2022

Maternal and Child Health Report

PUBLIC HEALTH REPORT

WAKE COUNTY NORTH CAROLINA Health & Human Services

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1.0 INTRODUCTION

The health of mothers and children has a profound impact on the well-being of families, communities, and society. In Wake County, there have been significant improvements in maternal and child health (MCH) outcomes in recent years. However, there are still disparities in MCH outcomes among different populations.

GOALS OF MATERNAL AND CHILD HEALTH REPORT

- Describe the socio-demographic characteristics of the general population in Wake County for comparison to maternal and child health statistics.
- Provide an overview of MCH indicators in Wake County, including teen pregnancy, abortions, live births, preterm births, birthweight, infant mortality, and prenatal care coverage.
- Describe trends in MCH outcomes in Wake County, as well as regional and national variations.
- Provide a data-driven resource of information that can be used to prioritize and improve MCH outcomes in Wake County.

MATERNAL AND CHILD HEALTH SURVEILLANCE

Maternal and child health (MCH) surveillance is the ongoing collection, analysis, and interpretation of data on the health of mothers and children. These data are used to monitor MCH trends, identify areas of improvement, and evaluate the effectiveness of MCH interventions. MCH surveillance is an essential tool for improving the health of mothers, children, and communities.

Source: https://centerfortotalhealth.org/new-perinatal-depression-display/mother-child-icon/, retrieved 11/1/23

2.0 DATA SOURCES

NORTH CAROLINA (N.C.) STATE CENTER FOR HEALTH STATISTICS

The N.C. State Center for Health Statistics plays a crucial role in gathering data, conducting health-related research, generating reports, and maintaining an extensive compilation of health statistics. It serves as a reliable data source, offering valuable health information to facilitate well-informed decision-making and the development of effective health policies.

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 and 5-year estimates are reported for Wake County as well as N.C.

3.0 LIMITATIONS

The N.C. State Center for Health Statistics provides ongoing reporting on several of the metrics provided in this report. However, due to a delay in reporting during the COVID-19 pandemic, this report was created using finalized data as of 2021 from the N.C. State Center for Health Statistics (additional sources shared in this report may include other years of data). The detailed causes of infant mortality used in this report are limited to 2020. A significant milestone in maternal and child health surveillance took place in 2021; Certain data of the Asian/Pacific Islander Non-Hispanic group are now displayed as a separate subset of data, rather than being amalgamated within the "Other Non-Hispanic" category as in previous years. This refinement enables a more inclusive, precise, and nuanced examination of data among different racial and ethnic groups in Wake County.

4.0 DEMOGRAPHIC PROFILE OF WAKE COUNTY

- 51% of Wake County residents are female and 49% are male (Table 1).
- 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).
- 39% of Wake County female residents are 45 years and older (Table 3).

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

Sex	Population	Percent
Female	587,611	51%
Male	562,593	49%

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: Female Population Distribution by Age Group, Wake County, NC 2021

Age Group	Total Population N = 1,150,204	Percent
<15	74,540	18.2%
15-19	39,726	6.8%
20-24	36,466	6.2%
25-29	41,337	7.0%
30-34	44,053	7.5%
35-39	40,282	6.9%
40-44	47,335	8.1%
45+	231,735	39.4%

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.

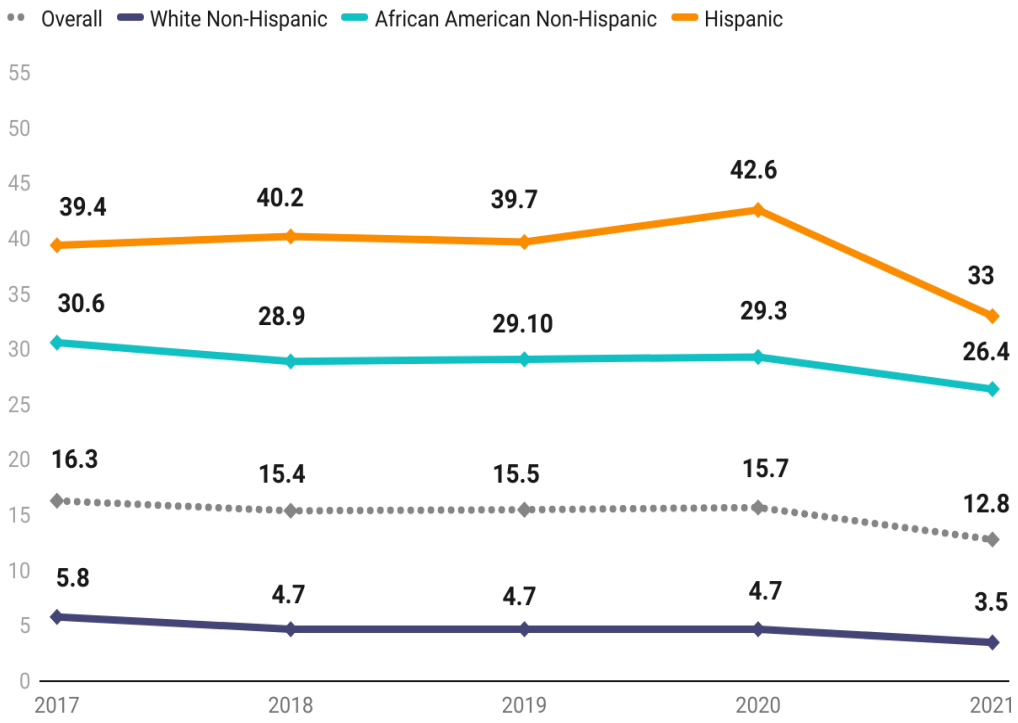
5.0 KEY INDICATORS OF MATERNAL AND CHILD HEALTH

TEEN PREGNANCY

In Wake County, the rate of pregnancies (all pregnancy outcomes) among teenage females aged 15 to 19 years declined from 16.3 pregnancies per 1,000 females in 2017 to 12.8 pregnancies per 1,000 females in 2021. This reduction brought the rate well below the state average rate of 22.1 pregnancies per 1,000 females in 2021.

However, despite this overall positive trend, significant disparities persist in teen pregnancy rates when analyzed through the lens of race and ethnicity. In 2021, Hispanic teens showed the highest pregnancy rate at 33 pregnancies per 1,000 females, followed by African American Non-Hispanic teens at 26.4 pregnancies per 1,000 females, while White Non-Hispanic teens had a considerably lower rate of 3.5 pregnancies per 1,000 females (Figure 1).

Figure 1: Teen Pregnancy Rates Ages 15-19 by Race/Ethnicity, Wake County 2017-2021

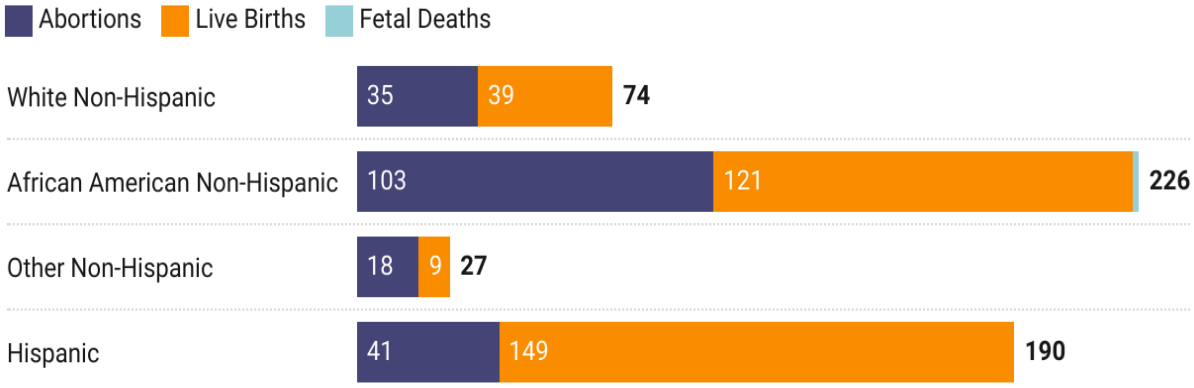


Rates are the total number of teen pregnancies per 1,000 females aged 15-19 in specified race and ethnicity group.

Source: NC State Center For Health Statistics • Created with Datawrapper

The figure below represents pregnancy outcomes among females aged 10 to 19 years by demographic breakdown. The findings underscore significant disparities in pregnancy outcomes across populations. In the figure, numbers are suppressed for counts between 1 and 4.

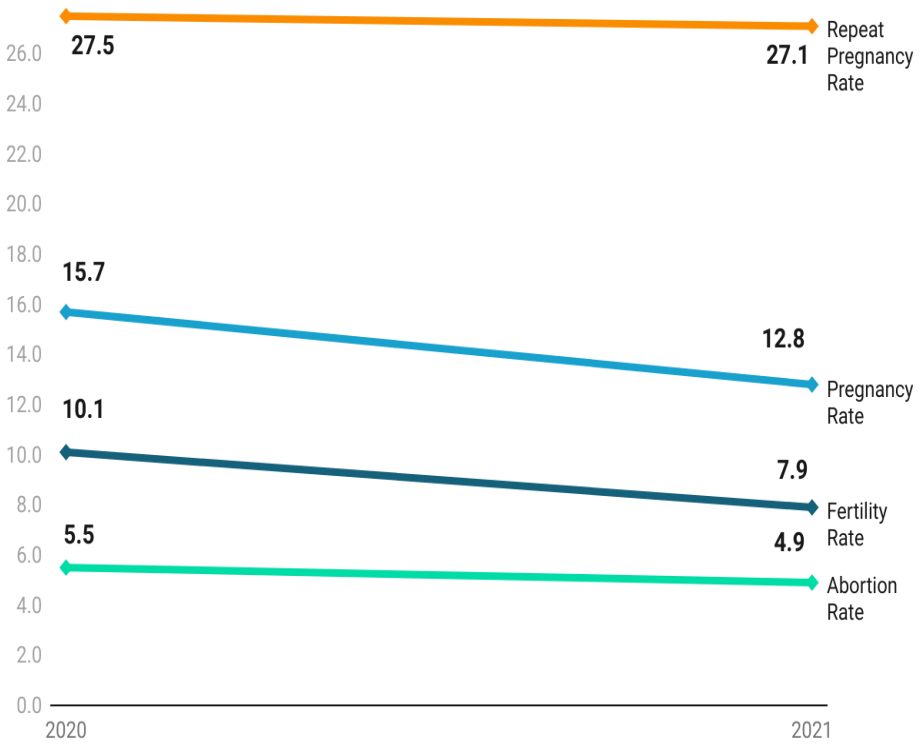
Figure 2: Total Teen Pregnancy Outcomes Ages 10-19 by Race/Ethnicity, Wake County 2021



Source: NCDHHS Center for Health Statistics • Created with Datawrapper

In 2021, African American Non-Hispanic teens ages 10-19 experienced a disproportionately high number of abortions (103) and live births (121) compared to their peers from other racial/ethnic backgrounds. The Hispanic population of females in Wake County had a higher number of live births (149) but reported a lower number of abortions (41). Conversely, the White Non-Hispanic group had a relatively lower number of abortions (35) and live births (39) among teenage females.

Figure 3: Teen Pregnancy, Repeat Pregnancy, Abortion, Fertility Rate Ages 15-19, Wake County 2020-2021



Rates are the total number of teen pregnancies per 1,000 females aged 15-19.

Source: NC State Center for Health Statistics • Created with Datawrapper

While overall teen pregnancy trends are showing improvement in Wake County, the persistently high repeat teen pregnancy rate is a cause for concern.

ABORTIONS

The data on page 8 present a comprehensive five-year analysis (2017-2021) of abortion rates among females aged 15 to 44 in Wake County, with a focus on highlighting disparities across different racial/ethnic groups. Over this period, the overall abortion rate in Wake County gradually increased, rising from 12.2 abortions per 1,000 females in 2017 to 14 abortions per 1,000 females in 2021.

Comparing the data across racial/ethnic categories, significant disparities become apparent:

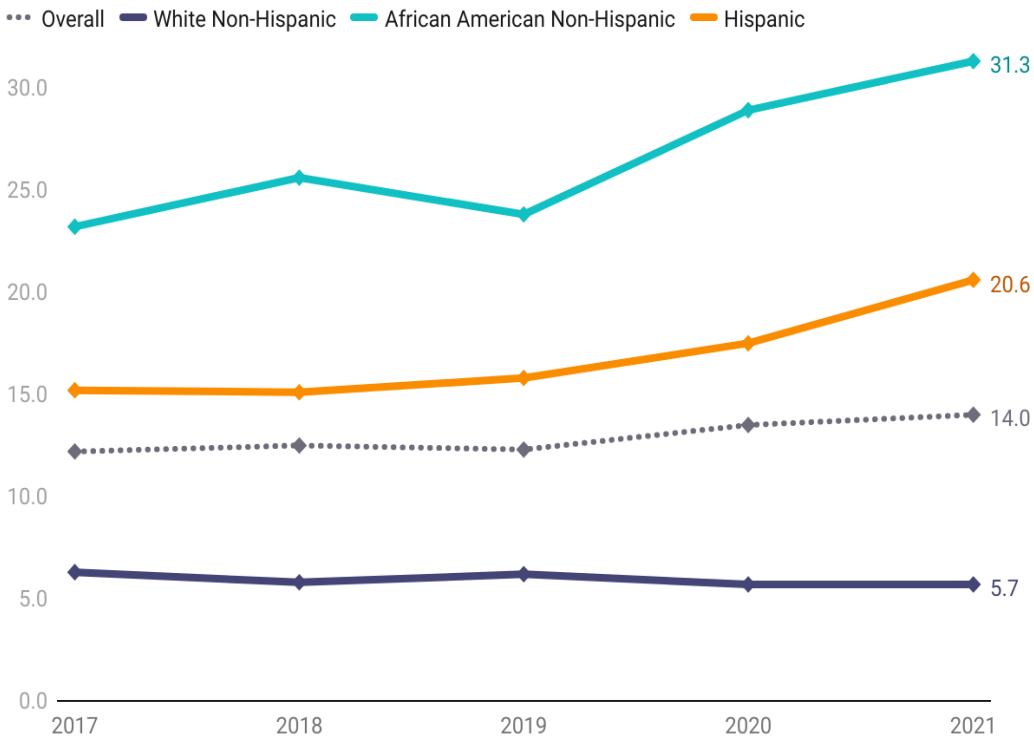
- White Non-Hispanic females consistently maintained the lowest abortion rates, with rates ranging from 5.7 to 6.3 abortions per 1,000 females throughout the five-year duration. These rates were half the overall average.

- African American Non-Hispanic females consistently exhibited considerably higher abortion rates, with rates ranging from 23.2 to 31.3 abortions per 1,000 females. These rates were around 1.7 to 2.5 times higher than the overall average.

- The Hispanic group also experienced elevated abortion rates in comparison to the "White Non-Hispanic" category, with rates ranging from 15.1 to 20.6 abortions per 1,000 females. These rates were 1.1 to 1.5 times higher than the overall average.

Throughout the five-year period (2017-2021), African American Non-Hispanic abortion rates were 4 to 5 times higher than those of White Non-Hispanic females.

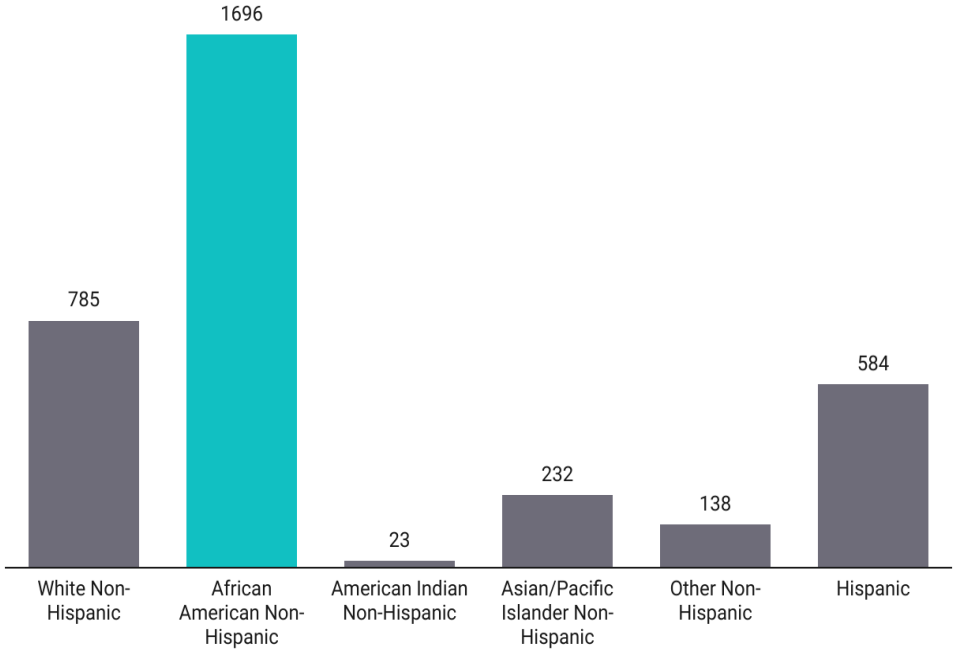
Figure 4: Abortion Rates Ages 15-44 by Race/Ethnicity, Wake County 2017-2021



Rates are the total number of abortions per 1,000 females aged 15-44 in specified race and ethnicity group.

Source: NC State Center for Health Statistics • Created with Datawrapper

Figure 5: Total Abortions Ages 15-44 by Race/Ethnicity, Wake County 2021



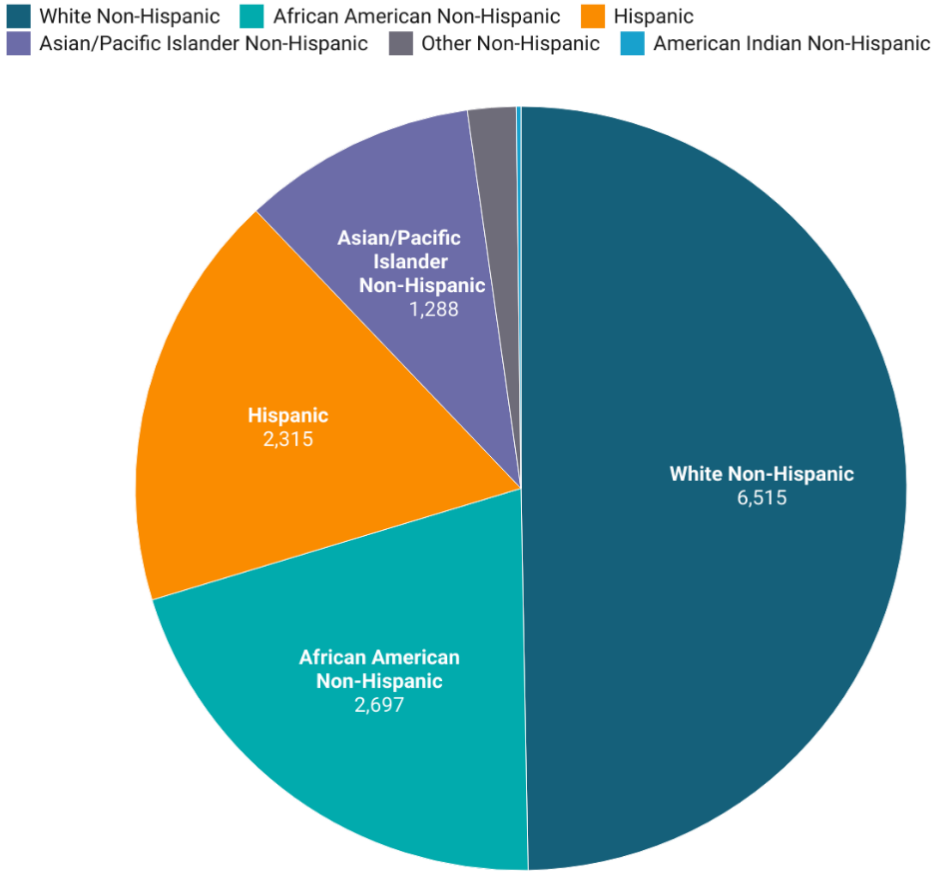
Highlighted bars represent a data point that is of particular importance due to its magnitude or significance. It could be an outlier, a key data point, or a critical value.

Source: NC State Center for Health Statistics • Created with Datawrapper

LIVE BIRTHS

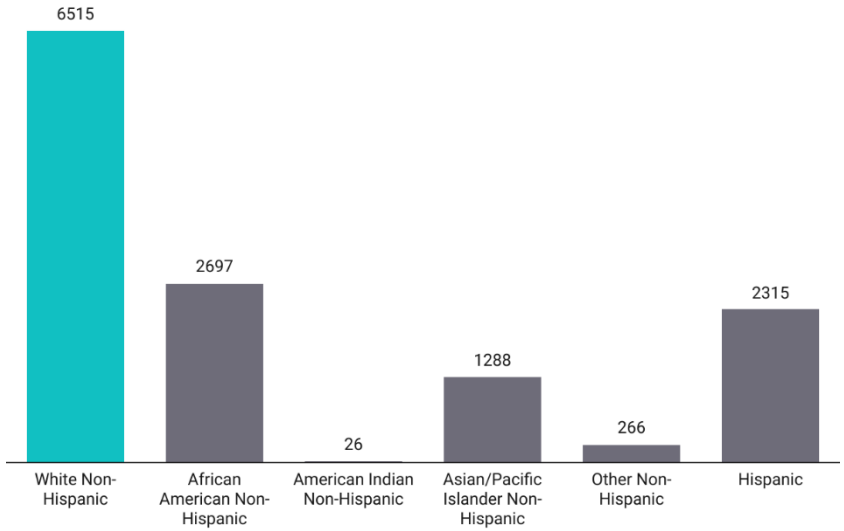
The analysis of total live births for Wake County women aged 15 to 44 by race and ethnicity in 2021 reveals variations in birth rates among different racial and ethnic groups. White Non-Hispanic women had the highest number of live births (6,515), followed by African American Non-Hispanic (2,697) and Hispanic women (2,315). Asian/Pacific Islander Non-Hispanic (1,288) women also contributed significantly to the overall live births in the county. In contrast, American Indian Non-Hispanic (26) and Other Non-Hispanic women (266) had lower birth numbers.

Figure 6: Total Live Births Ages 15-44 by Race/Ethnicity, Wake County 2021



Source: NC State Center for Health Statistics • Created with Datawrapper

Figure 7: Total Live Births Ages 15-44 by Race/Ethnicity Wake County 2021



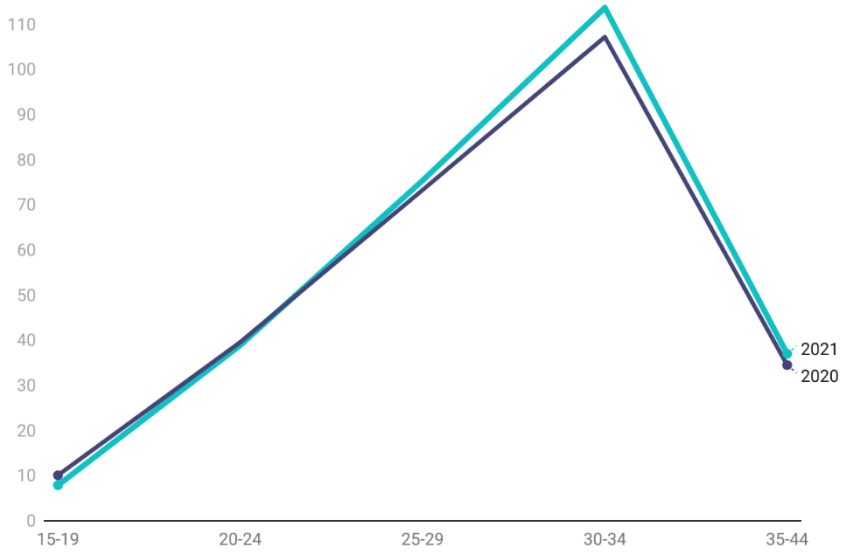
Highlighted bars represent a data point that is of particular importance due to its magnitude or significance. It could be an outlier, a key data point, or a critical value.

Source: NC State Center for Health Statistics • Created with Datawrapper

FERTILITY RATES

Fertility rates of women in Wake County by age groups in 2020 and 2021 shows varying trends across different age categories. While the overall fertility rate increased slightly, there were decreases in the fertility rates for women ages 15 to 19 and women ages 20 to 24. In contrast, the fertility rates for women ages 25 to 29, 30 to 34, and 35 to 44 increased during the same period. These trends can reflect changes in reproductive behaviors and highlight the importance of understanding fertility patterns among different age groups for effective planning and policymaking in public health.

Figure 8: Fertility Rates Ages 15-44 by Age and Year, Wake County 2020-2021



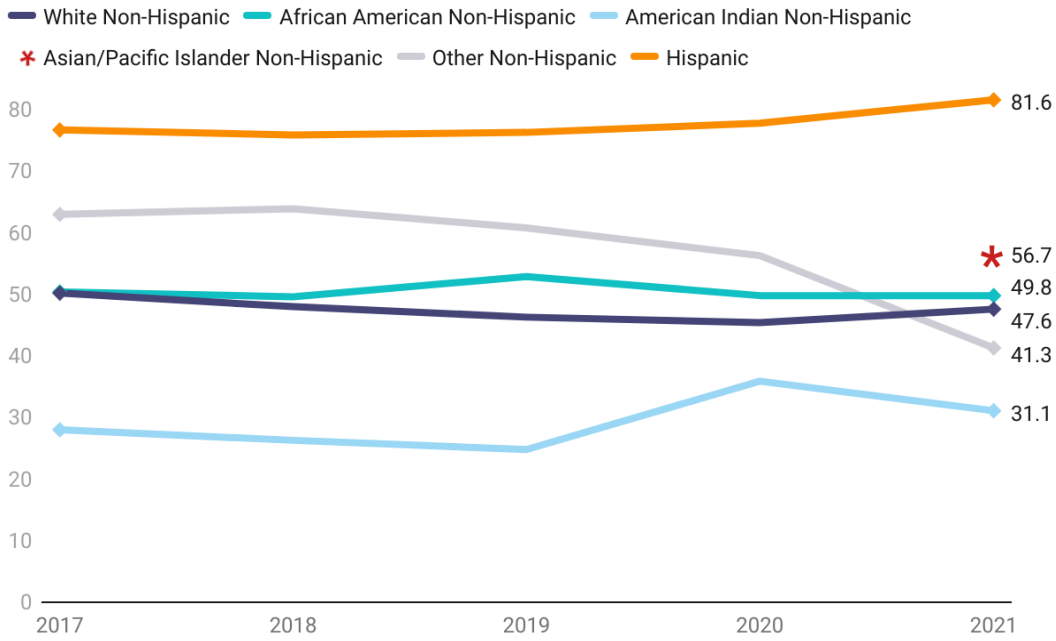
Rates are the total number of births per 1,000 females in specified age group.

Source: NC State Center for Health Statistics • Created with Datawrapper

FERTILITY RATES AMONG RACE AND ETHNICITIES

Hispanic women consistently had the highest fertility rate over a five-year period ranging from 76.7 in 2017 to 81.6 per 1,000 women in 2021. The highest birth rate in 2021 among Hispanic women is observed in the age group 24-30 with a fertility rate of 148.7 per 1,000. Conversely, American Indian Non-Hispanic women exhibit the lowest fertility rate in 2021 at 31.1. The fertility rates for all race and ethnicity groups showed slight fluctuations over the years but remained stable. The data shows that the fertility rate in 2021 among Asian/Pacific Islander Non-Hispanic women is 56.7, the second highest fertility rate after Hispanic women.

Figure 9: Fertility Rate Ages 15-44 by Race/Ethnicity, Wake County 2017-2021



Rates are the total number of births per 1,000 females aged 15-44 in specified race and ethnicity group. Asian/Pacific Islander Non-Hispanic represented by red asterisk due to limited historical data available for the category.

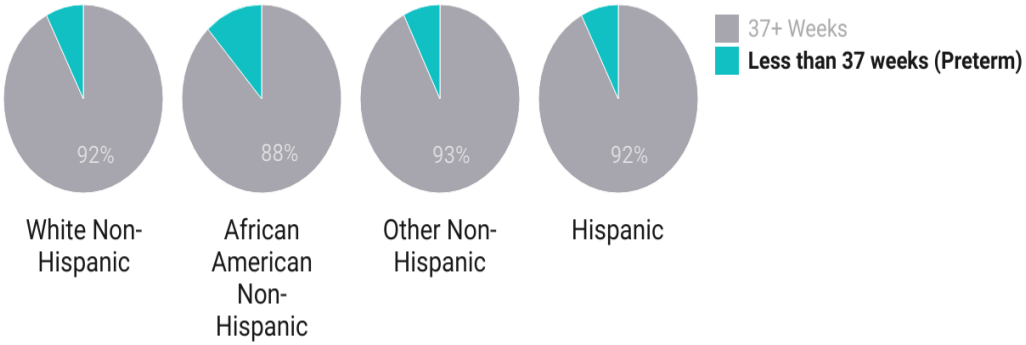
Source: NC State Center For Health Statistics • Created with Datawrapper

6.0 MORBIDITY IN MATERNAL AND CHILD HEALTH

PRETERM BIRTHS

Preterm birth, which is defined as giving birth before 37 weeks, pose significant risks and dangers to maternal health and is the leading cause of neonatal mortality. While the 2021 birth data for Wake County reveal an overall preterm birth percentage of 8.5%, significant disparities among different racial and ethnic groups are evident. African American Non-Hispanic mothers experience the highest percentage of preterm births (11.8%), which is notably higher than the percentages for White Non-Hispanic (7.6%), Other Non-Hispanic (7.5%), and Hispanic (7.6%) mothers. This indicates that African American Non-Hispanic mothers are more likely to give birth before 37 weeks of gestation compared to the other groups.

Figure 10: Percentage of Total Preterm Births by Race/Ethnicity, Wake County 2021



Source: NC State Center For Health Statistics • Created with Datawrapper

BIRTHWEIGHT

Low birthweight, particularly below 2,500 grams, is associated with various health concerns such as increased risk of developmental issues, respiratory problems, and a higher likelihood of neonatal mortality. In 2021 most births across all race/ethnicity groups had a birthweight greater than 2,500+ grams, indicating a higher percentage of healthy birthweights in these populations. However, African American Non-Hispanic births have a higher percentage (10%) in the range of 1,500-2,499 grams compared to other race/ethnicity groups. White Non-Hispanic births (94%) have the highest percentage in birthweights greater than 2,500 grams, suggesting a relatively higher proportion of healthy birthweights among this group.

Table 4: Birthweight and Mother's Race/Ethnicity, Wake County 2021

Maternal Race/Ethnicity	Very Low Birthweight (Under 1,500 grams)	%	Low Birthweight (1,500-2,499 grams)	%	Normal Birthweight (2,500+ grams)	%
Overall	206	2	810	6	12,146	92
White Non-Hispanic	56	1	316	5	6,140	94
African American Non-Hispanic	**82**	**3**	**268**	**10**	**2,346**	**87**
Other Non Hispanic	24	2	108	7	1,508	92
Hispanic	44	2	118	5	2,152	93

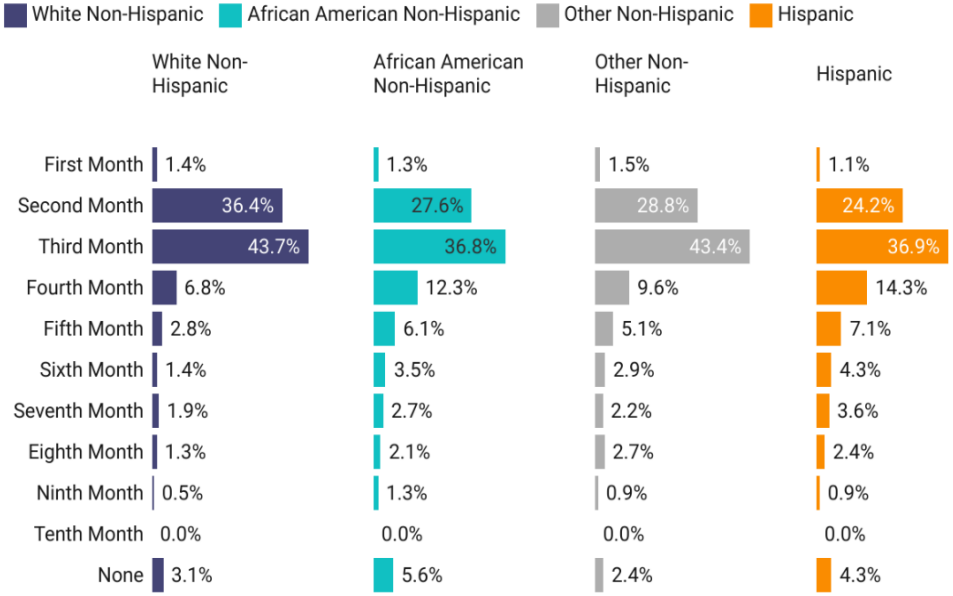
Additional 5 rows not shown.

Source: NC State Center for Health Statistics • Created with Datawrapper

PRENATAL CARE

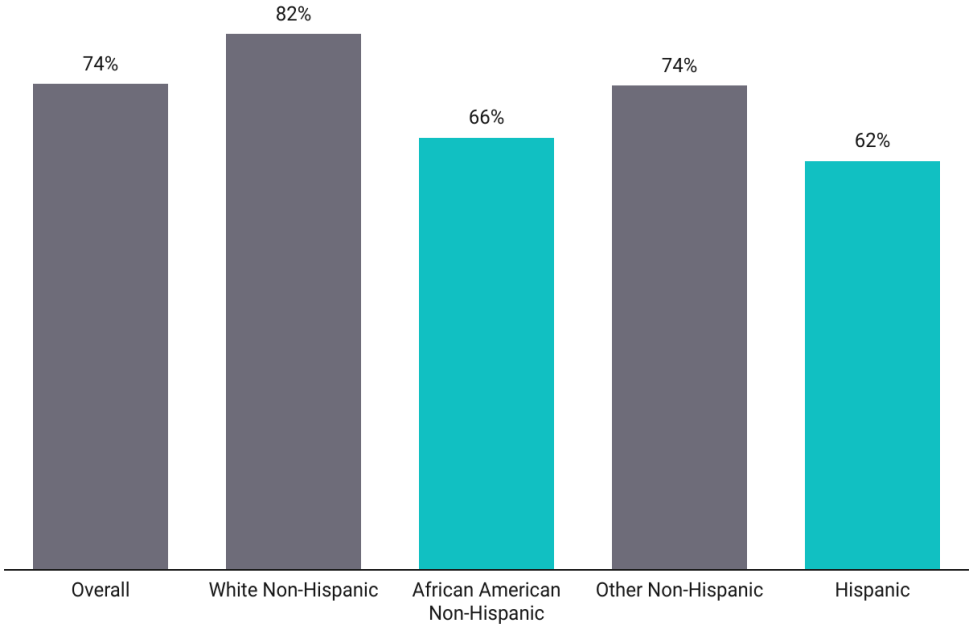
Delayed or absent prenatal care can have significant health impacts, including missed opportunities for early detection and management of pregnancy-related complications, increased risk of preterm birth, and potential adverse outcomes for both mother and baby. Therefore, it is crucial for prenatal care to start early to provide comprehensive support and guidance for a healthy pregnancy and delivery. Assessing the month prenatal care began by race/ethnicity reveals important disparities and trends. Notably, White Non-Hispanic women have higher proportions of prenatal care initiation during the second and third months, while African American Non-Hispanic and Hispanic women tend to start care later, particularly during the fourth to seventh months. The "Other Non-Hispanic" group displays mixed patterns. Late initiation, notably in the ninth month, is more common among African American Non-Hispanic mothers. Though rare, births without prenatal care and even in the tenth month are present across all groups but highest among African American Non-Hispanic and Hispanic women.

Figure 11: Percentage of Live Births by Month Prenatal Care Began and Race/Ethnicity, Wake County 2021



Source: NC State Center for Health Statistics • Created with Datawrapper

Figure 12: Percentage of Women with 1st Trimester Prenatal Care by Race/Ethnicity, Wake County 2021

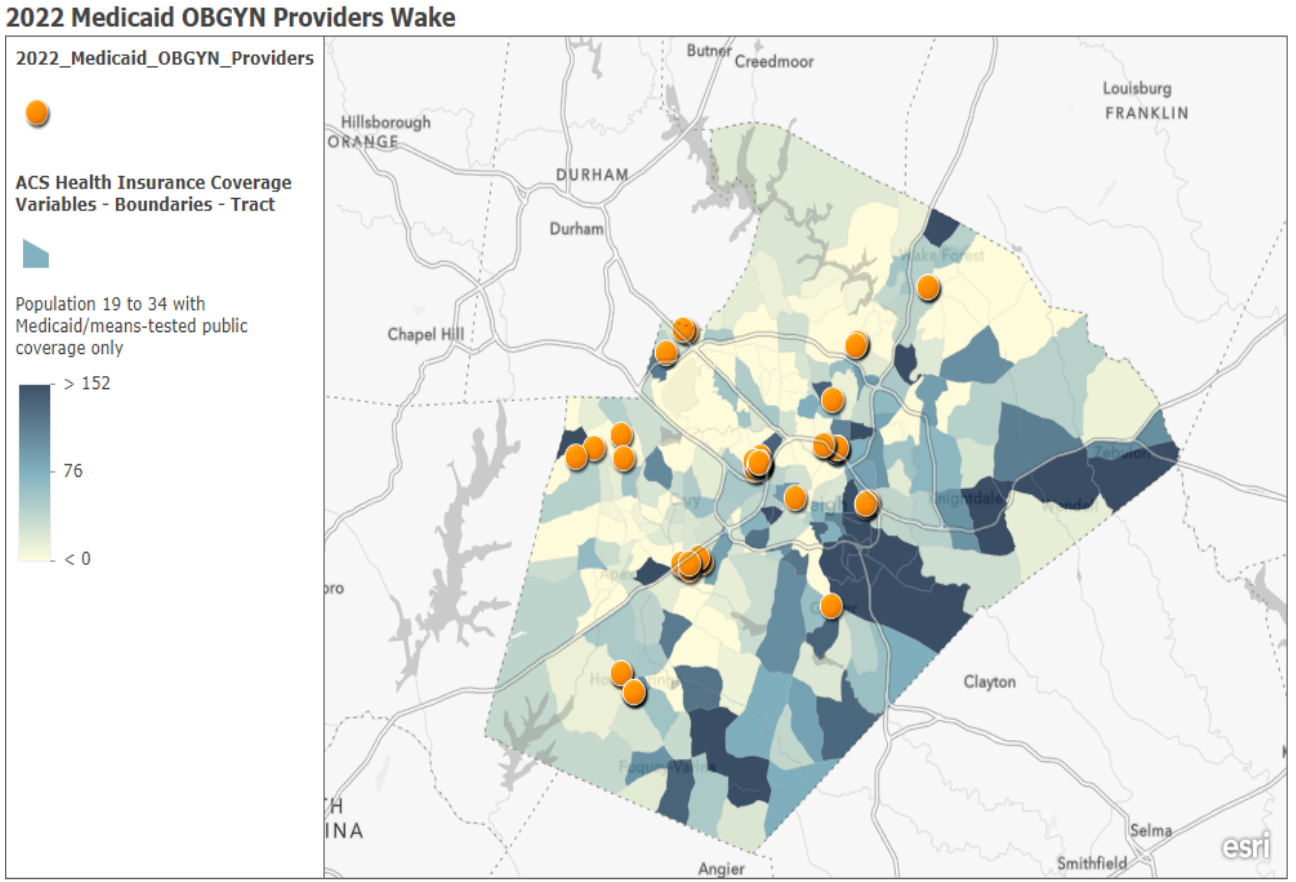


Highlighted bars represent a data point that is of particular importance, due to its magnitude or significance. It could be an outlier, a key data point, or a critical value.

Source: NC State Center For Health Statistics • Created with Datawrapper

Figure 13: Geographical Analysis of Prenatal Care Coverage by Census Tract, Wake County:

Inadequate access to maternal care can lead to negative health outcomes for both mothers and children, potentially exacerbating existing health disparities. The geospatial map illustrates the population density of individuals aged 19-34 with Medicaid coverage, juxtaposed with the distribution of obstetrician/gynecologist Medicaid providers. The visual portrayal of these data brings to the forefront a concerning pattern: areas with higher population densities of Medicaid beneficiaries exhibit minimal to no presence of Medicaid OB/GYN providers. This spatial representation underscores the need for equitable access to comprehensive healthcare services, especially during the crucial phases of pregnancy and postpartum care. It reveals a significant gap in healthcare provision, emphasizing the necessity for accessible, quality maternity care for this vulnerable population.



North Carolina State University, Wake County, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS | North Carolina State University, Wake County, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS | North Carolina State University, Wake County, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS

BIRTH CHARACTERISTICS AND RISK FACTORS

Table 5: Birth Characteristics and Risk Factors, Wake County 2021	Overall	White	African American
Preterm (<37 weeks gestation)	8.5%	7.6%	11.8%
Low birth weight	7.8%	5.8%	12.9%
Cesarean delivery	27.8%	27.4%	30.4%
Infant not breastfed at discharge	7.2%	5.9%	13.0%
No prenatal care	3.7%	3.1%	5.6%
Less than high school education	8.5%	1.4%	7.8%
Under 18 years	0.8%	0.2%	1.1%
Smoked during pregnancy	1.3%	1.2%	2.7%
Obese pre-pregnancy (BMI 30+)	23.2%	17.3%	39.1%
Hypertension (chronic or pregnancy related)	12.4%	12.3%	17.4%
Gestational Diabetes	7.3%	6.0%	8.3%

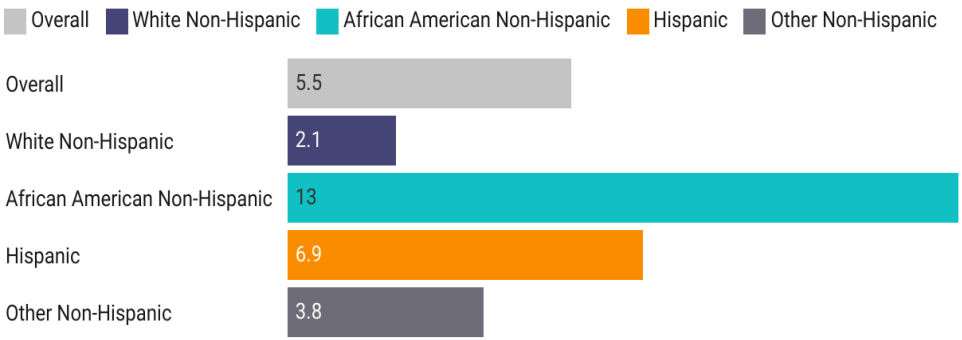
Created with Datawrapper

The table highlights differences in birth characteristics and risk factors among White Non-Hispanic and African American Non-Hispanic mothers in 2021. African American Non-Hispanic women generally exhibited higher percentages of birth characteristics and risk factors such as preterm birth, low birth weight, cesarean delivery, no prenatal care, lower educational attainment, higher incidence of teenage pregnancy, history of smoking during pregnancy, pre-pregnancy obesity, hypertension, and gestational diabetes. White Non-Hispanic mothers had a lower prevalence of all birth characteristics and risk factors listed compared to all other race and ethnicities.

7.0 MORTALITY IN MATERNAL AND CHILD HEALTH

INFANT MORTALITY RATE

Figure 14: Infant Mortality Rate by Maternal Race/Ethnicity, Wake County 2020



Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births.

Source: NC State Center for Health Statistics • Created with Datawrapper

Wake County's infant mortality data for 2020 reveals distinct differences in infant mortality rates based on maternal race and ethnicity. African American Non-Hispanic mothers experienced a significantly higher infant mortality rate compared to White Non-Hispanic, Hispanic, and Other Non-Hispanic mothers.

DETAILED CAUSES OF INFANT DEATHS

In total, there were 69 infant deaths in Wake County in 2020, with a range of causes including perinatal conditions, congenital abnormalities, infections, and ill-defined causes. The most common cause of infant deaths were conditions originating in the perinatal period (including disorders of newborn related to short gestation and low birthweight), accounting for 43 deaths.

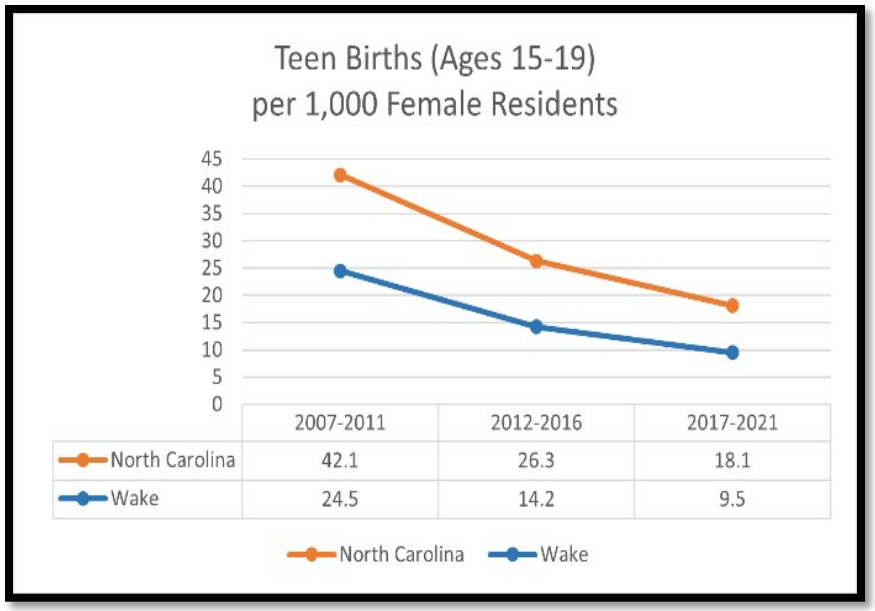
Table 6: Detailed Infant Causes of Death,Wake County 2020

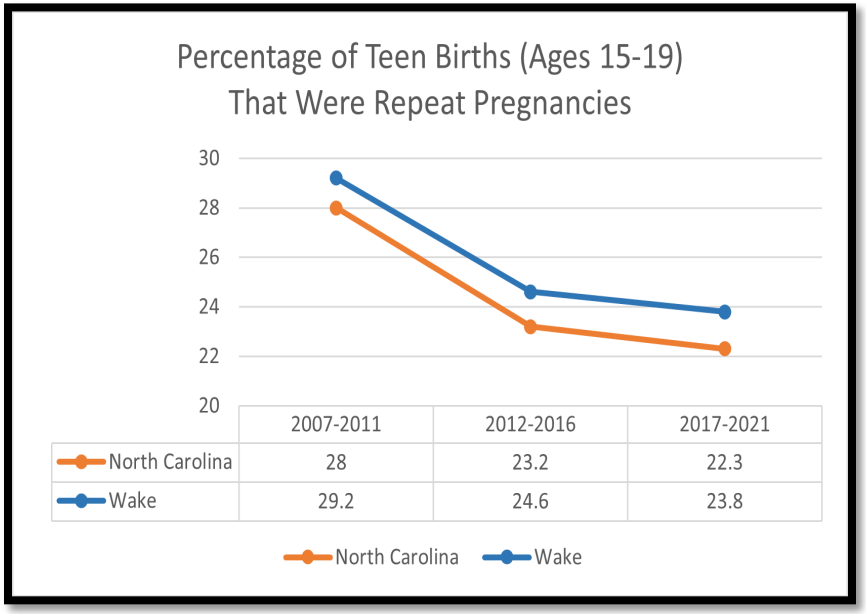
Cause of Death	Infant Deaths
Infections and Specific Diseases	7
Conditions Originating in the Perinatal Period (including disorders of newborn related to short gestation and low birthweight)	43
Congential Malformations and Chromosomal Abnormalities	13
Ill-defined and Unknown Cause of Mortality	6
Total Infant Deaths	69

Source: NC State Center of Health Statistics 2020 Detailed Mortality Statistics Report • Created with Datawrapper

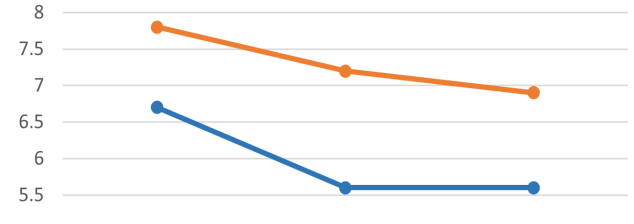
8.0 TRENDS IN MATERNAL AND CHILD HEALTH OUTCOMES

Figures 15-20: Overview of Historical Trends in North Carolina and Wake County, 2007-2021





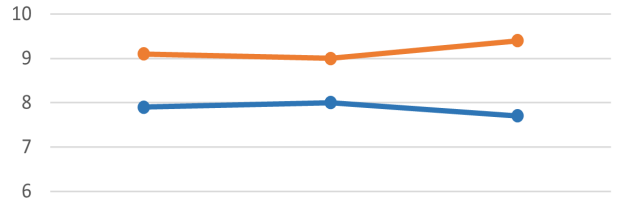
Infant Deaths per 1,000 Live Births (Healthy NC 2030 Target=6.0)



	2007-2011	2012-2016	2017-2021
North Carolina	7.8	7.2	6.9
Wake	6.7	5.6	5.6

North Carolina Wake

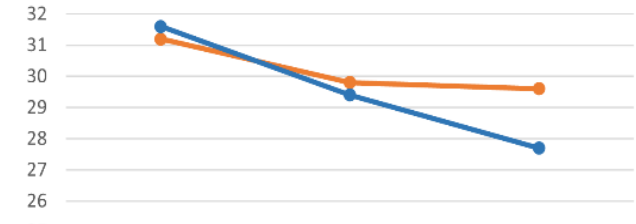
Percentage of Resident Live Births Classified as Low Birthweight (<2,500 grams/ 5lbs 8oz)



	2007-2011	2012-2016	2017-2021
North Carolina	9.1	9	9.4
Wake	7.9	8	7.7

North Carolina Wake

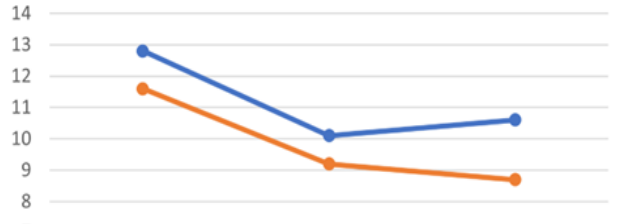
Percentage of Resident Live Births Delivered by Cesarean Section



	2007-2011	2012-2016	2017-2021
North Carolina	31.2	29.8	29.6
Wake	31.6	29.4	27.7

North Carolina Wake

Percentage of Live Births That Were Premature (<37 Weeks Gestation)

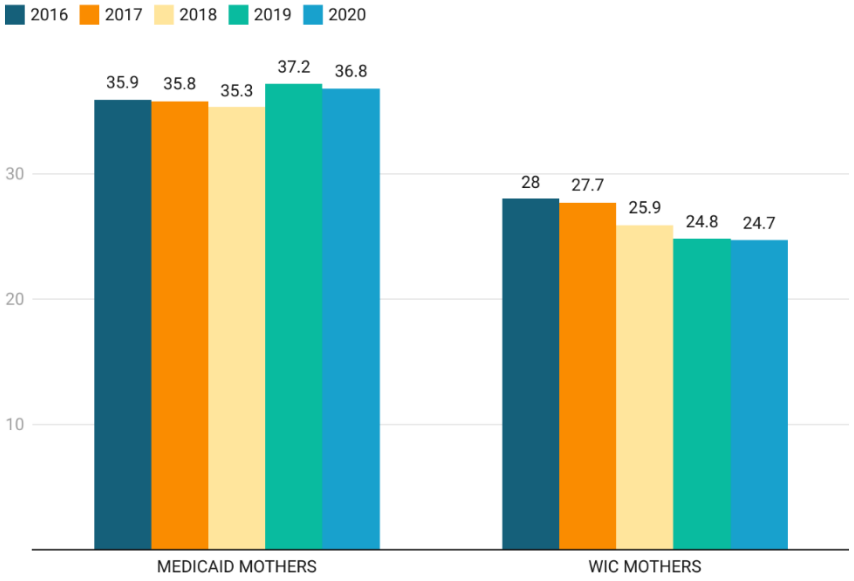


	2007-2011	2012-2016	2017-2021
North Carolina	12.8	10.1	10.6
Wake	11.6	9.2	8.7

North Carolina Wake

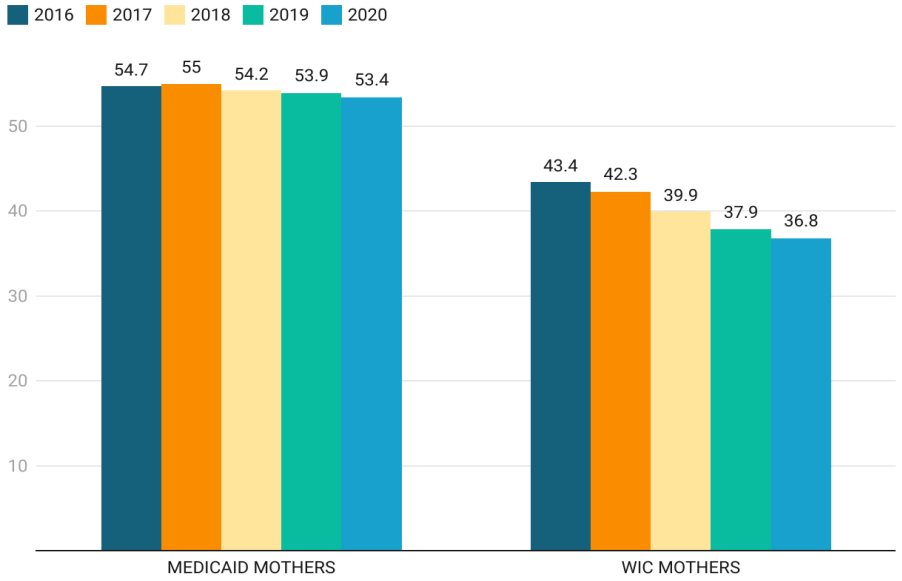
The figures on pages 19 and 20 display analyzed key indicators over three time periods (2007-2011, 2012-2016, and 2017-2021) in North Carolina and Wake County. Notable trends include a consistent decline in teen births, a slight decrease in repeat teen pregnancies, and reductions in infant mortality rates. Rates of low birthweight remained relatively steady, while the percentage of premature live births decreased over time. Cesarean section delivery rates also saw a gradual reduction. These findings highlight progress in maternal and child health across North Carolina and Wake County, emphasizing the need for continued efforts to improve these vital health outcomes.

Figure 21: Percent of Births to Medicaid and WIC Mothers, Wake County 2016-2020



Source: NC State Center for Health Statistics • Created with Datawrapper

Figure 22: Percent of Births to Medicaid and WIC Mothers, North Carolina 2016-2020



Source: NC State Center for Health Statistics • Created with Datawrapper

Overall, Wake County had consistently lower percentages of births to both Medicaid and WIC mothers compared to the statewide percentages for North Carolina over the time period 2016 to 2020.

National Variations in Maternal and Child Health Outcomes

Table 7: Fertility Rates by Mother's Race/Ethnicity, United States, Final 2021 and Provisional 2022

Data for 2022 are based on a continuous file of records received from the states. Rates are the total number of births (regardless of the age of the mother) per 1,000 women aged 15–44 in specified race and Hispanic-origin group.

Year	2021 Fertility Rate	2022 Fertility Rate
All Races and Origins	56.3	56.1
American Indian Or Alaska Native	50.8	49.5
Asian	49.6	50.9
Black	57.4	56.3
Native Hawaiian or Other Pacific Islander	71.5	75.7
White	54.4	53.0
Hispanic	63.4	66.1

Race categories in this table include only single race; that is, the race reported alone with only one race reported. Includes all people of Hispanic origin of any race.

Source: National Center for Health Statistics, National Vital Statistics System, Natality. • Created with Datawrapper

In 2022, the United States overall fertility rate dipped from 56.3 to 56.1.

By race and ethnicity:

- American Indian/Alaska Native fertility rates decreased from 50.8 (2021) to 49.5 (2022).
- Asian fertility rates increased from 49.6 (2021) to 50.9 (2022).
- Black population fertility rates dropped from 57.4 (2021) to 56.3 (2022).
- Native Hawaiian/Pacific Islander fertility rates increased from 71.5 (2021) to 75.7 (2022).
- White population fertility rates decreased from 54.4 (2021) to 53 (2022).
- Hispanic population fertility rates increased from 63.4 (2021) to 66.1 (2022).

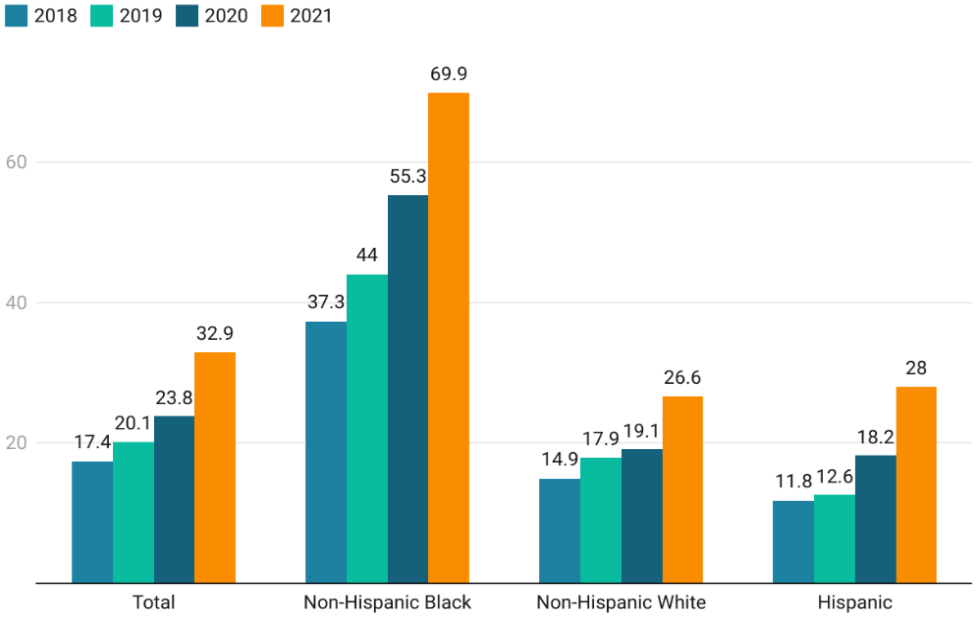
Table 8: Number of Live Births, Maternal Deaths, and Maternal Mortality Rates by Race/Ethnicity, United States, 2018–2021

Year		Total	Non-Hispanic Black	Non-Hispanic White	Hispanic
2018	Number of Live births	3,791,712	**552,029**	1,956,413	886,210
	Number of Deaths	658	**206**	291	105
	Maternal Mortality Rate	17	**37**	15	12
2019	Number of Live births	3,747,540	**548,075**	1,915,912	886,467
	Number of Deaths	754	**241**	343	112
	Maternal Mortality rate	20	**44**	18	13
2020	Number of Live births	3,613,647	**529,811**	1,843,432	866,713
	Number of Deaths	861	**293**	352	158
	Maternal Mortality rate	24	**55**	19	18
2021	Number of Live births	3,664,292	**517,889**	1,887,656	885,916
	Number of Deaths	1,205	**362**	503	248
	Maternal Mortality rate	33	**70**	27	28

Highlighted figures represent a data point that is of particular importance, due to its magnitude or significance. It could be an outlier, a key data point, or a critical value.

Source: CDC • Created with Datawrapper

Figure 23: Maternal Mortality Rates by Race/Ethnicity, United States, 2018–2021

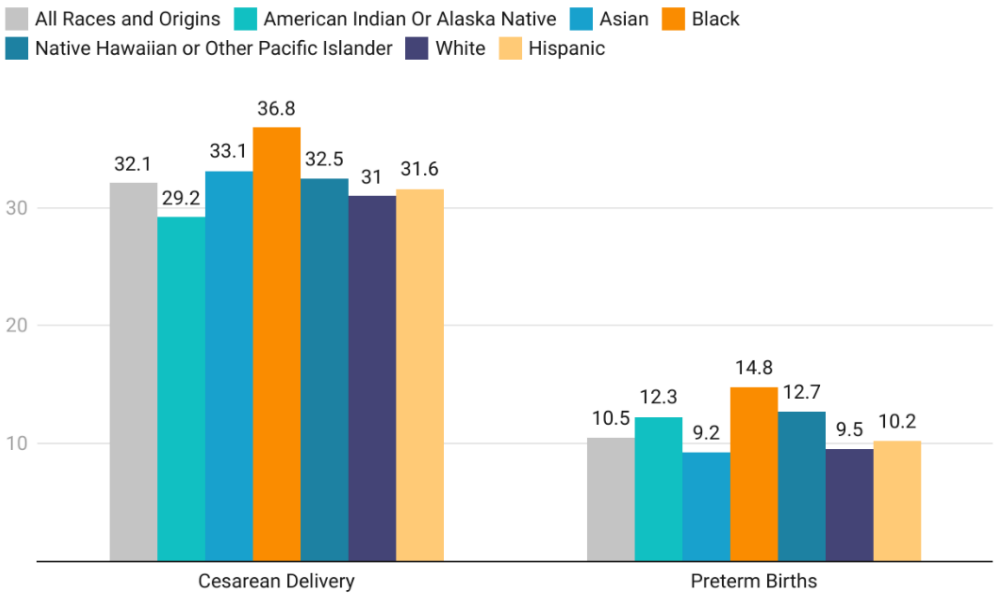


Maternal mortality rates are per 100,000 live births. Race groups are single race.

Source: : National Center for Health Statistics, National Vital Statistics System, Mortality. • Created with Datawrapper

Maternal mortality rates in the United States from 2018 to 2021 showed concerning trends. The overall maternal mortality rate increased from 17.4 deaths per 100,000 live births in 2018 to 32.9 in 2021. Non-Hispanic Black women consistently had the highest rates, reaching 69.9 in 2021, while Non-Hispanic White women had a rate of 26.6. These disparities highlight a critical public health challenge in maternal healthcare.

Figure 24: Percentage of Cesarean Delivery and Preterm Births by Mother's Race/Ethnicity, United States, 2021



Race categories in this table include only single race; that is, the race reported alone with only one race reported. Includes all people of Hispanic origin of any race. All cesarean deliveries and preterm births per 100 live birthts. Preterm Birth is defined as under 37 weeks of gestation completed.

Source: National Center for Health Statistics, National Vital Statistics System, Natality • Created with Datawrapper

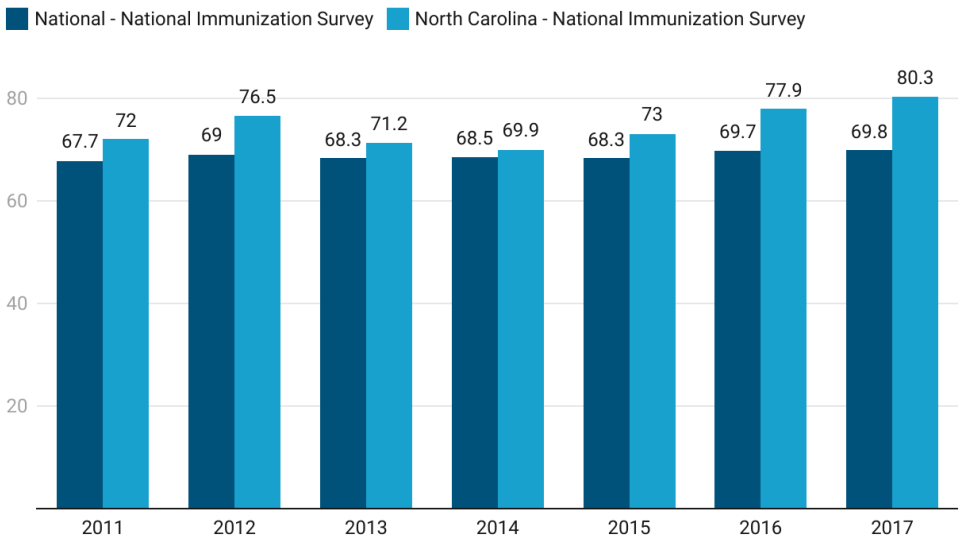
The analysis of cesarean delivery and preterm birth percentages in the United States for 2021 reveals crucial variations across racial and ethnic groups, with significant implications for maternal and infant health.

Cesarean deliveries, while sometimes medically necessary, carry inherent risks such as longer recovery times, increased risk of infection, and potential complications in subsequent pregnancies. The overall percentage of births delivered via cesarean for all races and origins in 2021 was 32.1%. Black mothers had the highest percentage of cesarean deliveries at 36.8%

Preterm births are associated with numerous health risks for infants, including developmental challenges, respiratory issues, and long-term health complications. The overall percentage of births that were preterm births for all races and origins in 2021 was 10.5%. Black mothers had the highest preterm birth percentage at 14.8% compared to White mothers who had a preterm birth percentage of 9.5%.

The data underscore a concerning trend: Black mothers are experiencing substantially higher rates of cesarean deliveries and preterm births than the national averages and other racial and ethnic groups.

Figure 25: Percent of Children who have Completed the Combined 7-Vaccine Series by Age 24 months, North Carolina and United States 2011-2017

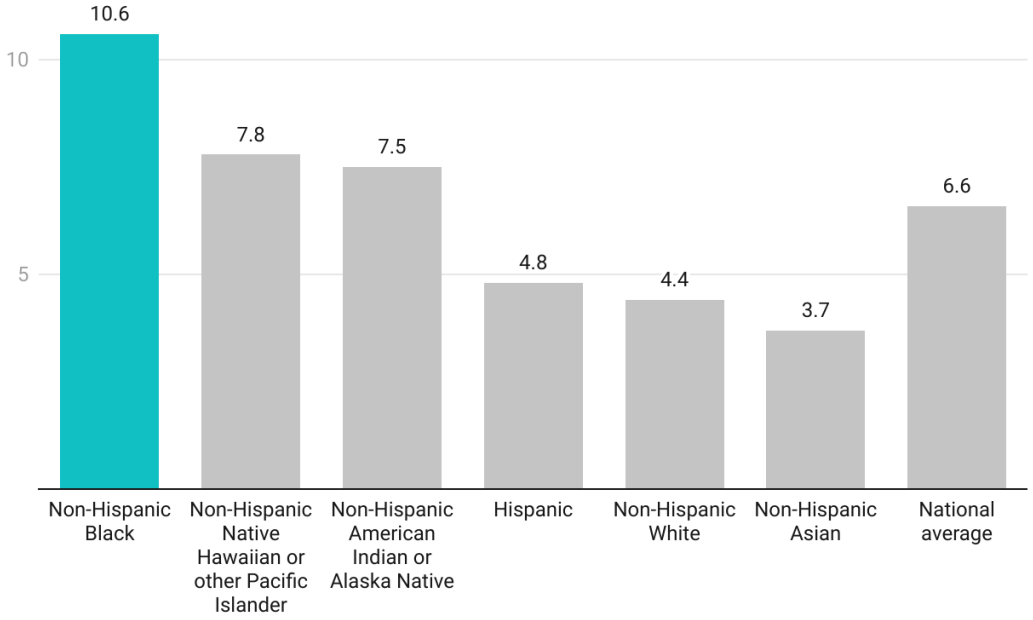


Vaccination coverage estimates are presented by birth year (birth cohort) rather than survey year. Estimates are weighted to account for the probability of selection, non-coverage, non-response, and adjusted to reflect the non-institutionalized population of U.S. children.

Source: National Immunization Survey • Created with Datawrapper

The data provided in the graph represent the percentage of children born between 2011 and 2017 who have completed the combined 7-series of vaccinations by the age of 24 months, with data available for both the national and North Carolina populations. For children born in 2011, in the national context, the completion rate of the combined 7-series vaccinations was 67.7%, and this percentage gradually increased over the subsequent years, reaching 69.8% for children born in 2017. In contrast, among children born in North Carolina in 2011, there was a higher initial completion rate of 72.0%, and this rate continued to increase over the years. By the time children born in 2017 reached the age of 24 months, the completion percentage had significantly risen to 80.3%. The data, spanning the birth years from 2011 to 2017, show that North Carolina consistently maintained a higher percentage of children completing the combined 7-series vaccinations by the age of 24 months compared to the national average for children born during the same period.

Figure 26: Infant Mortality Rates by Race/Ethnicity, United States, 2021



Rates per 1,000 live births. Highlighted bars represent a data point that is of particular importance due to its magnitude or significance. It could be an outlier, a key data point, or a critical value.

Source: Infant Mortality in the United States, 2019: Data From the Period Linked Birth/Infant Death File • Created with Datawrapper

In 2021, there were variations in infant mortality rates across racial and ethnic groups in the United States. Non-Hispanic Black infants had the highest rate, experiencing 10.6 infant deaths per 1,000 live births. In contrast, Non-Hispanic Asian infants had the lowest mortality rate, with only 3.7 infant deaths per 1,000 live births. Hispanic and Non-Hispanic White infants had infant mortality rates that were below the national average, indicating relatively better outcomes within these groups. However, Non-Hispanic Native Hawaiian or other Pacific Islander infants and Non-Hispanic American Indian or Alaska Native infants faced higher infant mortality rates, highlighting potential health challenges specific to these communities.

9.0 POSITIVE TRENDS AND AREAS OF IMPROVEMENT IN MATERNAL AND CHILD HEALTH, WAKE COUNTY

POSITIVE TRENDS

1. **Teen Pregnancy:** In 2021, Wake County experienced a noteworthy decline in its teen pregnancy rate placing it below both the state and national averages.
2. **Fertility Rates:** In 2021, Wake County saw a modest increase in its overall fertility rate, indicating a positive trend in population growth.
3. **Preterm Births:** Wake County exhibited a lower overall percentage of preterm births in 2021 compared to both statewide and nationwide averages.
4. **Low Birthweight:** In 2021, Wake County recorded a lower overall percentage of low birthweight cases than the statewide and nationwide averages.
5. **North Carolina** consistently maintained a higher percentage of children completing the combined 7-series vaccinations by the age of 24 months compared to the national average for children born during the same period.
6. **Infant Mortality:** Notably, Wake County experienced a significant reduction in its infant mortality rate in 2021, resulting in an overall rate lower than the statewide average.

AREAS REQUIRING IMPROVEMENT

1. **Teen Pregnancy:** Despite recent overall reductions in teen pregnancy rates in Wake County, notable disparities persist among racial and ethnic groups. Hispanic and African American Non-Hispanic teenagers continue to experience higher rates.
2. **Abortion:** Significant variations in abortion rates for 2021 between African American Non-Hispanic and White Non-Hispanic females underscore an area in need of improvement.
3. **Prenatal Care Initiation:** In 2021 discrepancies in the timing of prenatal care initiation among racial and ethnic groups are apparent, with African American and Hispanic mothers often commencing care later, even as late as the ninth month.
4. **Preterm Births:** In 2021 African American Non-Hispanic mothers experienced a notably higher percentage of preterm births.
5. **Infant Mortality:** There are substantial disparities in infant mortality rates in 2020, particularly with African American Non-Hispanic mothers experiencing elevated rates.
6. **Geospatial Analysis** of Medicaid Specialty OBGYN Providers in Wake County: The geospatial analysis signifies the need to increase availability of Medicaid prenatal care providers in census tracts where there is a higher percentage of Medicaid subscribers.

The positive trends in this report highlight encouraging developments in certain maternal and child health metrics within Wake County. However, the areas of improvement underscore the pressing requirement for focused initiatives aimed at addressing disparities, particularly among African American mothers and their infants. These efforts are essential to enhance outcomes for all families and community health in Wake County.

10.0 CONCLUSION

This report presents a comprehensive epidemiological examination of the maternal and child health landscape in Wake County. The pursuit of knowledge, insight, and actionable data is fundamental in collective efforts to bolster maternal and child well-being in the community. The analysis of key health indicators spanning teen pregnancy, abortion rates, live births, preterm births, birth weight, infant mortality, and prenatal care coverage provides an in-depth understanding of the current state of maternal and child health in the county. The comparative assessments and longitudinal analyses, including regional and national data, offer essential context for local efforts. They serve as a guidepost for evidence-based decision-making in public health policies and interventions.

As we navigate the intricacies of the current Maternal and Child Health landscape, it's evident that while progress has been made in areas such as expanding services to reach more pre- and post-natal patients, persistent disparities across racial and ethnic groups require unwavering attention. Disparities in abortion rates, prenatal care initiation, preterm births, birthweight, and infant mortality are underpinned by sociodemographic factors, emphasizing the multifaceted nature of the challenges. The county's commitment to addressing Maternal and Child Health disparities exemplifies a proactive approach to public health. Collaborative programs, enhanced parenting support, and maternal health interventions are promising steps toward improving Maternal and Child Health outcomes.

The report emphasizes the shared responsibility to enhance the well-being of all mothers and children in the community. Equipped with comprehensive data and insights, the community is better prepared to work toward a future where every mother and child in Wake County can access and enjoy the highest attainable health status.

For information on the risk and protective factors contributing to Maternal and Child Health outcomes and how Wake County is improving Maternal and Child Health outcomes, please continue to read and visit the county's Maternal and Child Health Program page.

Risk and Protective Factors contributing to Maternal and Child Health Outcomes

Protective factors are conditions or attributes in an individual, family, or community that increase the health and well-being of mothers, children, families, and communities. Protective factors can lower the likelihood of negative outcomes or reduce a risk factor's impact. Risk factors encourage, or increase, behaviors that increase the likelihood of negative outcomes. Research has documented that social, economic, cultural, behavioral, environmental, and healthcare access and utilization factors can contribute to good and poor maternal and child health outcomes. Furthermore, such factors can drive disparities across racial and ethnic populations. It is necessary to understand the associated risk and protective factors in order to appropriately implement prevention efforts. Using several resources, a complied list of risk factors and protective factors by category (Socioeconomic, Cultural and Behavioral, Environmental, and Healthcare access and utilization) are below.

Protective Factors:

Socioeconomic:

- Community Support and Resources
- Employment
- Income
- Education
- Transportation

Cultural and Behavioral:

- Self-Esteem
- Spirituality
- Pregnancy Support
- Health Literacy

Environmental:

- Access to Healthy Options
- Access to Physical Activity Opportunities

Healthcare access and Utilization:

- Prenatal Care
- Financial Support
- Quality of Care
- Provider and Pharmacy Availability

Risk Factors:

Socioeconomic:

- Low Income
- Low Education
- Structural and Systemic Racism and Discrimination
- History of Adverse Childhood Events
- No Employment

Cultural and Behavioral:

- Biases
- Exposure to Violence/Trauma
- Stress
- Lack of Social Integration and Support Systems
- Lack of Health Literacy
- Stigma

Environmental:

- Food Insecurity
- Geographic Differences
- Lack of Parks, Playgrounds, and Walkability in Neighborhoods

Healthcare access and Utilization:

- Limited Access to Providers and Hospitals and Lack of Access to Culturally and Linguistically Appropriate Care

Preventive Measures from a Local Perspective

Wake County Health and Human Services' (WCHHS) Maternal and Child Health Section responded to the challenges posed by the COVID-19 pandemic by reevaluating and enhancing its efforts to address Maternal and Child health inequities. Drawing from the recommendations of the Infant Mortality Workgroup Report in 2020, the Maternal and Child Health section carries out initiatives using the Social Ecological model to tackle maternal and child health trends and disparities on multiple levels (individual, interpersonal, organizational, community, and policy) in Wake County.

Prenatal Care

- Despite progress in early prenatal care across all demographics from 2018 to 2020, percentages for early and adequate prenatal care remain lower for African American (Non-Hispanic) and Hispanic women compared to White (Non-Hispanic) women.
- The Maternal and Child Health section offers prenatal services, childbirth classes, Care Management for High-Risk Pregnancies (CMHRP), and more to support maternal and child health.
- Recent additions to the team, including a bilingual health educator, have expanded services, and translated materials into multiple languages.
- Between 2021-2022, CMHRP adapted and expanded, to serve high-risk mothers, responding to over 4,000 referrals from WCHHS' prenatal clinics, private clinics and WakeMed, including telehealth services.

Improving Community Outcomes for Maternal and Child Health Program (ICO4MCH)

- ICO4MCH works to implement strategies using a health equity approach (racial equity and reproductive justice) to improve birth outcomes, reduce infant mortality, and improve the health status of children ages 0-5.
- The WCHHS' ICO4MCH team has partnered with Upstream USA, launched a breastfeeding awareness and support campaign, and is now offering Triple P parenting support trainings. Triple P is an internationally recognized evidence-based program designed to equip parents with the essential skills to nurture self-assured and well-adjusted children, effectively address behavioral issues, and proactively mitigate the onset of problems in child development.
- Further, the ICO4MCH team continues to collaborate with community partners aiming to improve accessibility to resources and reduce infant mortality.

Improving Birth Outcomes

- African American (Non-Hispanic) women in Wake County continue to have poorer birth outcomes than White and Hispanic women for birthweight, adequacy of prenatal care, and infant mortality.
- Programs like Maternal Health Nurse Home Visitation (MHNHV) and Nurse-Family Partnership (NFP) have positively impacted high-risk prenatal patients and first-time mothers.
- These programs have provided essential support, including postpartum depression screenings, safe sleep education, and high blood pressure assessments to over 12,481 patients.

- NFP has successfully graduated participants, with many achieving educational and employment milestones.

Non-Birthing Support

- Non-birthing support, which encompasses the involvement of fathers and support persons during pregnancy and the postpartum period, has gained increasing recognition for its profound impact on maternal and child health. Recent studies have highlighted the significance of father engagement in promoting positive outcomes for both mothers and infants. The absence of paternal involvement has been linked to hindrances in infant development from early infancy.
- Recognizing the significance of father engagement, the Maternal and Child Health Section is exploring collaboration with the Father Engagement Team in Child Welfare Services. The Father Engagement Team offers a range of services, including education, linkages, referrals, support groups, coaching, and fatherhood conferences to actively engage and support fathers involved with Child Welfare Services.

Wake County continues to make strides in addressing infant and maternal health disparities. Although there's room for improvement, these local initiatives are a testament to the community's collective commitment to affecting change and reducing inequities.

11.0 REFERENCES

1. Racial Disparities in Maternal and Infant Health: Current Status and Efforts to Address Them, retrieved 11/3/23 from https://www.kff.org/racial-equity-and-health-policy/issue-brief/racial-disparities-in-maternal-and-infant-health-current-status-and-efforts-to-address-them/#:~:text=Research%20has%20documented%20that%20social,of%20mortality%20among%20Black%20infants.

2. Tsawe, M., Moto, A., Netshivhera, T. *et al.* Factors influencing the use of maternal healthcare services and childhood immunization in Swaziland. *Int J Equity Health* 14, 32 (2015). https://doi.org/10.1186/s12939-015-0162-2.

3. Salinas-Miranda AA, King LM, Salihu HM, Wilson RE, Nash S, Collins SL, Berry EL, Austin D, Scarborough K, Best E, Cox L, King G, Hepburn C, Burpee C, Briscoe R, Baldwin J. Protective Factors Using the Life Course Perspective in Maternal and Child Health. Engage. 2020;1(3):69-86. Epub 2020 Dec 18. PMID: 33880449; PMCID: PMC8054993.

4. Risk and Protective Factors, retrieved 11/3/23 from https://youth.gov/youth-topics/pregnancy-prevention/risk-and-protective-factors.

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