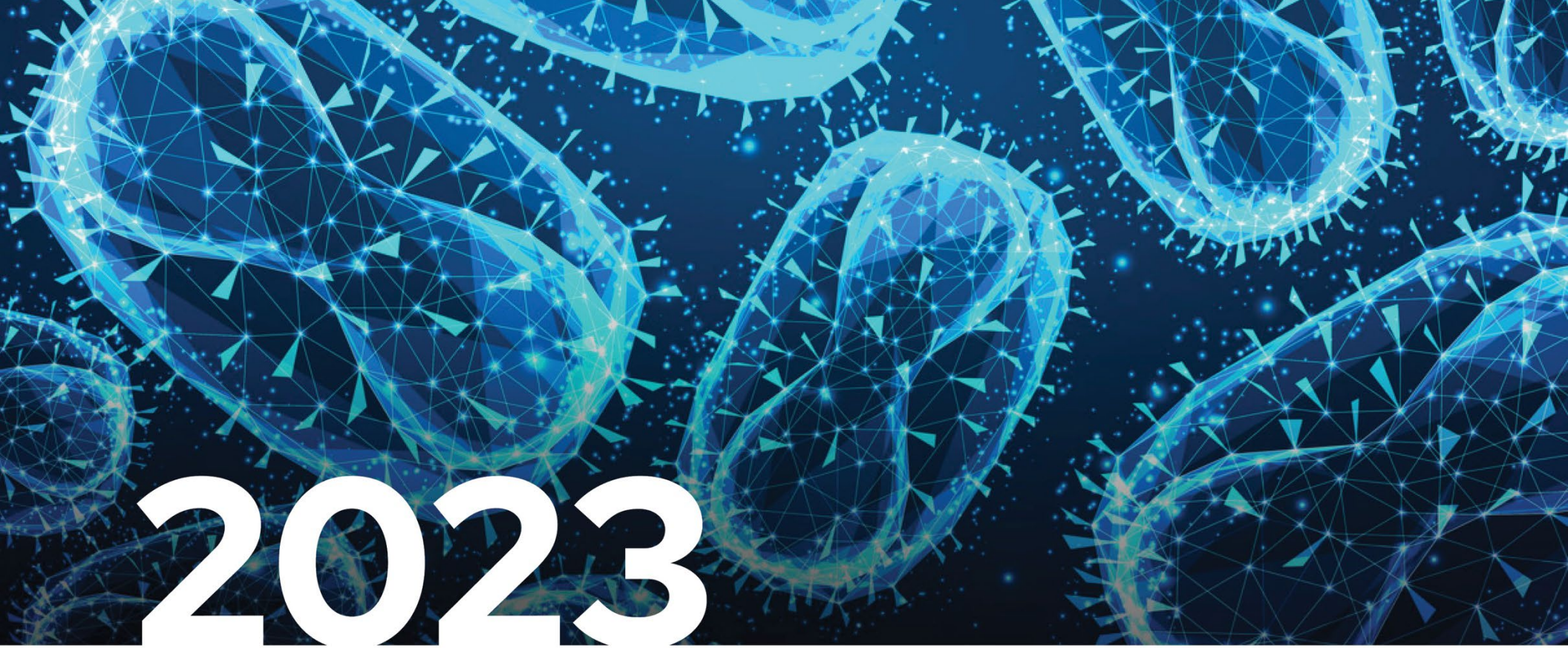


2023 Communicable Disease Report

PUBLIC HEALTH REPORT

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

WAKE COUNTY NORTH CAROLINA Health & Human Services

TABLE OF CONTENTS

1.0 INTRODUCTION

Wake County Health and Human Services (WCHHS) strives to perform the three core public health functions of assessment, policy development, and assurance to provide the 10 Essential Public Health Services shown in Figure 1. In 2020, the 10 Essential Public Health Services were revised to focus on equity at the center of all of them. Public health reports are provided on an annual basis about health and safety trends for Wake County residents, providers, policymakers, and the community to better inform decision making. Public Health reports can be found on wake.gov.

Figure 1: Ten Essential Public Health Services

Image source: Centers for Disease Control and Prevention (CDC). (https://www.cdc.gov/publichealthgateway/publichealthservices/essentialhealthservices.html)

BACKGROUND AND SIGNIFICANCE

Communicable diseases, also known as infectious diseases, are illnesses caused by microorganisms such as bacteria, viruses, parasites, and fungi. The route of transmission varies by disease and may include direct contact with contaminated body fluids or excretions, contact with contaminated objects, inhalation of contaminated airborne particles, ingestion of contaminated food or water or transmission from an animal or vector (i.e., arthropod) carrying the microorganism.

There are over 75 reportable diseases and conditions specified in the N.C. Administrative Code rule 10A NCAC 41A.0101. Reportable diseases were determined to be of public health significance and many that are reported to the North Carolina Department of Health and Human Services (NCDHHS) must also be reported to the Centers for Disease Control and Prevention (CDC) as part of national public health surveillance. Most of the diseases reported to NCDHHS are tracked through the North Carolina Electronic Disease Surveillance System (NCEDSS) but a few have their own reporting systems, such as the Enhanced HIV/AIDS Reporting System (eHARS).[1] NCEDSS and other databases diseases are reported to contribute to public health surveillance, which is "the ongoing, systematic collection, analysis, and interpretation of health-related data essential to planning, implementation, and evaluation of public health practice".[2]

Although the list of reportable diseases may vary slightly from state to state, all states use the same criteria to define what constitutes a case of a given disease. Timely and complete disease reporting allows public health practitioners to monitor and respond to the changing health status of their community. It also helps ensure that prevention activities reach the right people, and that public health and community programs get the resources they need.[1]

Case definitions are different for each reportable disease but, in general, a confirmed case requires both clinical symptoms and a positive laboratory test, a probable case has clinical symptoms and meets other criteria such as knowing how and when they were exposed (epidemiological linkage), and a suspect case generally has clinical symptoms but no confirmatory lab test or epidemiological linkage. In this report, to ensure comprehensive reporting and capture all potential cases, we include probable and confirmed case counts for most of the top reportable diseases. This approach helps to avoid overlooking any opportunities to identify positive cases and monitor the spread of diseases accurately. By considering all possible scenarios, including probable and suspect cases, we can maintain a thorough and inclusive surveillance system.

REPORTABLE DISEASES AND CONDITIONS IN NORTH CAROLINA

Acute flaccid myelitis (AFM)	Hantavirus Infection, Non-Hantavirus Pulmonary Syndrome	Pelvic Inflammatory Disease (Chlamydial/gonococcal)
Anthrax	Hantavirus Pulmonary Syndrome (HPS)	Plague
Babesiosis	Hemolytic-Uremic Syndrome (HUS)	Psittacosis
Botulism	Hemorrhagic Fever Virus Infection	Poliomyelitis (paralytic)
Brucellosis	Hepatitis A	Q Fever
Campylobacter infection	Hepatitis B (Acute, Chronic, Perinatally Acquired)	Rabies (human)
Candida auris (C. auris)	Hepatitis C (Acute and Perinatally Acquired)	Rubella
Carbapenem-resistant *enterobacteriaceae* (CRE)	HIV/AIDS	*S. aureus* reduced susceptibility to Vancomycin
Chancroid	Influenza Virus Infection (Novel and Pediatric Deaths)	Salmonellosis
Chikungunya	Legionellosis	Severe Acute Respiratory Syndrome (SARS, coronavirus infection)
Chlamydial infection (laboratory confirmed)	Leprosy (Hansen's Disease)	Shigellosis
Cholera	Leptospirosis	Smallpox
2019 Novel Coronavirus (COVID-19)	Listeriosis	Spotted Fever Rickettsiosis (formerly Rocky Mountain Spotted Fever)
Creutzfeldt-Jakob Disease	Lyme Disease	Streptococcal Infection, Group A, Invasive
Cryptosporidiosis	Lymphogranuloma Venereum	Syphilis
Cyclosporiasis	Malaria	Tetanus
Dengue	Measles (Rubeola)	Toxic Shock Syndrome
Diphtheria	Meningitis (pneumococcal and invasive)	Trichinosis
E. coli infection (Shiga-Toxin Producing)	Meningococcal disease (invasive)	Tuberculosis
Ehrlichia and Anaplasmosis	Middle East Respiratory Syndrome (MERS)	Tularemia
Encephalitis/Meningitis (Arboviral)	Mpox	Typhoid Fever (Acute and Carriage)
Foodborne (*C. perfringens*, Staphylococcal, other)	Mumps	Vaccinia
Foodborne Poisoning (Ciguatera, Mushroom, Scombroid Fish)	Non-Gonococcal Urethritis	Varicella (Chickenpox)
Gonorrhea	Ophthalmia Neonatorum	*Vibrio* infection (other than Cholera)
Granuloma Inguinale	Paratyphoid Fever (*Salmonella enterica* serotypes Paratyphi A, B [tartrate negative], and C)	Yellow Fever
Haemophilus influenzae, invasive disease	Pertussis (Whooping Cough)	Zika

Source: North Carolina Communicable Disease Manual

KEY FINDINGS

- Rates of the following reportable diseases increased from 2021 to 2022: Hepatitis B, Salmonellosis, Campylobacteriosis, *E. coli*, Shigellosis, Malaria (imported/travel-related cases), syphilis, chlamydia, gonorrhea, and Tuberculosis.
- 2022 included a nationwide mpox outbreak during which Wake County had 114 cases (rate of 9.9/100,000 population).
- There was an increase in respiratory illnesses starting in the fall of 2022 and continuing into 2023 due to the "Tripledemic", which consisted of COVID-19, Influenza, and RSV cases circulating at the same time.

2.0 DEMOGRAPHIC PROFILE OF WAKE COUNTY

- 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.
- 51% of Wake County residents are female and 49% are male.
- 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).

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

Sex	Population	Percent
Female	587,611	51%
Male	562,593	49%
Total	1,150,204	100%

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

Race/Ethnicity	Total Population *1,129,410	Percent
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%

Table 3: Population Distribution by Age Group, Wake County, NC 2021

Age Group	Total Population N = 1,150,204	Percent
<15	218,039	19.0%
15-24	152,454	13.3%
25-34	167,179	14.5%
35-44	171,597	14.9%
45-54	162,032	14.1%
55-64	134,824	11.7%
65+	144,079	12.5%

For Tables 1-3: Source: 2021 American Community Survey Estimates, United States Census Bureau. 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.

3.0 TOP TEN REPORTED DISEASES IN WAKE COUNTY, 2022

Table 4: Top Ten Reported Diseases, Wake County, 2022

	Diseases and conditions	Confirmed/Probable	Confirmed only
1	COVID-19	392,474	392,474
2	Chlamydia	6265	6265
3	Gonorrhea	2453	2453
4	Salmonellosis	295	176
5	Syphilis^	182	182
6	Campylobacter	179	62
7	HIV, New	148	148
8	Hepatitis B, Chronic	142	57
9	E Coli	64	13
10	Shigellosis	62	21

Note: Cases are reported as **"confirmed"** when specific laboratory tests definitively identify the infectious agent. **"Probable"** cases lack confirmatory tests but have strong clinical symptoms or epidemiological evidence suggestive of the disease.

*2022 STD data are provisional as of 6/21/2023

^See STD section for information regarding changes in the Syphilis case definition that occurred during 2022.

4.0 VACCINE PREVENTABLE DISEASES

Hepatitis B

https://www.cdc.gov/hepatitis/hbv/index.htm

Epidemiology

Overview:
Hepatitis B is a vaccine preventable liver infection caused by the hepatitis B virus (HBV).
Symptoms:
Not all cases have symptoms. Symptoms can include fatigue, poor appetite, stomach pain, nausea, and jaundice. Chronic infection can lead to serious issues such as liver disease and liver cancer.
Transmission:
HBV is transmitted through activities that involve puncturing the skin or mucous membrane contact with infectious blood or body fluids (e.g., semen, saliva)
Treatment:
Mostly supportive care (e.g., rest, good nutrition, plenty of fluids, avoiding alcohol, drugs, etc.).
Prevention:
Vaccination is the best prevention. Other prevention methods include not sharing personal items like razors, not sharing needles or drug equipment, safer sex practices.

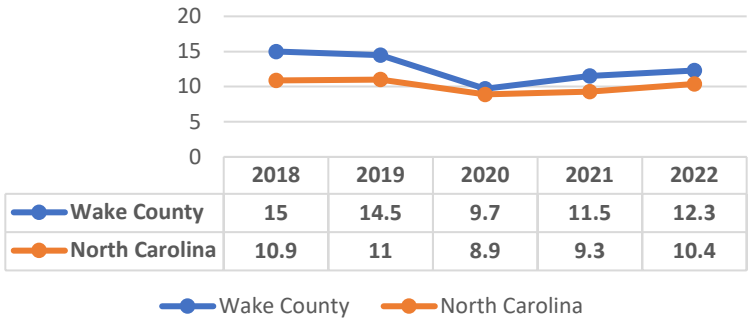
Local Facts and Figures:

The hepatitis B incidence rate in Wake County has continued to increase since 2020.

In 2022:

- 142 cases were reported.
- 58% of cases were between the ages of 25-49 years.
- 28% of cases were reported among Asians.

Figure 2: Hepatitis B Incidence Rates, 2018-2022



	2018	2019	2020	2021	2022
Wake County	15	14.5	9.7	11.5	12.3
North Carolina	10.9	11	8.9	9.3	10.4

Note: 2022 rates were calculated using the population data from 2021

Figure 3 : Hepatitis B by Age Group, 2022

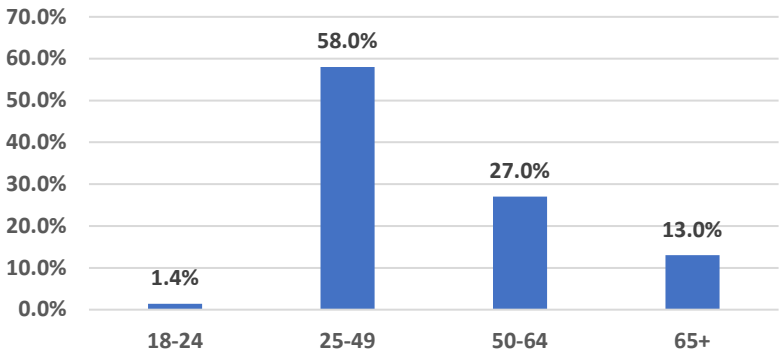


Figure 4 : Hepatitis B by Race, 2022

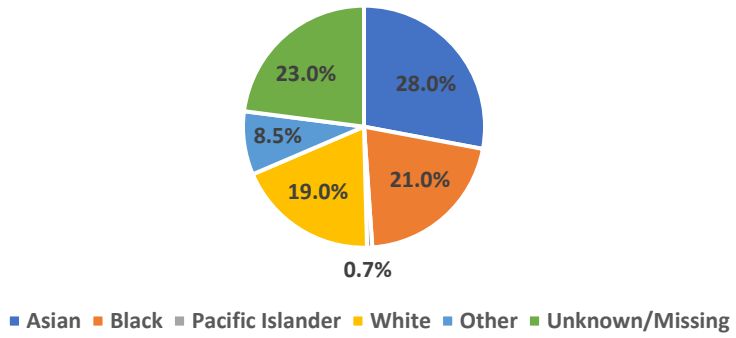
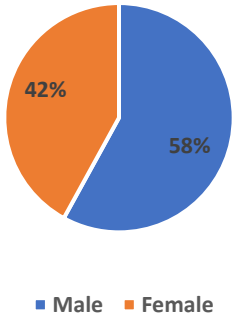


Figure 5: Hepatitis B by Sex, 2022



5.0 ENTERIC DISEASES

Salmonellosis

https://www.cdc.gov/salmonella/

Epidemiology

Overview:
Salmonellosis is an infectious disease caused by *Salmonella* bacteria.

Symptoms:
Common symptoms include diarrhea, fever, and abdominal cramps between 12 to 72 hours after infection.

Transmission:
Transmission occurs by eating or drinking contaminated food or water. *Salmonella* bacteria is also spread by direct contact with an infected person or animal.

Treatment:
Most people recover without treatment. However, small children, the elderly and those with severe diarrhea should see a healthcare provider for treatment options.

Prevention:
Prevention methods include washing hands after contact with animals and before eating, drink only pasteurized milk, avoid untreated water, and cook food to temperature.

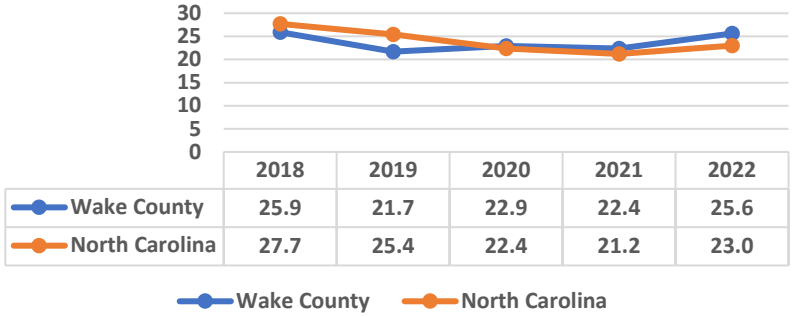
Local Facts and Figures:

Salmonellosis incidence rates in Wake County increased by 14% in 2022.

In 2022:

- 295 cases were reported.
- 33% of cases were reported among those between the ages of 0-4 years.
- Half of the cases (57%) were among Whites.

Figure 6: Salmonellosis Incidence Rates, 2018-2022



	2018	2019	2020	2021	2022
Wake County	25.9	21.7	22.9	22.4	25.6
North Carolina	27.7	25.4	22.4	21.2	23.0

Note: 2022 rates were calculated using the population data from 2021

Figure 7: Salmonellosis Cases by Age Group, 2022

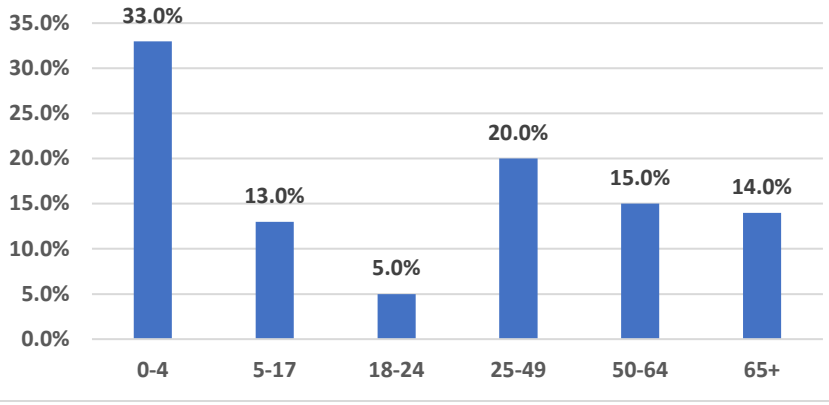


Figure 8: Salmonellosis by Race, 2022

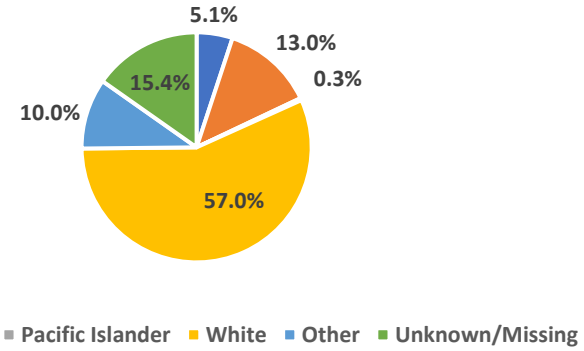
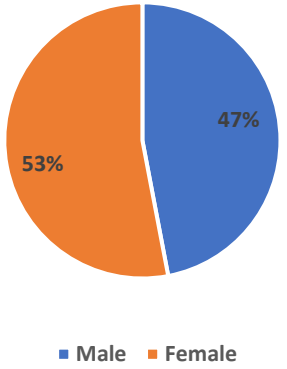


Figure 9: Salmonellosis by Sex, 2022



Campylobacteriosis

https://www.cdc.gov/campylobacter/index.html

Epidemiology

Overview:

Campylobacteriosis is an infectious disease caused by the *Campylobacter* bacteria. It is one of the most common causes of diarrheal illness in the U.S.

Symptoms:

Symptoms typically include diarrhea (often bloody), fever, abdominal cramps, and bloating. Symptoms occur within 2-5 days after exposure and last about a week.

Transmission:

Most infections are associated with eating raw or undercooked poultry or contamination transferred to other foods.

Treatment:

Most people recover without treatment and antibiotics are only recommended for the very ill.

Prevention:

Proper hand hygiene after contact with animals and before eating will help prevent the spread of disease. Avoiding raw milk also helps to prevent infection.

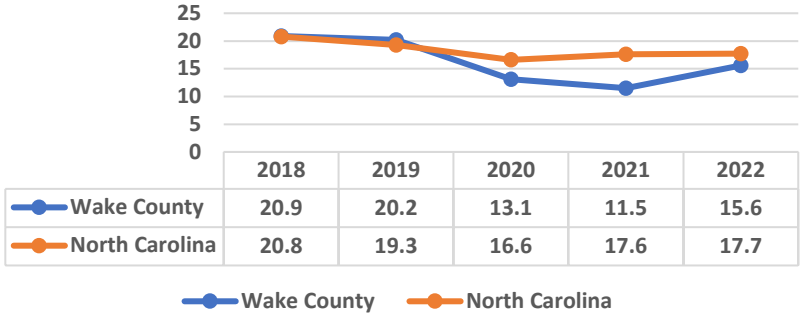
Local Facts and Figures:

Campylobacteriosis incidence rates in Wake County increased by 36% in 2022.

In 2022:

- 179 cases were reported.
- 31% of cases were reported among those between the ages of 25-49 years.
- Majority (52%) of cases were reported among Whites.

Figure 10: Campylobacteriosis Incidence Rates, 2018-2022



Note: 2022 rates were calculated using the population data from 2021

Figure 11: Campylobacteriosis by Age Group, 2022

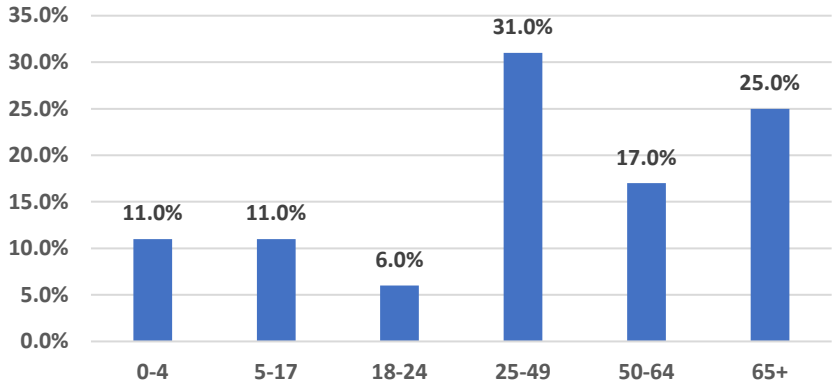


Figure 12: Campylobacteriosis by Race, 2022

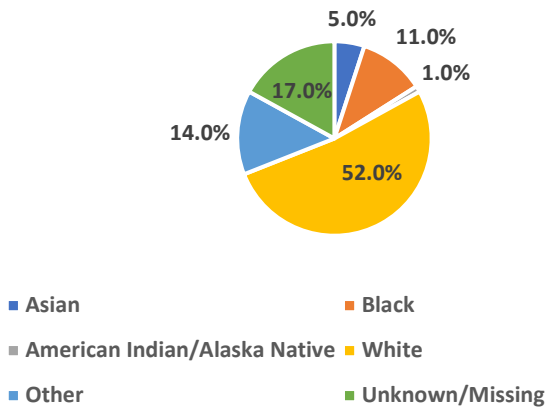
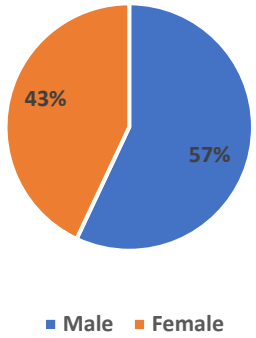


Figure 13: Campylobacteriosis by Sex, 2022



E. Coli

https://www.cdc.gov/ecoli/

Epidemiology

Overview:

E. coli is an intestinal disease caused by the bacteria *Escherichia Coli*. Strains of E. coli can produce a toxin that causes serious illness.

Symptoms:

Common symptoms include bloody diarrhea and can create a condition called hemolytic uremic syndrome. This syndrome can cause kidney failure.

Transmission:

The disease is spread through the fecal-oral route by the consumption of contaminated food, raw milk, untreated water, and other contact with feces of an infected person.

Treatment:

Treatment is supportive care. Antibiotics should not be used to treat infection.

Prevention:

Prevention methods include proper hand hygiene after contact with animals and before handling food. Ensure food is cooked to the proper temperature.

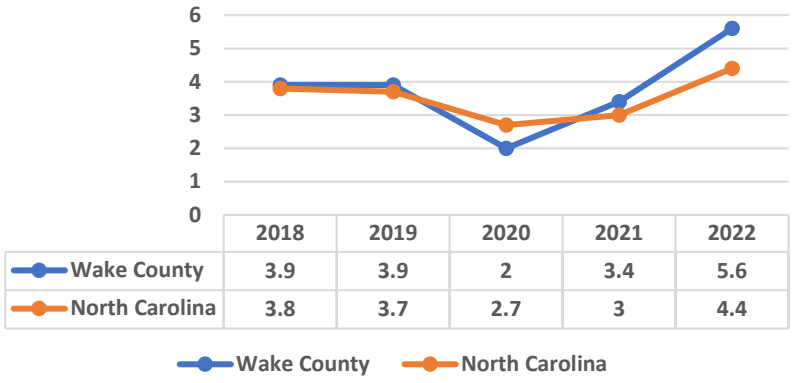
Local Facts and Figures:

E. Coli incidence rates in Wake County has continued to increase drastically since 2020.

In 2022:

- 64 cases were reported.
- 56% of cases were reported among females.
- Majority of cases (52%) were reported among Whites.

Figure 14: E. Coli Incidence Rates, 2018-2022



Note: 2022 rates were calculated using the population data from 2021

Figure 15: E.Coli by Age Group, 2022

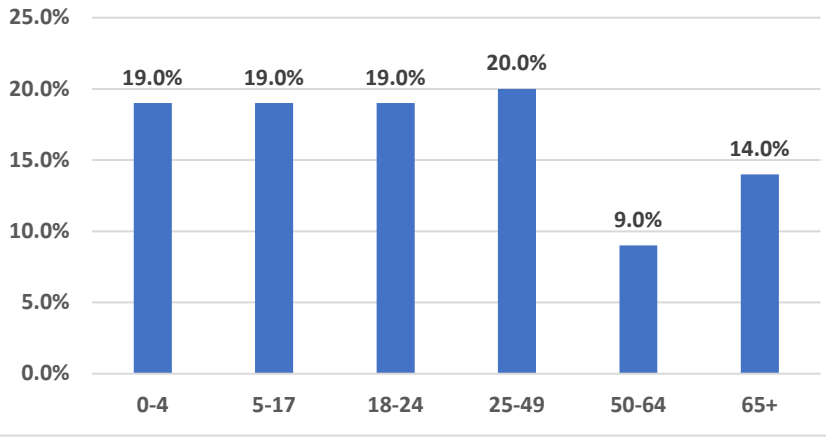


Figure 16: E.Coli by Race, 2022

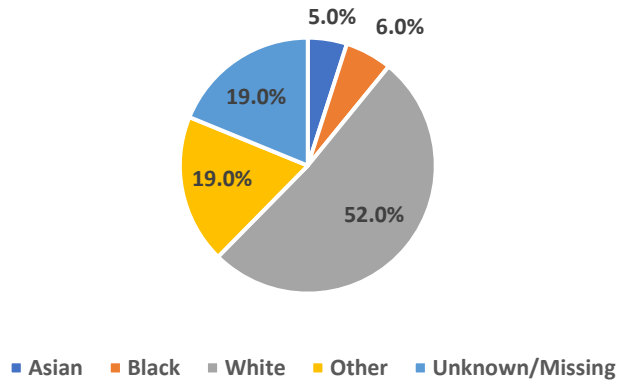
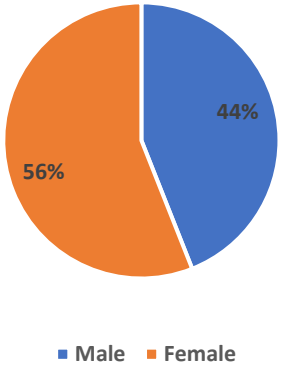


Figure 17: E.Coli by Sex, 2022



Shigellosis

https://www.cdc.gov/shigella/

Epidemiology

Overview:

Shigellosis is an infectious disease caused by a group of bacteria called *Shigella*. There are four different species of *Shigella* which include *Shigella sonnei*, *Shigella flexneri*, *Shigella boydii* and *Shigella dysenteriae*.

Symptoms:

Symptoms commonly include diarrhea, fever, and stomach cramps. Some individuals may be asymptomatic.

Transmission:

The disease is spread person to person via the fecal-oral route. Shigella is very contagious and only a small number of bacteria are needed to make someone ill.

Treatment:

Treatment is supportive care. Antibiotics are not recommended unless the infection is severe. Anti-diarrheal medications are also not recommended.

Prevention:

Frequent and proper handwashing with soap can help stop the spread of disease.

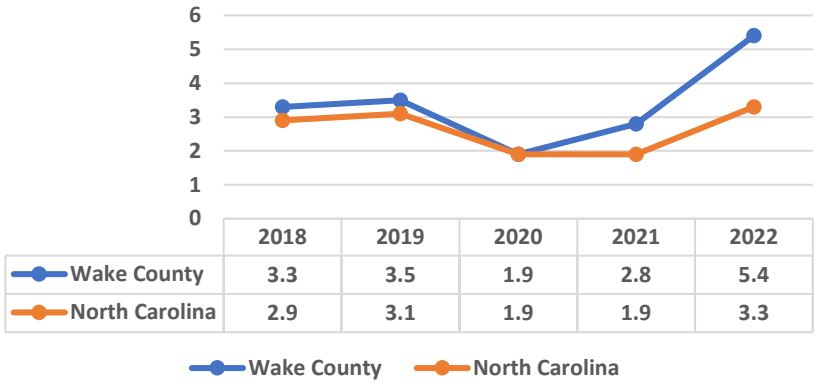
Local Facts and Figures:

Shigellosis incidence rates in Wake County has continued to increase since 2020.

In 2022:

- 62 cases were reported.
- Majority (45%) of cases were reported among the ages of 25-49 years.
- Approximately one third of cases (37%) were reported among Whites.

Figure 18: Shigellosis Incidence Rates, 2018-2022



	2018	2019	2020	2021	2022
Wake County	3.3	3.5	1.9	2.8	5.4
North Carolina	2.9	3.1	1.9	1.9	3.3

Note: 2022 rates were calculated using the population data from 2021

Figure 19: Shigellosis by Age Group, 2022

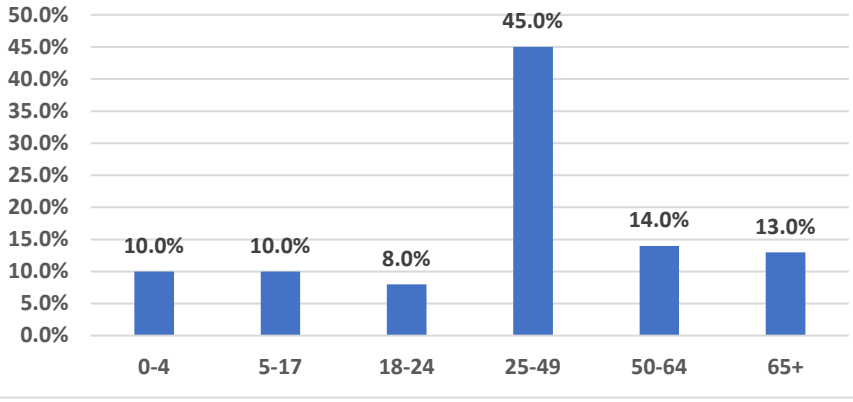


Figure 20: Shigellosis by Race, 2022

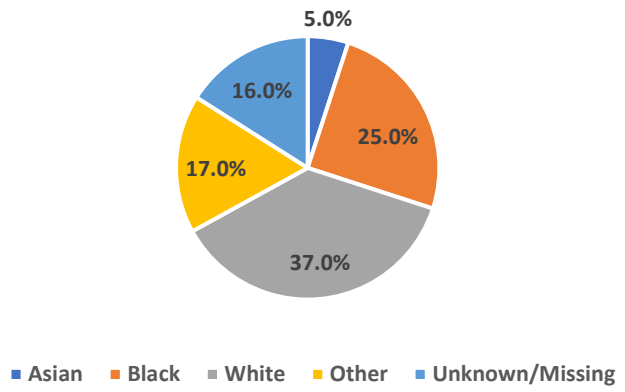
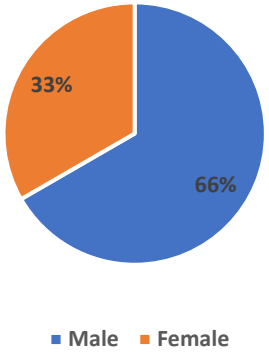


Figure 21: Shigellosis by Sex, 2022



6.0 VECTOR-BORNE DISEASES

Vector-borne diseases are caused by microbes that are spread to people by arthropods like ticks and mosquitoes that feed on human blood. The vector-borne diseases that occur most often in Wake County are transmitted by ticks, but there are instances of diseases transmitted by mosquitoes as well.

Table 5 shows confirmed, suspect and probable cases of tickborne (ehrlichiosis, Lyme disease, and Spotted fever) and mosquito-borne (chikungunya, dengue, malaria, West Nile Virus, and Zika virus) disease over the last 5 years. For tickborne diseases, many more cases are suspected and investigated than can be confirmed. This is due to the difficulty in getting clinical and/or laboratory information needed to meet the confirmed case definition.

Preventive Measures:

Personal Protection

- Use insect repellents and bed nets.
- Wear protective clothing.
- Check yourself, your children, and pets for ticks every day after being outside.

Vector Control

- Eliminate breeding sites by preventing stagnant water.
- Use insecticides to kill mosquitoes or other vectors around your living spaces.
- Keep surroundings clean.

Vaccination

- Vaccines for vector borne diseases such as malaria are available for travelers, military etc.

Stay informed

- Stay updated on the current situation and specific preventive measures recommended by local health authorities in your region.
- Follow destination-specific guidelines for travel.

Table 5: Vector-borne Diseases in Wake County, 5-Year Average Trend, 2018-2022

		2018		2019		2020		2021		2022	
		Confirmed	Confirmed/ Probable /Suspect	Confirmed	Confirmed/Probable /Suspect	Confirmed	Confirmed/Probable /Suspect	Confirmed	Confirmed/Probable /Suspect	Confirmed	Confirmed/Probable /Suspect
Tickborne	Ehrlichiosis, HGE	0	0	1	2	1	2	0	1	0	0
	Ehrlichiosis, HME	0	11	1	15	0	24	2	30	1	9
	Spotted Fever	1	48	2	63	0	28	0	35	3	18
	Lyme Disease	1	29	7	37	0	20	4	47	19	33
	Chikungunya	0	2	2	3	1	2	0	1	0	0
Mosquito-borne	Dengue	2	3	5	6	0	0	0	2	0	0
	Malaria	6	6	12	12	1	1	6	6	10	10
	West Nile Virus	0	1	0	0	0	0	0	1	0	0
	Zika Virus	0	2	0	1	0	0	0	0	0	0

7.0 SEXUALLY TRANSMITTED DISEASES (STDS)

A sexually transmitted infection (STI) is a virus, bacteria, fungus, or parasite people can get through sexual contact.[3] Many STIs have no symptoms, so people can have an infection but be unaware of it.[3] A sexually transmitted disease (STD) develops because of an STI and the term implies that the infection has led to some symptom of disease.[3] This section contains syphilis, gonorrhea, and chlamydia data from NCEDSS and HIV data from the NCDHHS Division of Public Health HIV/STD/Hepatitis Surveillance Unit.[4] Figures 23-26 show cases and rates for the four most frequently reported STDs in Wake County: newly diagnosed HIV cases (including those classifiable as AIDS at the time of diagnosis), early syphilis, gonorrhea, and chlamydia. Figure 23 shows that early syphilis cases and rates, which were already high in Wake County in previous years, continued to increase; from 2021 to 2022 confirmed and probable early syphilis cases increased by 12.1%. Figure 24 shows that new HIV diagnoses and rates slightly decreased from 2021 to 2022. Additionally, both gonorrhea and chlamydia and rates increased from 2021-2022 as well (Figures 25 and 26). STD cases during 2020 and 2021 may be undetected therefore under reported, because WCHHS testing and diagnostic services were reduced in those years due to the COVID-19 pandemic. Methods of preventing STIs include using condoms, limiting the number of sexual partners, and immunization against STIs that have vaccines

available, including human papillomavirus (HPV) and hepatitis B. More information regarding HIV/STD prevention, testing, and treatment can be found on the Wake County HIV, Hepatitis C, and STD Information website.

Congenital syphilis cases occur when pregnant people pass the infection on to their infants during pregnancy. Undetected congenital syphilis can result in poor pregnancy outcomes such as miscarriage, stillbirth, preterm delivery, and perinatal death.[5] Additionally, illnesses associated with congenital syphilis can manifest in the newborn or later in childhood including hydrops fetalis, hepatosplenomegaly, blindness, deafness, and deformities of the bones and teeth.[5] Infected infants may be asymptomatic at birth but, if left untreated, manifest complications later in life. syphilis infection among biological women of reproductive age is on the rise in North Carolina.[5] Between 2012 and 2021, there was a 538% increase in reported syphilis cases among women and congenital syphilis infections increased by 41 times in North Carolina from 2012 to 2021.[5] Between 2021 (42 cases) to 2022 (55 cases), there was a 31% increase in congenital syphilis cases in North Carolina.[6]

Congenital syphilis is preventable through early detection and appropriate treatment of maternal infection during pregnancy. North Carolina public health law requires healthcare providers screen all pregnant women for syphilis during the first prenatal visit, between 28-30 weeks gestation, and again at delivery.[5] Pregnant people not being able to access appropriate prenatal care or providers' failure to adhere to this law results in missed opportunities to identify, treat, and prevent congenital syphilis.

Similar to North Carolina, the number of congenital syphilis cases at the national level followed the same increasing pattern as the rate of primary and secondary syphilis cases reported in biological women between ages 15 and 44.

Figure 22: Reported Cases of Congenital Syphilis (CS) by Birth Year and Rates of Reported Cases of Primary and Secondary Syphilis (P& S) Among Women Aged 15-44 Years, United States, 2012-2021

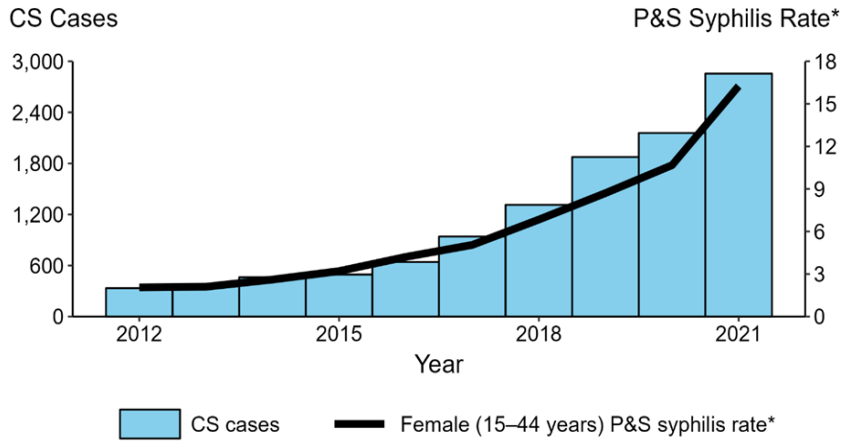
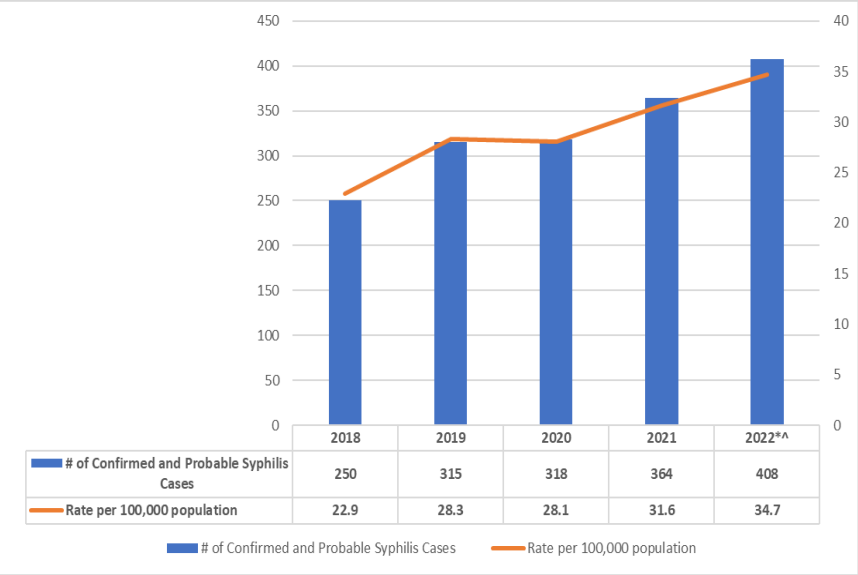


Image source: https://www.cdc.gov/std/statistics/2021/overview.htm#Syphilis

In this report, the county-level data for syphilis include both confirmed and probable cases due to a change in the case definition for a confirmed syphilis case that occurred in the middle of 2022. This change caused many cases in 2022 that would have previously been confirmed to be categorized as probable cases. If only confirmed cases were included, there would not be any new confirmed cases for Wake County after late August 2022. In order to compare syphilis data from 2022 to past years, all five years must include both confirmed and probable cases.

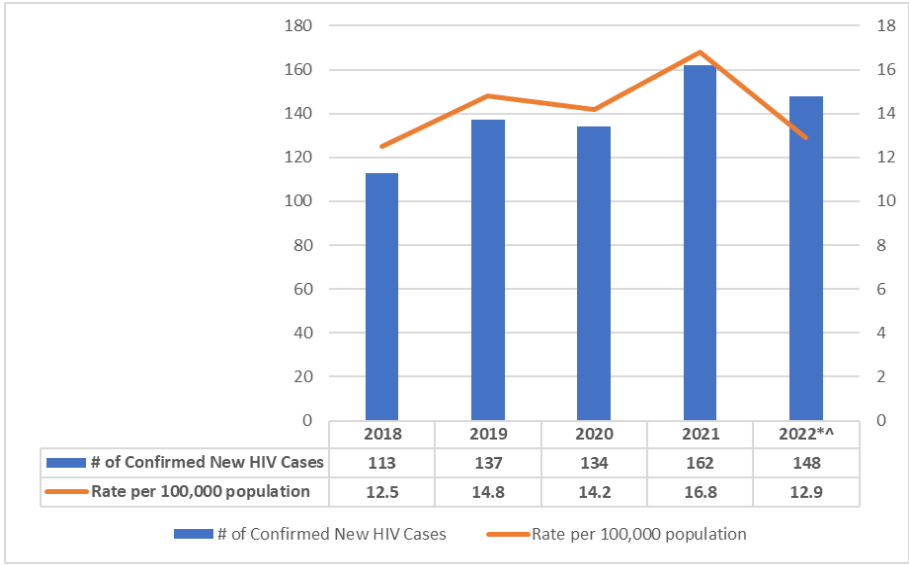
Figure 23: Early Syphilis Cases and Rates, Wake County, 2018-2022



*2022 rate calculated using 2021 population data

^2022 data are provisional as of 6/21/2023

Figure 24: New** HIV Cases and Rates, Wake County, 2018-2022

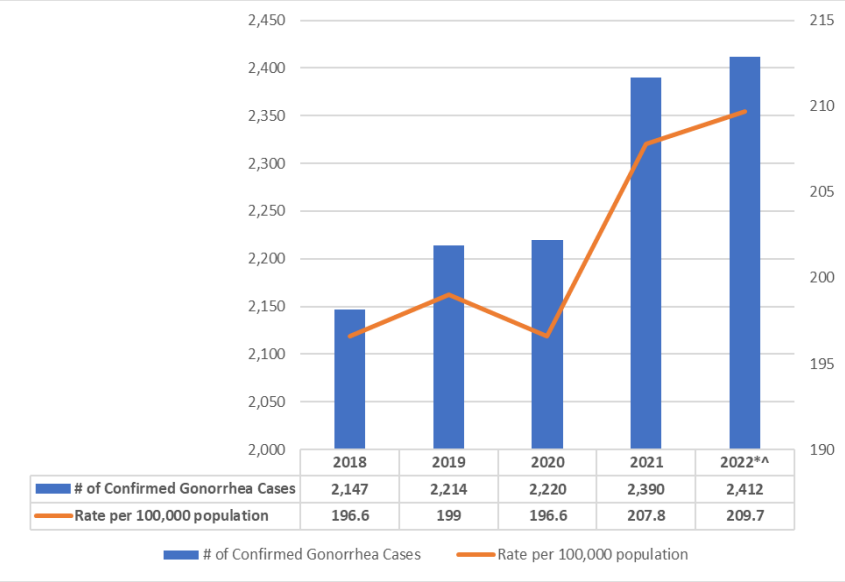


*2022 rate was calculated using 2021 population data

** New HIV cases refers to cases that were newly diagnosed with HIV (or AIDS if clinically applicable at time of diagnosis) within that calendar year

^2022 data are provisional as of 6/21/2023

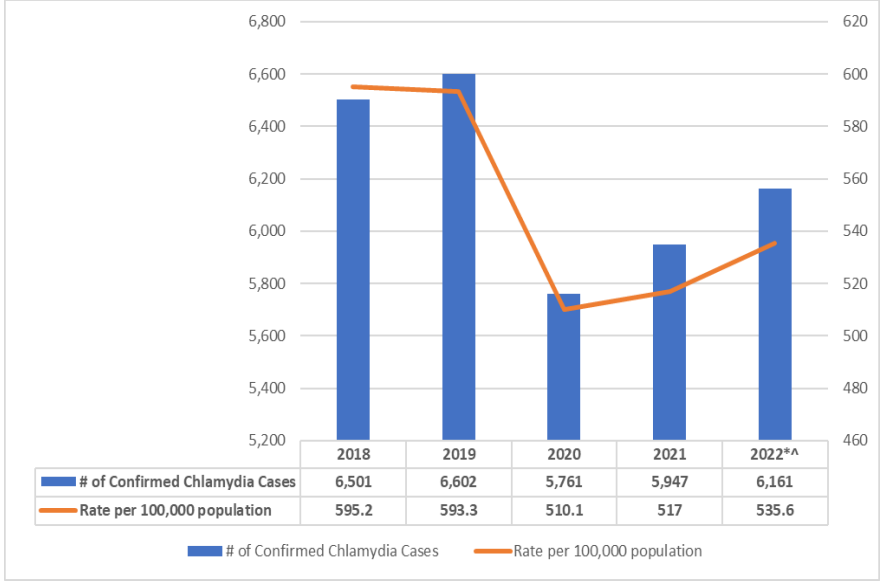
Figure 25: Gonorrhea Cases and Rates, Wake County, 2018-2022



*2022 rate was calculated using 2021 population data

^2022 data are provisional as of 6/21/2023

Figure 26: Chlamydia Cases and Rates, Wake County, 2018-2022



*2022 rate was calculated using 2021 population data

^2022 data are provisional as of 6/21/2023

GEOGRAPHICAL ANALYSIS OF STDS, WAKE COUNTY

Figures 27-30 demonstrate the patient residential zip code breakdown of STD cases in Wake County.

Figures 27 and 28 compare confirmed and probable early syphilis cases in 2021 vs. 2022. The increase in overall cases in

2022 can be seen in some of the southern zip codes and out east in zip code 27597. In both years, 27610 is the zip code with the highest early syphilis case numbers. Zip code 27610 also had the highest number of confirmed cases of gonorrhea and chlamydia over the past 5 years (2018-2022) (Figures 29 and 30).

Figures 27 and 28: Early Syphilis Confirmed and Probable Cases in Wake County 2021 vs. 2022

Figure 27: Early Syphilis, Confirmed and Probable Cases by Patient Residence Zip Code, 2021

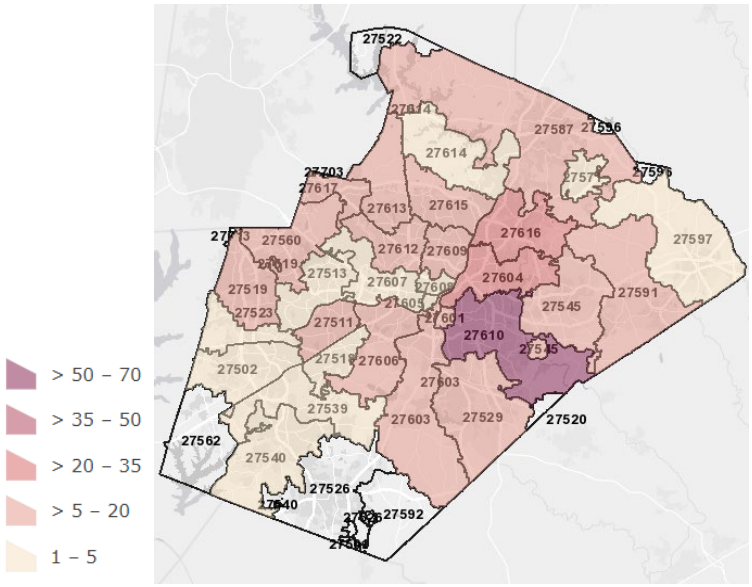
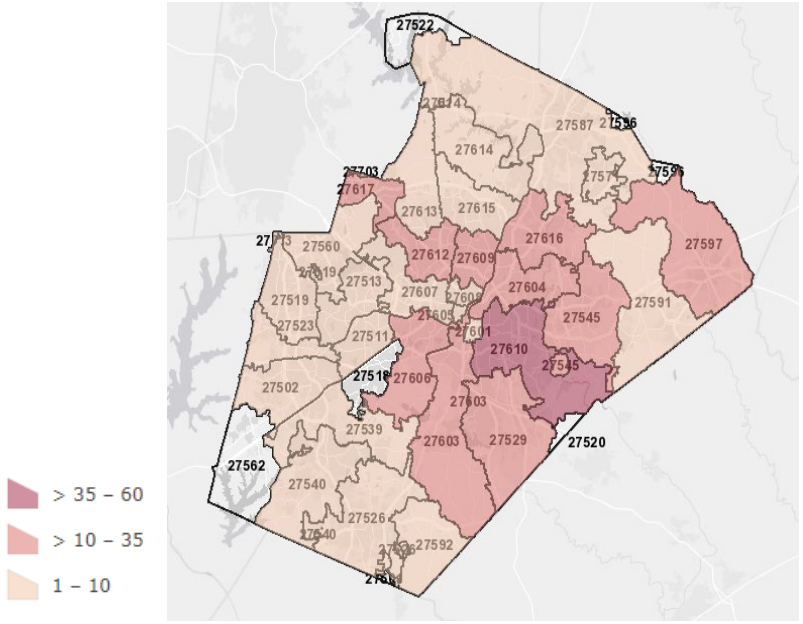
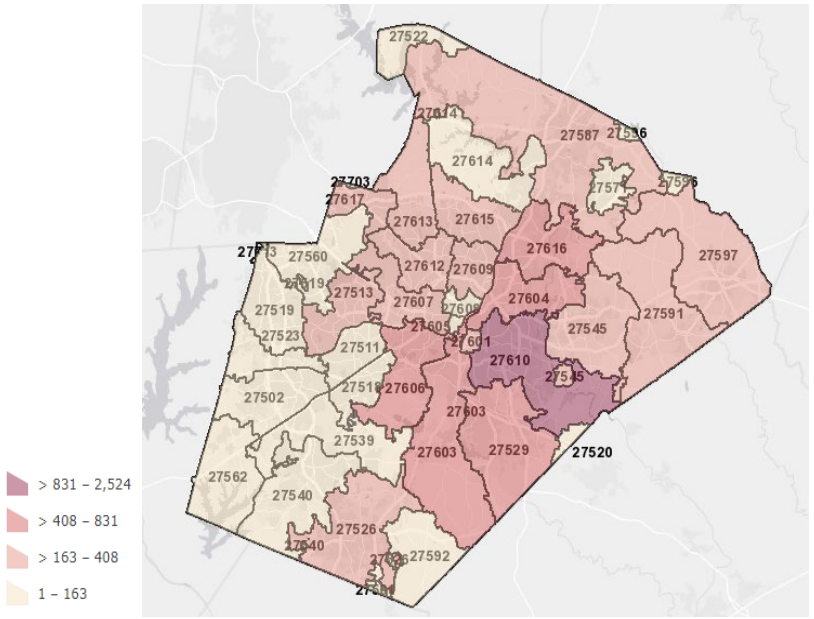


Figure 28: Early Syphilis, Confirmed and Probable Cases by Patient Residence Zip Code, 2022^



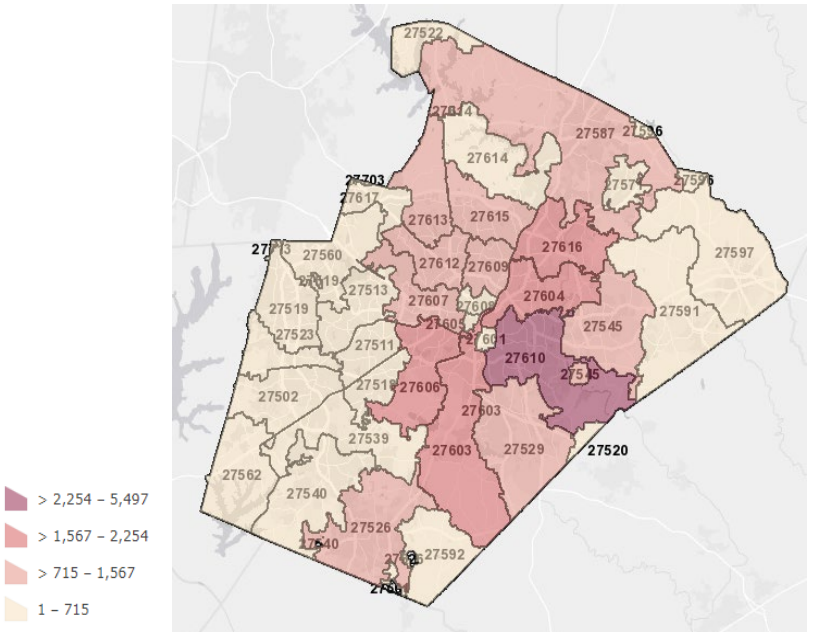
^2022 data are provisional as of 6/21/2023

Figure 29: Confirmed Gonorrhea Cases in Wake County by Patient Residence Zip Code, 2018-2022^



^2022 data are provisional as of 6/21/2023

Figure 30: Confirmed Chlamydia Cases in Wake County by Patient Residence Zip Code, 2018-2022^



^2022 data are provisional as of 6/21/2023

8.0 TUBERCULOSIS (TB)

https://www.cdc.gov/tb/topic/basics/default.htm

Epidemiology

Overview:

Tuberculosis (TB) is caused by the bacterium called *Mycobacterium tuberculosis*. The bacteria typically attack the lungs but can attack any part of the body such as the kidney, spine, and brain.

Not all TB bacteria infections lead to sickness. Consequently, two TB-related conditions exist: latent TB infection, where the bacteria resides in the body without causing illness, and TB disease, wherein active bacteria will make the person sick.

Symptoms:

Bad cough that lasts 3 weeks or longer, chest pain, coughing up blood or sputum, weakness or fatigue, weight loss, no appetite, chills, fever, sweating at night.

Transmission:

TB bacteria can spread through the air from one person to another.

Treatment:

Treatment can take 4,6, or 9 months depending on the regimen which includes a 4-month rifapentine-moxifloxacin regimen and a 6- or 9-month RIPE (rifampin, isoniazid, pyrazinamide, and ethambutol) TB regimen. Directly Observed Therapy (DOT) helps patients' complete treatment.

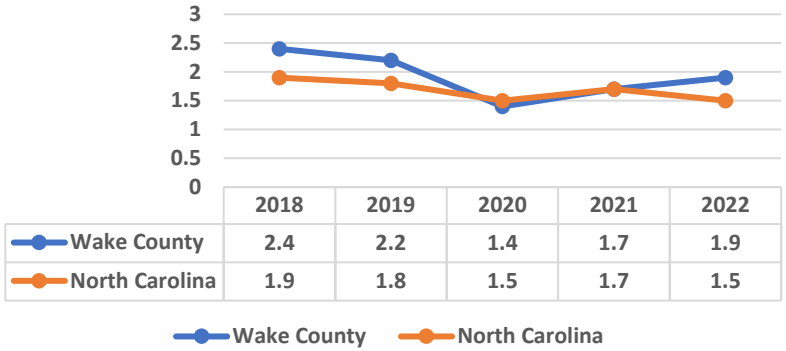
Prevention:

Close contact with infectious TB patients should be avoided.

Local Facts and Figures:

- TB incidence rates in Wake County has continued to increase since 2020.
- 22 active cases were reported in 2022.

Figure 31: Tuberculosis Incidence Rates, 2018-2022



	2018	2019	2020	2021	2022
Wake County	2.4	2.2	1.4	1.7	1.9
North Carolina	1.9	1.8	1.5	1.7	1.5

Wake County North Carolina

Note: 2022 rates were calculated using the population data from 2021

9.0 DISEASE SPOTLIGHT: MPOX (FORMERLY KNOWN AS MONKEYPOX)

Mpox	2022
Number of Cases	114
Rate (per 100,000 population)	9.9

Local Facts:

In Wake County in 2022:

- The Mpox rate among males (19 cases per 100,000 population) was higher than the rate among females (1.2 cases per 100,000 population).
- Over 90% of confirmed and probable cases were of individuals younger than 50 years old.
- More than half (68%) of confirmed and probable cases were among those who identify as Black or African American.
- As of February 2023, Wake County Health and Human Services administered 2,748 Mpox (Jynneos) vaccines to at-risk individuals.[9]

Epidemiology:

Overview:
Mpox is a rare disease caused by infection with the mpox virus. Mpox virus is part of the same family of viruses as variola virus, the virus that causes smallpox. Mpox was discovered in 1958 when two outbreaks of a pox-like disease occurred in colonies of monkeys kept for research. Despite being named "monkeypox", the source of the disease remains unknown. However, African rodents and non-human primates (like monkeys) might harbor the virus and infect people. The first human case of Mpox was recorded in 1970. There are two types of Mpox virus: Clade I and Clade II. Infections with Clade II are rarely fatal; Over 99% of people who get this form of disease survive. The Clade I type of Mpox has a fatality rate around 10%.[7]

Transmission:
Close or Intimate Contact:

Mpox can spread to anyone through close, personal, often skin-to-skin contact, including:

- Direct contact with Mpox rash and scabs from a person with Mpox, as well as contact with their saliva, upper respiratory secretions (mucus), and areas around the anus, rectum, or vagina
- This direct contact can happen during intimate contact, including:
    - Oral, anal, or vaginal sex, or touching the genitals (penis, testicles, labia, and vagina) or anus of a person with Mpox
    - Hugging, massage, and kissing
    - Prolonged face-to-face contact

The risk is considered low for getting Mpox by touching objects, fabrics, and surfaces that have been used by someone with Mpox and not disinfected, such as clothing, bedding,

towels, fetish gear, or sex toys. No studies have found a clear link between Mpox and water in pools, hot tubs, or splash pads.

Mpox virus can be spread to the fetus during pregnancy or to the newborn by close contact during and after birth.

Anyone in close personal contact with a person or animal with Mpox can become infected and should take steps to protect themselves. If you have been informed that you are a close contact of a person with Mpox, watch for symptoms of Mpox for 21 days from the date of your last exposure, get vaccinated, and if you have a new or unexplained rash or other Mpox symptoms, visit your healthcare provider or clinic.[8]

Incubation Period: 3-17 days.

Symptoms: People with Mpox often get a rash that may be located on hands, feet, chest, face, or mouth or near the genitals, including penis, testicles, labia, and vagina, and anus. The rash will go through several stages, including scabs, before healing. The rash can initially look like pimples or blisters and may be painful or itchy. Sometimes, people have flu-like symptoms before the rash. Some people get a rash first, followed by other symptoms. Others only experience a rash.

Other symptoms of Mpox can include:

- Fever
- Chills
- Swollen lymph nodes
- Exhaustion
- Muscle aches and backache
- Headache
- Respiratory symptoms (i.e., sore throat, nasal congestion, or cough)

People with Mpox may experience all or only a few symptoms. Mpox symptoms usually start within 3 weeks of exposure to the virus. If someone has flu-like symptoms, they will usually develop a rash 1-4 days later. People with Mpox should visit their health care provider or clinic.

Treatment: Most people with Mpox recover fully within 2 to 4 weeks without the need for medical treatment. There are no treatments specifically for Mpox. But because the viruses that cause Mpox and Smallpox are similar, antiviral drugs developed to protect against smallpox may be used to treat Mpox effectively.

Prevention: These five steps can help protect against Mpox:

- Avoid close, skin-to-skin contact with people who have a rash that looks like Mpox.
- Avoid contact with objects and materials that a person with Mpox has used.
- Wash your hands often.
- Get Vaccinated if you are a close contact or at risk. (https://www.cdc.gov/poxvirus/mpox/vaccines/index.html)
- People in Central or West Africa should avoid contact with animals that can spread Mpox virus, usually rodents and primates.

Figures 32 – 35 show the demographic breakdown of Mpox cases in Wake County, 2022.

Figure 32:

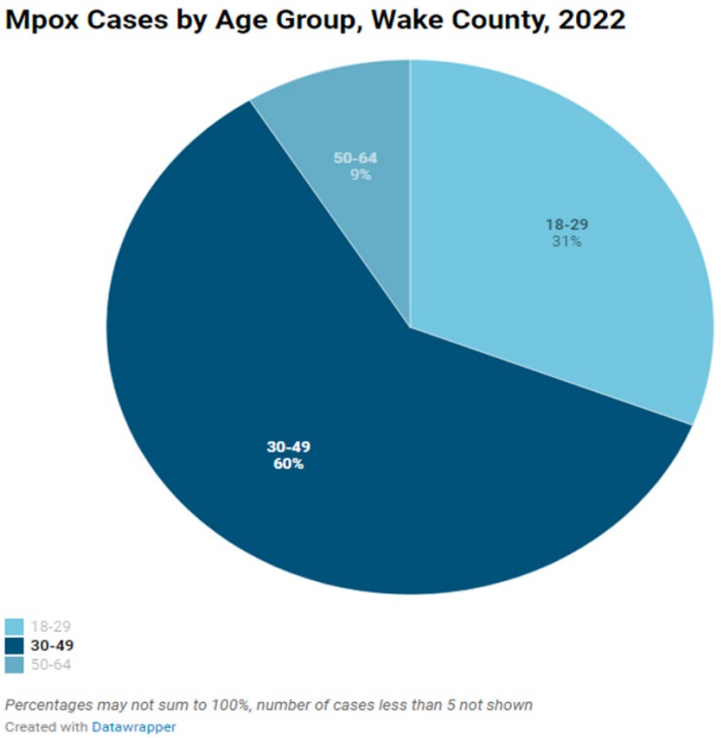


Figure 33:

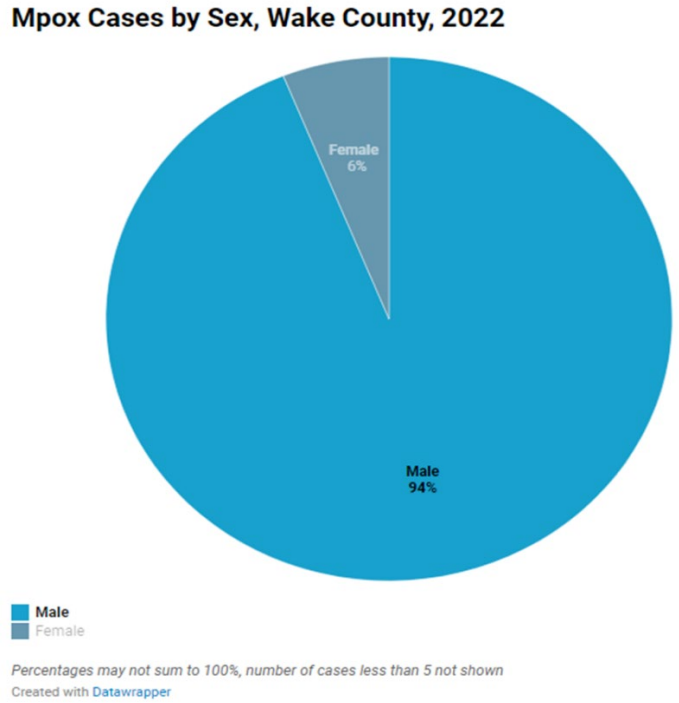


Figure 34:

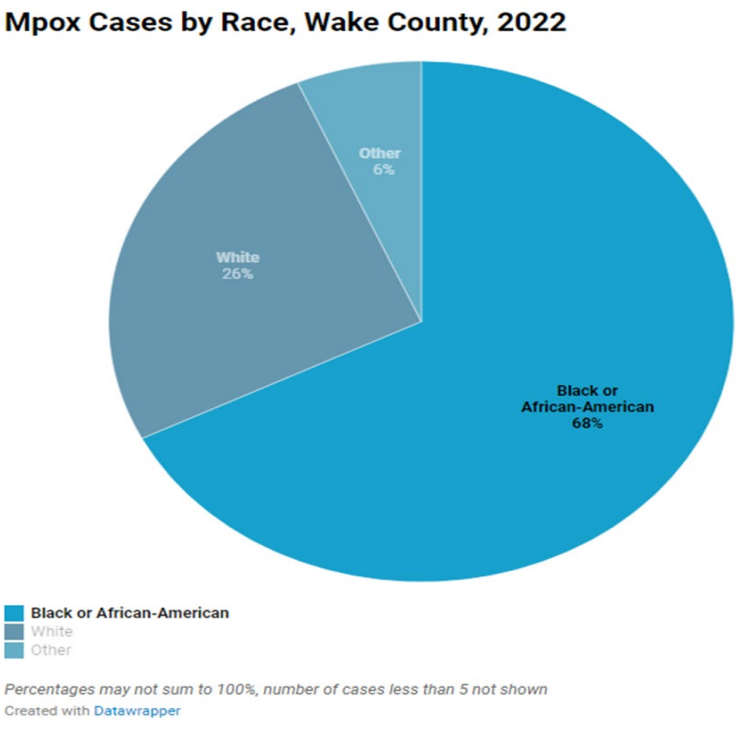
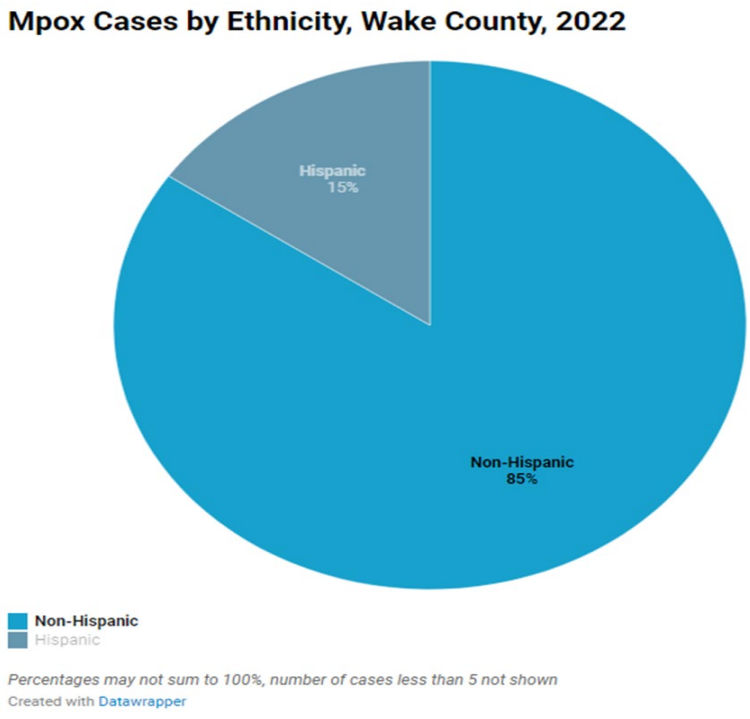


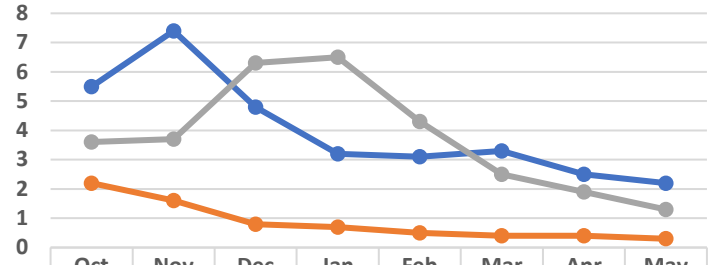
Figure 35:



10.0 SPECIAL FOCUS: THE TRIPLEDEMIC – COVID-19, RESPIRATORY SYNCYTIAL VIRUS (RSV), AND INFLUENZA (FLU)

Background: During the onset of the flu season in 2022, specifically in October and November, there was a higher percentage of emergency department (ED) visits for influenza-like illness (ILI) compared to Respiratory Syncytial Virus (RSV) and COVID-19 (Figure 36). However, the number of ILI visits started to decline thereafter. Conversely, COVID-19 cases reached their peak in December and January. Similarly, RSV cases were also higher in October and November but began to decrease afterwards. The simultaneous surges of these viruses at the beginning of the flu season caused significant stress on health care systems, as they approached maximum capacities.

Figure 36: Percent of Emergency Department (ED) Visits, ILI, RSV, COVID-19, 2022-2023



	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
ILI %	5.5	7.4	4.8	3.2	3.1	3.3	2.5	2.2
RSV %	2.2	1.6	0.8	0.7	0.5	0.4	0.4	0.3
COVID-19 %	3.6	3.7	6.3	6.5	4.3	2.5	1.9	1.3

*COVID-19 – COVID-19 is an illness caused by the SARS-CoV-2 virus, leading to severe respiratory symptoms.

*ILI – ILI is defined as fever (temperature over 100 F or greater) and cough and /or sore throat.

*RSV – RSV is a common respiratory virus that usually causes mild, cold like symptoms. It is the most common cause of bronchiolitis and pneumonia in children younger than 1 year of age.

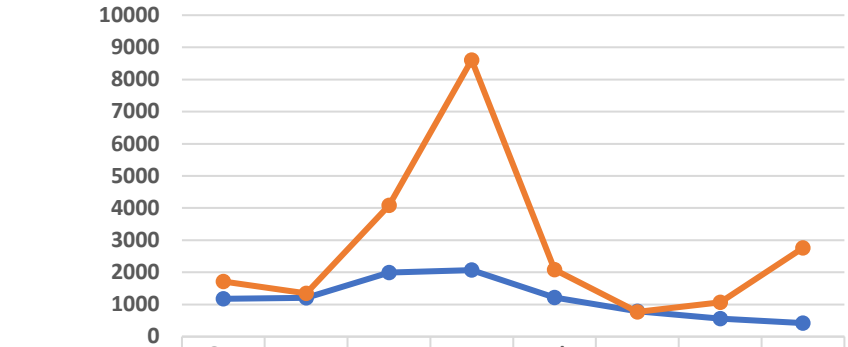
The concurrent presence of COVID-19, Influenza, and RSV presented a complex challenge for public health and health care systems in Wake County. This special focus aims to examine the epidemiological characteristics, trends, and impact of these three respiratory diseases in the county.

Methodology: ED visits data for these three respiratory diseases were gathered using North Carolina Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT).

The data is presented in monthly intervals, covering the period from October 1, 2022, to May 31, 2023. It is categorized by age group, race, and sex.

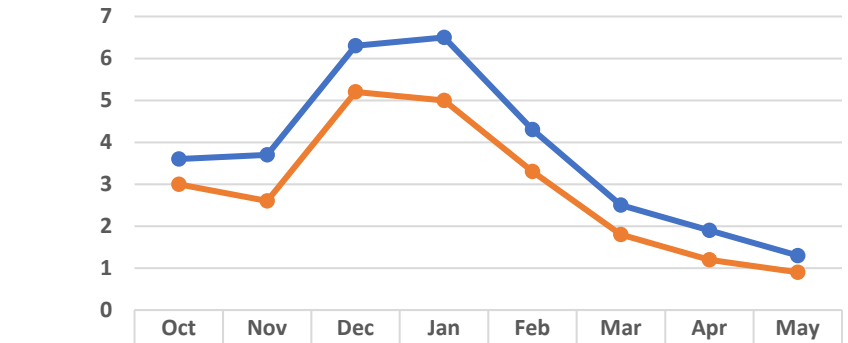
COVID-19: In the 2022-2023 year, there was a notable decrease in the number of COVID-19 cases compared to the previous year, 2021-2022 (Figure 37). However, the percentage of ED visits remained higher compared to the state (Figure 38). The most affected age groups were 0-4 years and 65+ years, suggesting a higher vulnerability to getting sick from COVID-19 among young children and older adults. Among the reported cases, a higher proportion were females (58%) compared to males (42%). In terms of race, both white (44%) and black (40%) populations were predominantly affected by the virus.

Figure 37 : Number of ED Visits, COVID-19, 2021-2023



	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
2022-2023	1175	1208	1994	2069	1217	793	559	421
2021-2022	1712	1343	4085	8607	2085	770	1071	2760

Figure 38 : Percent of ED Visits, COVID-19, 2022-2023



	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Wake	3.6	3.7	6.3	6.5	4.3	2.5	1.9	1.3
NC	3	2.6	5.2	5	3.3	1.8	1.2	0.9

According to the North Carolina Respiratory Virus Summary Dashboard, there were 236,104 COVID-19 cases and 382 COVID-19 deaths reported in Wake County, North Carolina in 2022. In 2022, the highest number of deaths was reported in January 2022, with 94 deaths. The lowest number of deaths was reported in December 2022, with 16 deaths.

While the public health emergency for COVID-19 officially ended on May 11, 2023, it remains crucial to maintain ongoing monitoring and tracking of the virus and its impact on health care systems and communities. Additionally, it is essential to continue following preventive measures as a key strategy in mitigating the spread of the virus. Vaccines and updated boosters are now available for those who are 6 months and older.

Throughout the COVID-19 pandemic, Wake County Public Health has relied heavily on data to guide its pandemic response. Wake County public health continues to use a combination of metrics such as wastewater surveillance, hospitalizations, vaccinations, and the prevalence of variants to inform decision making, guidance, and the provision of services.

Figure 39: Percent of COVID-19 ED visits by Age group, 2022-2023

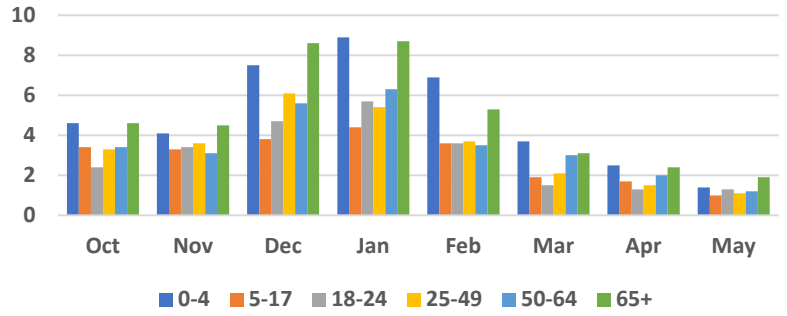


Figure 40 : ED visits for COVID-19 by Sex, 2022-2023

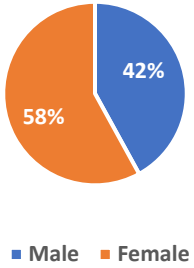
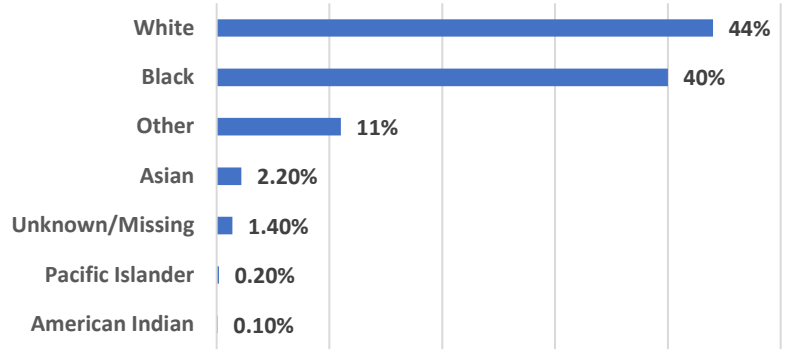


Figure 41 : ED visits for COVID-19 by Race, 2022-2023



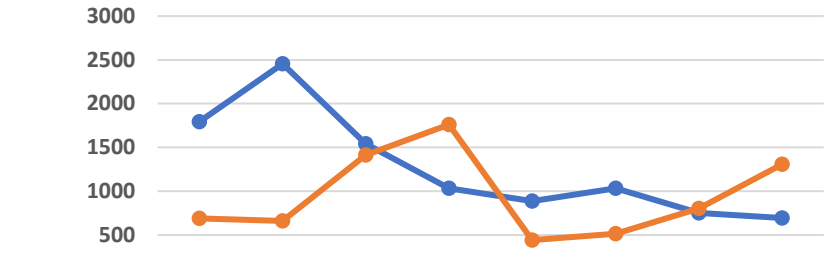
In 2022, Wake County Public Health conducted investigations into a total of 160 COVID-19 outbreaks. These outbreaks affected a total of 2083 individuals. An overwhelmingly majority of these outbreaks, 93% occurred within long-term healthcare facilities (Other outbreaks were conducted in shelter homes, childcare facility, food processing and packaging facility, independent living facility etc.). This data highlights the significant impact of outbreaks in these settings and emphasizes the need for enhanced measures to prevent and manage outbreaks in long-term healthcare facilities.

According to the North Carolina Immunization Registry (NCIR), Wake County Health and Human Services (WCHHS) administered a total of 9,936 doses of COVID-19 vaccines between October 1, 2022 and May 31, 2023.[9]

Influenza-Like Illness (ILI): Flu season typically occurs during the fall and winter months. It can start as early as October and continue through May, with the highest levels of flu activity often observed between December and February.

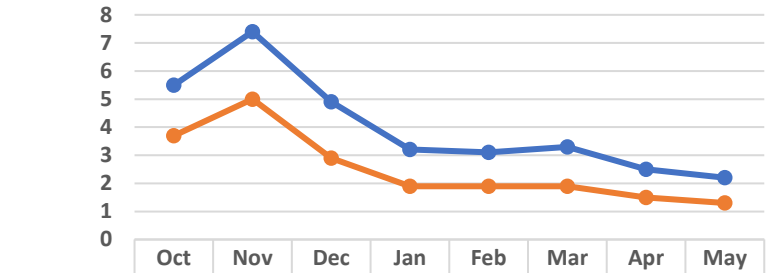
In Wake County and North Carolina, the flu season for 2022-2023 year began earlier than in previous years. In November, the number of flu cases peaked, surpassing the count from the previous year by a significant margin and started to decline. Although the number of cases remained lower compared to previous year during this period (2022-2023), the overall count for the entire flu season was still higher than that of the previous year.

Figure 42 : Number of ED Visits, ILI, 2021-2023



	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
2022-23	1792	2455	1540	1032	885	1031	750	693
2021-22	689	661	1411	1760	441	513	802	1308

Figure 43: Percent of ED Visits, ILI, 2022-2023



	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Wake	5.5	7.4	4.9	3.2	3.1	3.3	2.5	2.2
NC	3.7	5	2.9	1.9	1.9	1.9	1.5	1.3

The percentage of ILI cases consistently remained higher compared to the state. During the recorded period, age groups 0-4 years and 5-17 years were mostly affected. Among the ILI cases, 45% were reported among males, while 55% were among females. The black population experienced a higher impact, with 42% of the cases occurring within this demographic group.

Figure 44 : Percent of ILI ED visits by Age group, 2022-2023

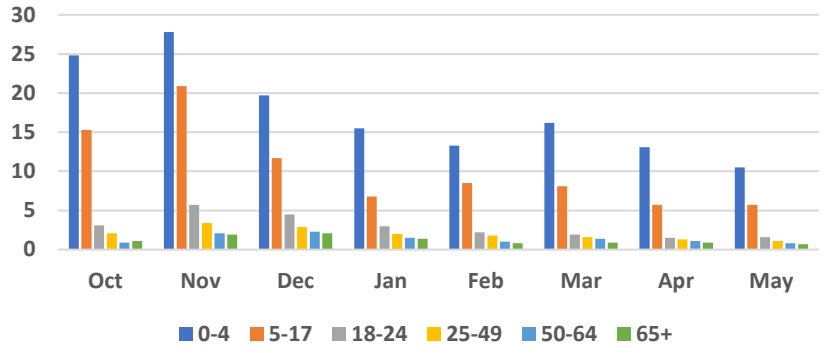


Figure 45 : ED visits for ILI by Sex, 2022-2023

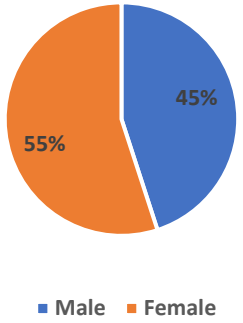
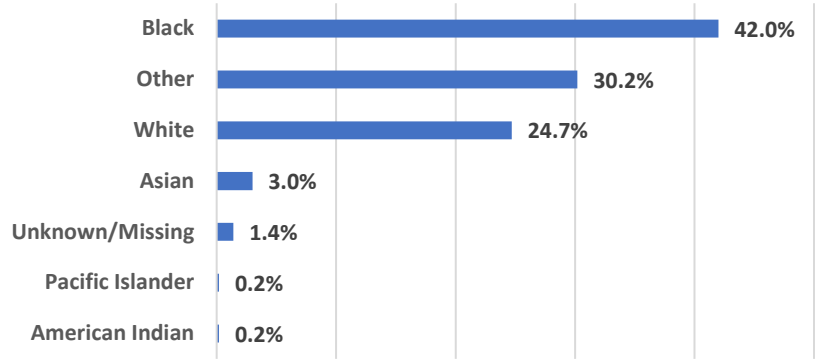


Figure 46 : ED visits for ILI by Race, 2022-2023



From October 1, 2022, to May 31, 2023, a total of ten flu deaths were reported in Wake County. Reported deaths were among adults aged 18 years and older. The affected population consisted entirely of individuals from the white demographic group, accounting for 100% of the reported deaths.

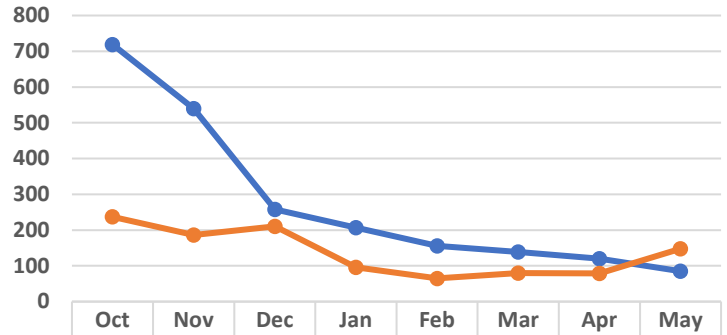
WCHHS administered a total of 5,520 flu vaccine doses from September 1, 2022, to May 31, 2023. 5,146 doses were administered to the community and 374 doses were administered to Wake County employees. This data was retrieved from NCIR.

Respiratory Syncytial Virus (RSV): During the 2022-2023 season, there was a significant increase in the number of cases of RSV at the beginning of the season compared to the previous year. However, as the season progressed, there was a decline in the number of cases, although the overall count remained higher compared to the 2021-2022 season. The youngest age group 0-4 years was the most affected by this virus.

Among the reported RSV cases, 55% were male and 45% were female, indicating a relatively equal distribution between the sexes. In terms of racial distribution, both the white and black populations accounted for 35% of the RSV cases.

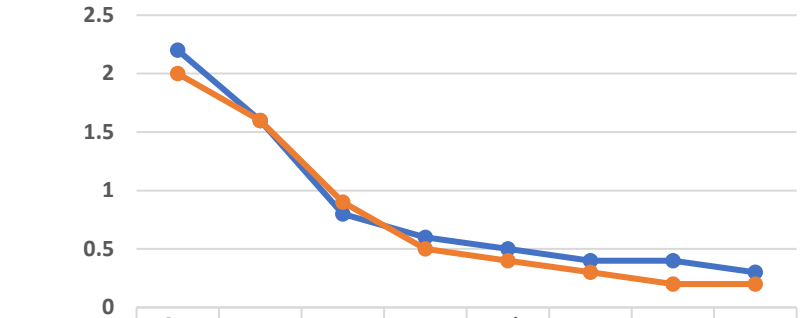
The higher incidence of RSV among young children and the comparable distribution among sexes and racial groups aligns with the patterns observed in existing literature regarding the impact of RSV on different populations.

Figure 47: Number of ED Visits, RSV, 2021-2023



	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
2022-2023	719	540	258	207	156	139	120	85
2021-2022	237	186	210	96	65	80	79	148

Figure 48: Percent of ED Visits, RSV, 2022-2023



	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Wake	2.2	1.6	0.8	0.6	0.5	0.4	0.4	0.3
NC	2	1.6	0.9	0.5	0.4	0.3	0.2	0.2

Figure 49 : Percent of RSV ED visits by Age group, 2022-2023

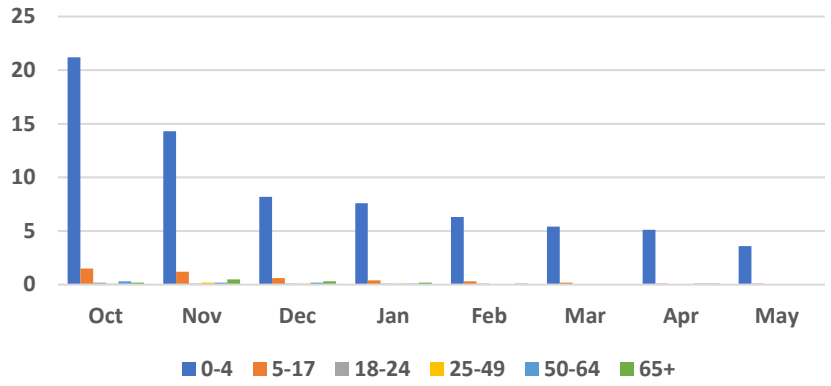


Figure 50 : ED visits for RSV by Sex, 2022-2023

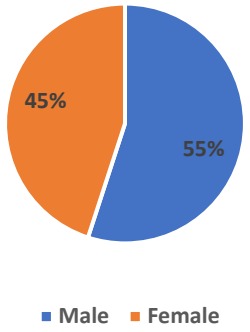
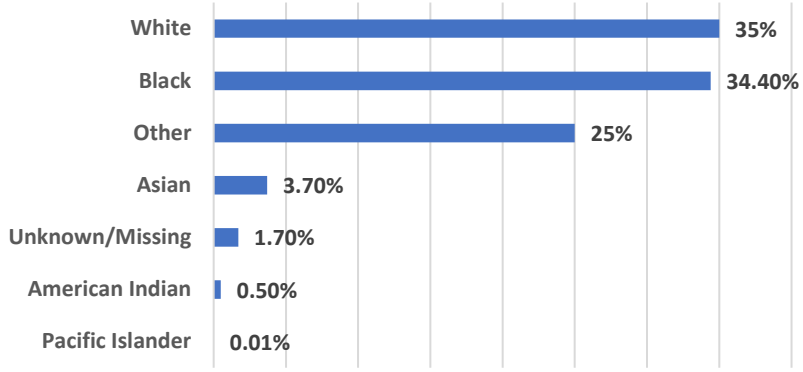


Figure 51: ED visits for RSV by Race, 2022-2023



Preventive Measures for ILI, COVID-19, and RSV:

1. Vaccination: Get vaccinated against COVID-19, as well as seasonal influenza (flu) and RSV if vaccines are available and recommended by healthcare professionals.
2. Hand hygiene: Wash hands frequently with soap and water for at least 20 seconds. If soap and water are not available, use hand sanitizer containing at least 60% alcohol.
3. Mask usage: Follow guidelines from health authorities regarding mask usage. Wear masks in indoor public spaces or when social distancing is not possible, especially if you are unvaccinated or in areas with high transmission rates.
4. Physical Distancing: Maintain physical distance from others, especially in crowded places or when interacting with individuals outside your household. Keep a distance of at least 6 feet whenever possible.
5. Respiratory Etiquette: Cover your mouth and nose with a tissue or your elbow when coughing or sneezing. Dispose of used tissues properly and immediately wash your hands.
6. Cleaning and Disinfection: Clean and disinfect frequently touched surfaces and objects regularly, especially in shared spaces and high-traffic areas.
7. Ventilation: Ensure proper ventilation in indoor spaces by opening windows or using air purifiers to improve air circulation and reduce the risk of respiratory virus transmission.
8. Stay Home when sick: If you are experiencing symptoms of COVID-19, RSV, or ILI, stay home, avoid close contact with others, and seek medical advice.
9. Follow Public Health Guidelines: Stay updated with guidelines and recommendations from local health authorities and comply with any restrictions or measures implemented to prevent the spread of respiratory viruses.

11.0 SUMMARY

In summary, respiratory viruses including COVID-19, Flu, and RSV continued to have an impact across Wake County. Wake County had 114 mpox cases between July-December 2022. In response to the mpox outbreak, Wake County Health and Human Services administered 2,748 mpox (Jynneos) vaccines to at risk individuals (as of February 2023).[9]

STDs were also prevalent in 2022 including syphilis, chlamydia, and gonorrhea while newly diagnosed HIV cases slightly decreased in 2022 compared to 2021. Across North Carolina and the U.S., there has been an increase in congenital syphilis cases, which follows the trend of increasing syphilis cases in biological women ages 15 to 44.

Additional reportable conditions and diseases that increased during 2022 included hepatitis B, salmonellosis, campylobacteriosis, *E. coli*, shigellosis, malaria (imported/travel-related cases), and tuberculosis.

Communicable diseases can have tremendous impacts on communities. It is essential to monitor and track diseases over time and analyze information as a part of public health surveillance. Over 75 communicable diseases are required by law to be reported to local health departments by a variety of sources including healthcare providers, school administrators, childcare center operators, food or drink establishments, and laboratories. This surveillance ensures appropriate measures can be placed and actions can be taken to protect the public's health. Staff at local health departments, including Wake County, work to contact individuals diagnosed with reportable communicable diseases and provide disease education and information regarding measures such as isolation. These staff members also interview individuals to find out information such as how they were exposed to the pathogen or any close contacts they have, and then give guidance based on the answers to those questions and the specific disease. Staff also works to ensure their jurisdiction meets all state and national requirements for reportable diseases.

12.0 DATA SOURCES

United States Census Bureau

The Census Bureau collects and provides information about the people and economy of the United States. The Census Bureau's website (http://www.census.gov/) includes data on demographic characteristics of the population, family structure, educational attainment, income level, and the proportion of persons who live at or below the federal poverty level. State and county-specific data are easily accessible, and valuable to understand a population. In this report, 2021 American Community Survey (ACS) (Census Bureau) 1-year estimate is reported for Wake County.

North Carolina Electronic Disease Surveillance System (NCEDSS)

This report uses communicable disease data from NCEDSS. NCEDSS is a component of the CDC initiative to move states to web-based health surveillance and reporting systems. NCEDSS is also part of the Public Health Information Network (PHIN). The electronic system replaced a patchwork of smaller disease-specific surveillance systems and paper-based reporting. NCEDSS is used by the NCDHHS, Division of Public Health, the state's 86 local and multi-county district health departments (LHDs), and eight HIV/STD Regional Offices. Laboratories also report electronically to NCEDSS.

North Carolina Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT)

This report uses emergency department (ED) data from NC DETECT. NC DETECT is North Carolina's statewide syndromic surveillance system. It was created by the North Carolina Division of Public Health (NC DPH) in 2004 in collaboration with the Carolina Center for Health Informatics (CCHI) in the UNC Department of Emergency Medicine to address the need for early event detection and timely public health surveillance in North Carolina using a variety of secondary data sources. Authorized users are currently able to view data from emergency departments, North Carolina Poison Control, and emergency medical services (EMS), as well as pilot data from select urgent care centers. NC DETECT is designed, developed, and maintained by CCHI staff with funding by the NC DPH. New functionality is added regularly based on end user feedback. This report includes 2021, 2022, and 2023 ED data.

13.0 REFERENCES

1. "Communicable Disease Surveillance and Reporting". epi.dph.ncdhhs.gov. *North Carolina Department of Health and Human Services*. September 22, 2020. Web. 6/21/2023. https://epi.dph.ncdhhs.gov/cd/report.html
2. "Introduction to Public Health Surveillance". cdc.gov. *Centers for Disease Control and Prevention*. 2014. Web. 6/21/2023. https://www.cdc.gov/training/publichealth101/surveillance.html
3. "Diseases and Related Conditions". cdc.gov. *Centers for Disease Control and Prevention*. July 7, 2023. Web. 7/21/2023. https://www.cdc.gov/std/general/default.htm
4. "Facts and Figures: North Carolina HIV/AIDS, STDs, and Viral Hepatitis B and C". epi.dph.ncdhhs.gov. *North Carolina Department of Health and Human Services.* March 15, 2023. Web. 6/21/2023. https://epi.dph.ncdhhs.gov/cd/stds/figures.html
5. "Increase in Female and Congenital Syphilis Infections". epi.dph.ncdhhs.gov. *North Carolina Department of Health and Human Services.* December 19, 2022. Web. 6/21/2023. https://epi.dph.ncdhhs.gov/cd/stds/docs/Rise_in_Female_and_Congenital_Syphilis_Infections_2022.pdf
6. "This week is Sexually Transmitted Infection Awareness Week – Syphilis Cases on the Rise in North Carolina, Especially in Women and Babies". ncdhhs.gov. *North Carolina Department of Health and Human Services.* April 12, 2023. Web. 6/21/2023. https://www.ncdhhs.gov/news/press-releases/2023/04/12/week-sexually-transmitted-infection-awareness-week-syphilis-cases-rise-north-carolina-especially
7. "About Mpox" .cdc.gov. *Centers for Disease Control and Prevention.* July 22, 2022. Web. 6/22/2023. https://www.cdc.gov/poxvirus/mpox/about/index.html
8. "Mpox Vaccination Basics". cdc.gov. *Centers for Disease Control and Prevention*. May 5, 2023. Web. 7/21/2023. https://www.cdc.gov/poxvirus/mpox/vaccines/index.html
9. Source: WCHHS Immunization Tracking Program, 6/27/2023

14.0 ACKNOWLEDGMENTS

For contributions to this report:

Ruth Lassiter, Communicable Disease Program Manager, WCHHS

Nancy Philips, Communicable Disease Nursing Supervisor, WCHHS

Michelle Ricci, Public Health Educator, WCHHS

Michelle Winings, Interim Director of Nursing, Immunization Compliance Coordinator, WCHHS

Eleanor Wade, Immunization Tracking Coordination Supervisor, WCHHS

Crystal Lormejuste, Health Informatics Analyst, WCHHS

Sarah Johnson, Graphic Designer, Wake County Government

Authors & Contributors

Nannette M. Bowler, JD
Health and Human Services Director

Rebecca A. Kaufman, MS
Health Director

Editors-in-Chief

Morgan Poole, MPH
Epidemiology Program Manager

Jenelle Mayer, MPH
Surveillance and Compliance Health Director

Content Editors

Katie LaWall, MPH
Senior Epidemiologist

Akanksha Acharya, MS, CPM
Senior Epidemiologist

Morgan Poole, MPH
Epidemiology Program Manager