



2024

Maternal and Child Health Report

PUBLIC HEALTH REPORT



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

- Provide an overview of the socio-demographic profile of Wake County, enabling comparisons with maternal and child health statistics.
- Offer a comprehensive overview of maternal and child health indicators in Wake County, covering pregnancy and birth outcomes, as well as maternal and infant health outcomes.
- Identify trends in maternal and child health outcomes over time and provide comparisons with regional and national data to contextualize Wake County's outcomes.
- Serve as a valuable resource to guide the prioritization of efforts and the improvement of MCH outcomes through evidence-based initiatives.

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/motherchild-icon/>, retrieved 1/23/25

Equity Lens and Focus on Disparities

Equity Framework: This report uses an equity lens to identify and address disparities in maternal and child health ^(1,5). By analyzing data across demographic and health indicators, we can highlight areas where inequities persist ⁽⁵⁾. This ensures that our focus remains on improving health outcomes for all families, particularly those from historically marginalized groups.

Disparities in Maternal and Child Health: Significant disparities continue across maternal and child health indicators, with Black or African American mothers experiencing higher rates of severe maternal morbidity, preterm births, low birthweight, and infant mortality ^(1,2). Highlighting such disparities is essential to the development and implementation of targeted support within and around historically marginalized groups. It is important to recognize that structural racism and implicit bias within the healthcare system may contribute to unequal access to care, misdiagnosis, and undertreatment, which worsen outcomes for these populations ^(1,2,3,4,5). Detailed breakdowns of disparities across maternal and infant health outcomes can be found throughout the report. Disparity tables offer grades per indicator or outcome (based on data from 2019–2023). A disparity ratio greater than 1 indicates that the disadvantaged group experiences a higher rate of the outcome compared to the advantaged group.

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, 2023 American Community Survey (ACS) (Census Bureau) 1-year and 5-year estimates are reported for Wake County as well as North Carolina.

3.0 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) (NH) (56%), Black or African American (Non-Hispanic) (18.6%), Hispanic or Latino (11.5%), and Asian (8.8%) (Table 2).
- 42.1% of Wake County female residents are of childbearing age (15-44 years) (Table 3).

Table 1: Population Distribution by Sex, Wake County, NC, 2023

Sex	Population	Percent
Female	582,915	51%
Male	607,360	49%
Total	1,190,275	100%

Table 2: Population Distribution by Race and Ethnicity, Wake County, NC, 2023

Race/Ethnicity	Population	Percent
White alone	666,121	56%
Black or African American alone	221,946	18.6%
Hispanic or Latino (any race)	137,414	11.5%
American Indian/Alaska Native alone	2,633	0.2%
Asian alone	104,741	8.8%
Native Hawaiian/Other Pacific Islander alone	361	0%
Two or More Races alone	48,794	4.1%
Some Other Race	8,265	0.7%

Table 3: Female Population Distribution by Age Group, Wake County, NC, 2023

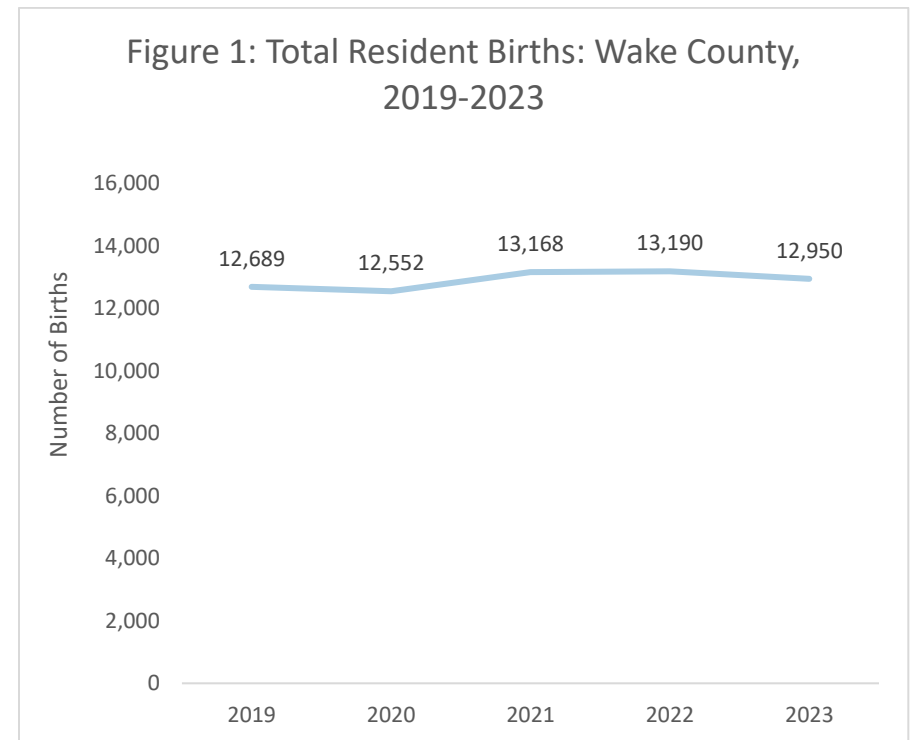
Age Group	Population	Percent
<15	108,018	17.8%
15-19	38,979	6.4%
20-24	37,195	6.1%
25-29	42,220	7%
30-34	45,764	7.5%
35-39	45,224	7.4%
40-44	46,524	7.7%
45+	243,436	40.1%

For Tables 1-3: Source: 2023 American Community Survey Estimates, United States Census Bureau. Note: Percentages may not sum to 100% due to rounding.

4.0 MATERNAL DEMOGRAPHICS

Total Resident Births

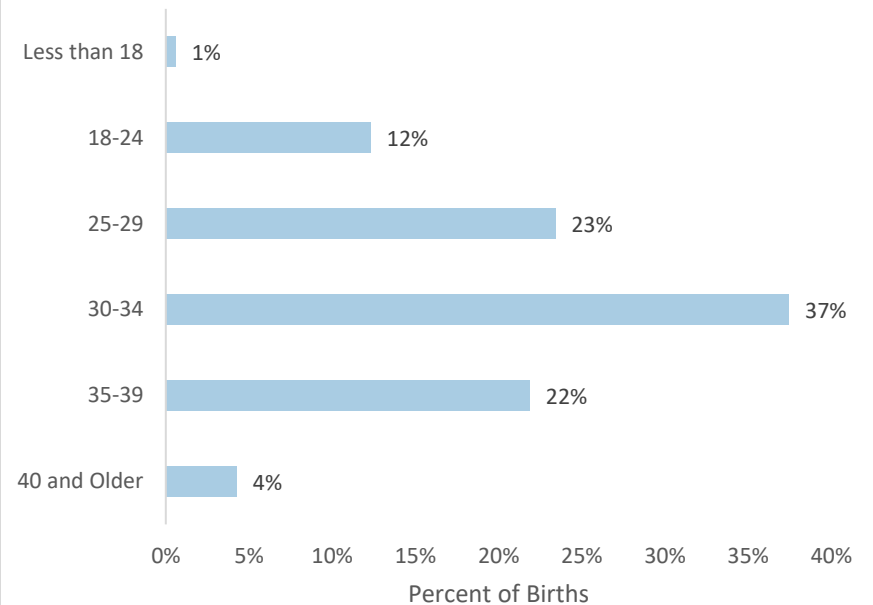
Between 2019 and 2023, the total number of resident births per year in Wake County remained relatively stable, with minor fluctuations over the years. In 2023, there were 12,950 resident births, showing a slight decrease from 13,190 in 2022.



Births by Maternal Age

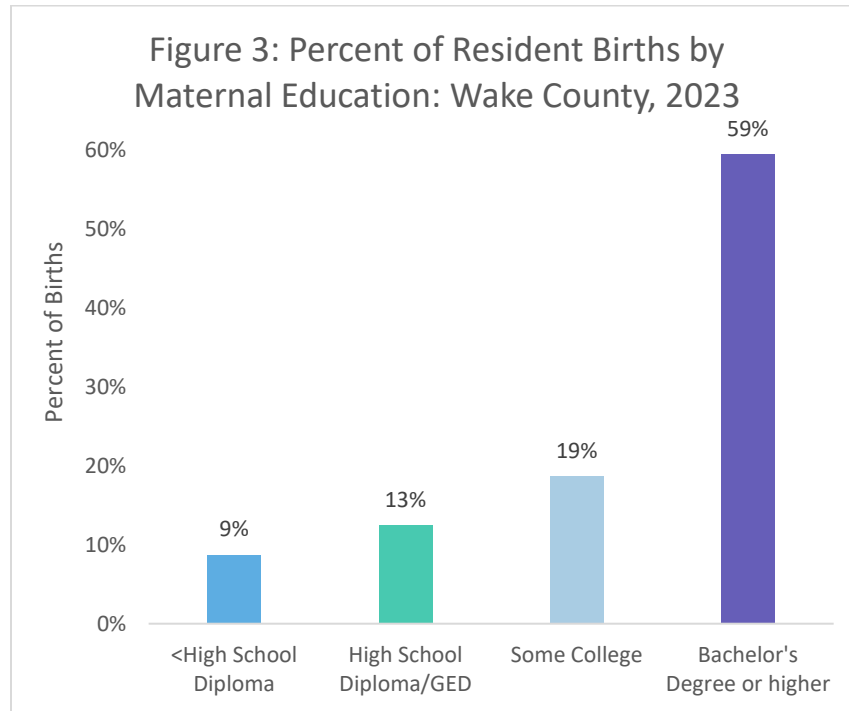
In 2023, the age group 30-34 years represented the highest percentage of births in Wake County with 37% of total births. Those between the age of 25 and 29 had the second highest percentage of births, accounting for 23% of total births. Mothers aged 18-24 accounted for 12% of total births. Mothers aged 35-39 contributed 22% of births, and those aged 40 and older represented 4%. Teen births (less than 18 years old) made up just 1% of total births.

Figure 2: Percent of Resident Births by Maternal Age: Wake County, 2023



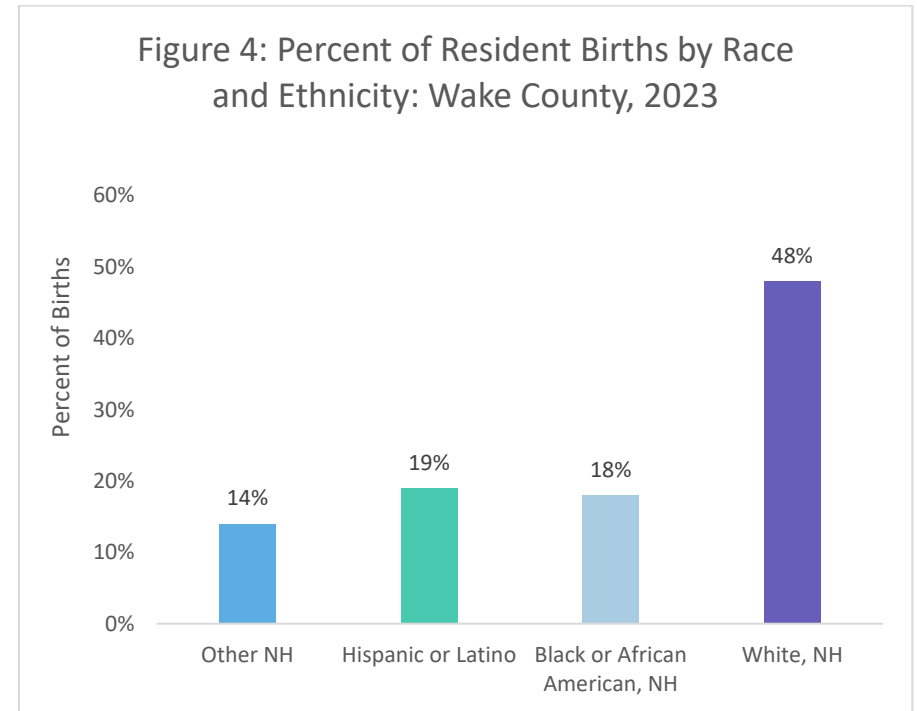
Births by Maternal Education

In 2023, 59% of resident births in Wake County were to mothers with a bachelor's degree or higher, highlighting the high educational attainment of mothers in the region. Mothers with some college education accounted for 19%, while those with a high school diploma or GED represented 13%. Only 9% of births were to mothers with less than a high school education.



Births by Maternal Race and Ethnicity

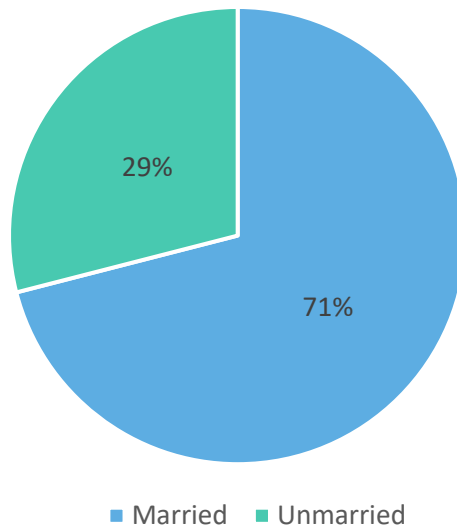
In 2023, the majority of resident births in Wake County were among White Non-Hispanic mothers, accounting for 48% of total births. Hispanic or Latino mothers represented 19%, followed by Black or African American Non-Hispanic mothers at 18%. Mothers categorized as Other Non-Hispanic made up 14% of total births. This distribution reflects the racial and ethnic diversity of the population giving birth in the county.



Births by Maternal Marital Status

The chart below displays maternal marital status in Wake County for 2023. Most births occur among married mothers, accounting for 71% of the total, while 29% of births were to unmarried mothers.

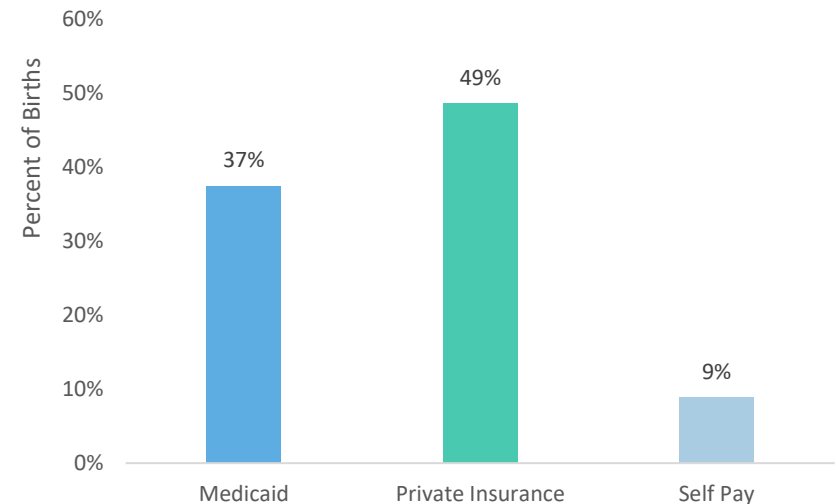
Figure 5: Percent of Births by Maternal Marital Status:
Wake County, 2023



Births by Payment Source

In Wake County, 2023 data indicate that Medicaid covers 37% of all births, while private insurance accounts for 49%. Self-pay represents 9% of all births, and payment sources not named represent 5%. These data highlight the various payment sources utilized by families during childbirth.

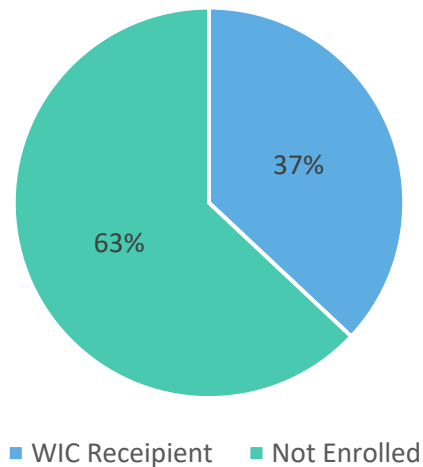
Figure 6: Percent of Births by Payment Source:
Wake County, 2023



Births by WIC Enrollment

In Wake County, WIC supports approximately 37% of families that gave birth in 2023, demonstrating its vital role in providing nutritional assistance, education, and resources to families. This program enhances maternal and infant health by promoting healthy eating, ensuring access to essential healthcare services, and reducing disparities in health outcomes ⁽⁶⁾.

Figure 7: Percent of Births by WIC Enrollment:
Wake County, 2023



5.0 OVERVIEW OF PREGNANCY AND BIRTH OUTCOMES

In Wake County, monitoring pregnancy and birth outcomes helps identify areas where support and interventions are needed to improve maternal and infant health. This section summarizes metrics related to pregnancy and delivery.

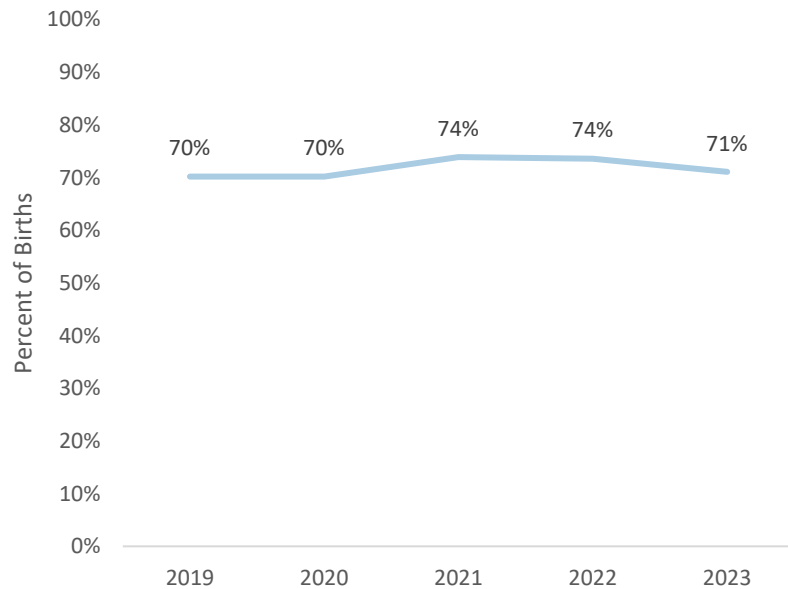
5.1 Maternal Health and Pregnancy Care

Prenatal Care

Delayed or absent prenatal care can have serious 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 ⁽¹⁵⁾. Therefore, it is crucial for prenatal care to start early to provide comprehensive support and guidance for a healthy pregnancy and delivery.

The 2023 birth data reveal that for 71% of Wake County births, mothers received prenatal care in the first trimester. This marks a decrease from 74% in 2021, indicating a concerning trend in early prenatal care initiation.

Figure 8: Percent of Births where Mother Received Prenatal Care in the First Trimester: Wake County, 2019-2023



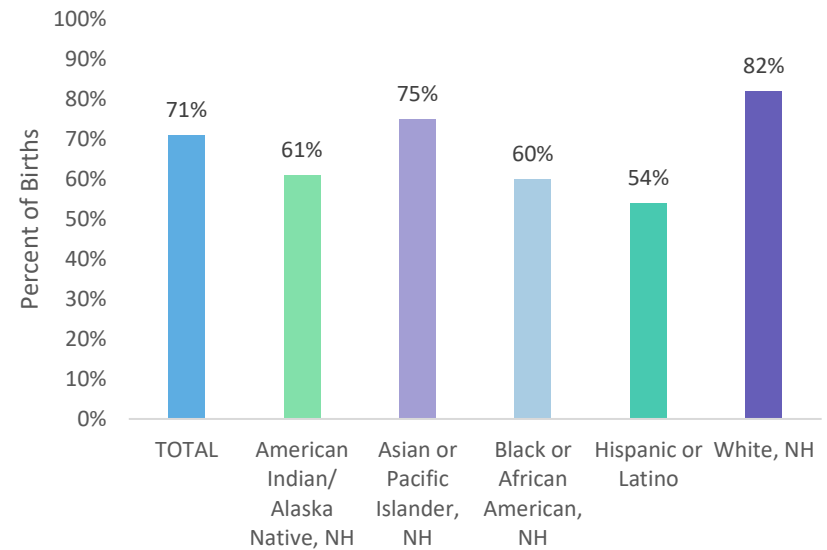
Disparities are evident among different racial and ethnic groups regarding early prenatal care. Hispanic (54%), Black or African American Non-Hispanic (60%), and American Indian/Alaska Native Non-Hispanic (61%) mothers have the lowest rates of initiating prenatal care in the first trimester. In contrast, White Non-Hispanic (82%) and Asian or Pacific Islander Non-Hispanic (75%) mothers have the highest rates of initiating prenatal care in the first trimester.



Prenatal Care

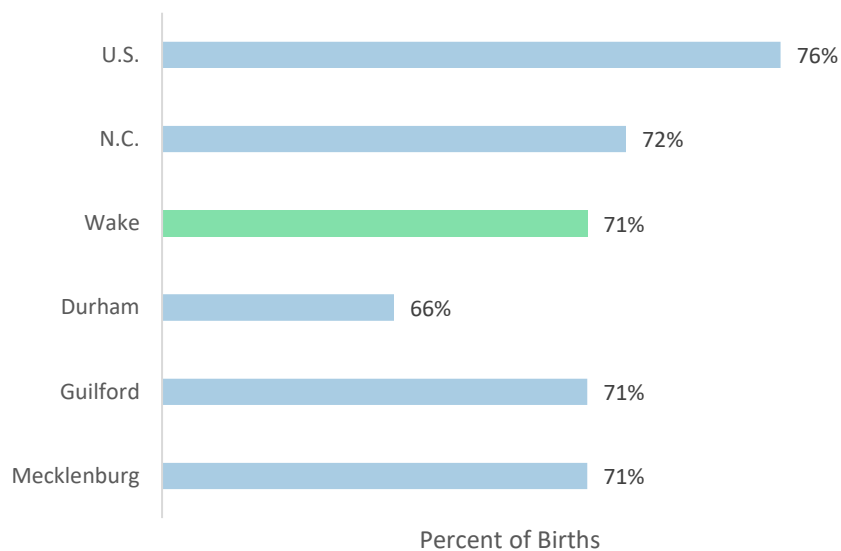
Black Non-Hispanic mothers and Hispanic mothers are **TWICE** as likely as their white counterparts to begin prenatal care until after the first trimester or go without it entirely.

Figure 9: Percent of Births where Mother Received Prenatal Care in the First Trimester by Race and Ethnicity: Wake County, 2023



When comparing county data to regional and national prenatal care trends, Wake County's percent of births where mothers received prenatal care in the first trimester is lower (71%) than North Carolina (72%) and the United States (76%). Among neighboring counties in North Carolina, Wake County's percentage is higher than Durham (66%) but same as Guilford (71%) and Mecklenburg (71%) counties.

Figure 10: Percent of Births where Mother Received Prenatal Care in the First Trimester by Residency of Mother, 2023



Method of Delivery

Delivery methods vary across racial and ethnic groups and may be correlated with maternal and infant health outcomes ⁽¹⁶⁾. In Wake County, an analysis of delivery methods reveals disparities that may stem from factors such as access to care, varying health needs, provider practices, and the availability and distribution of resources.

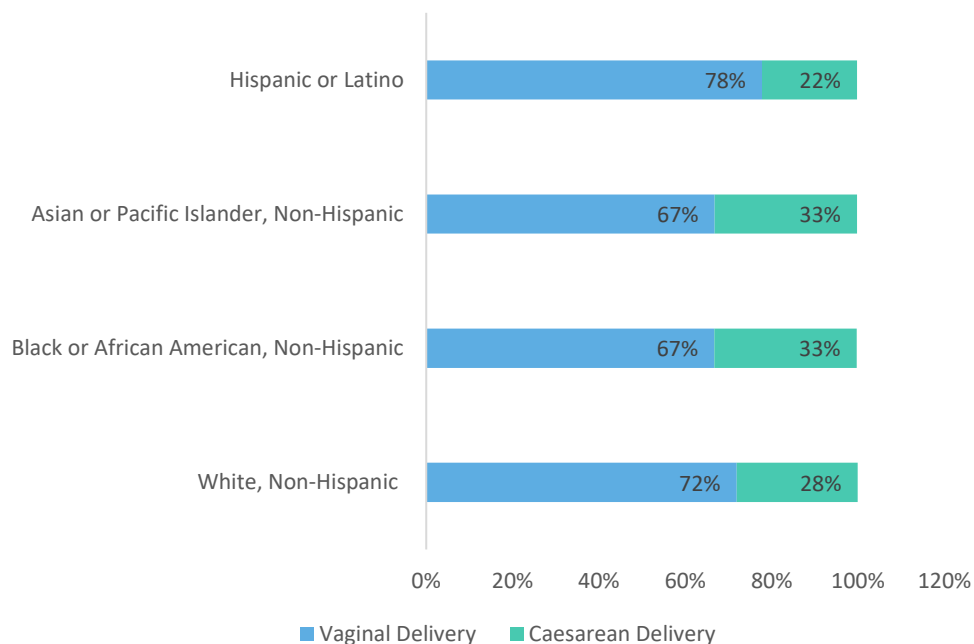
Vaginal Delivery:

Childbirth through the birth canal, generally associated with shorter recovery times and fewer complications compared to cesarean delivery ⁽⁷⁾.

Cesarean Delivery (C-Section):

A surgical procedure to deliver a baby through incisions in the abdomen and uterus. C-sections often involve longer recovery times and carry higher risks, including infection and blood clots ⁽⁷⁾.

**Figure 11: Method of Delivery by Race and Ethnicity:
Wake County, 2023**



In 2023, Hispanic or Latino women had the highest percentage of vaginal deliveries (78%) among racial and ethnic groups in Wake County.

This compares to 72% for White Non-Hispanic women, 67% for Asian or Pacific Islander Non-Hispanic women, and 67% for Black or African American Non-Hispanic women.

Black or African American Non-Hispanic women and Asian or Pacific Islander Non-Hispanic women had the highest percentages of cesarean deliveries at 33% each, among racial and ethnic groups.

White Non-Hispanic women had a cesarean rate of 28%, and Hispanic or Latino women had the lowest rate at 22%.

Characteristics of Labor and Delivery

Understanding key interventions used during labor and delivery offers insight into maternal health management practices and the medical support provided to mothers and infants. The following analysis outlines common procedures used to manage pain, prevent infections, and address complications that may arise during labor.

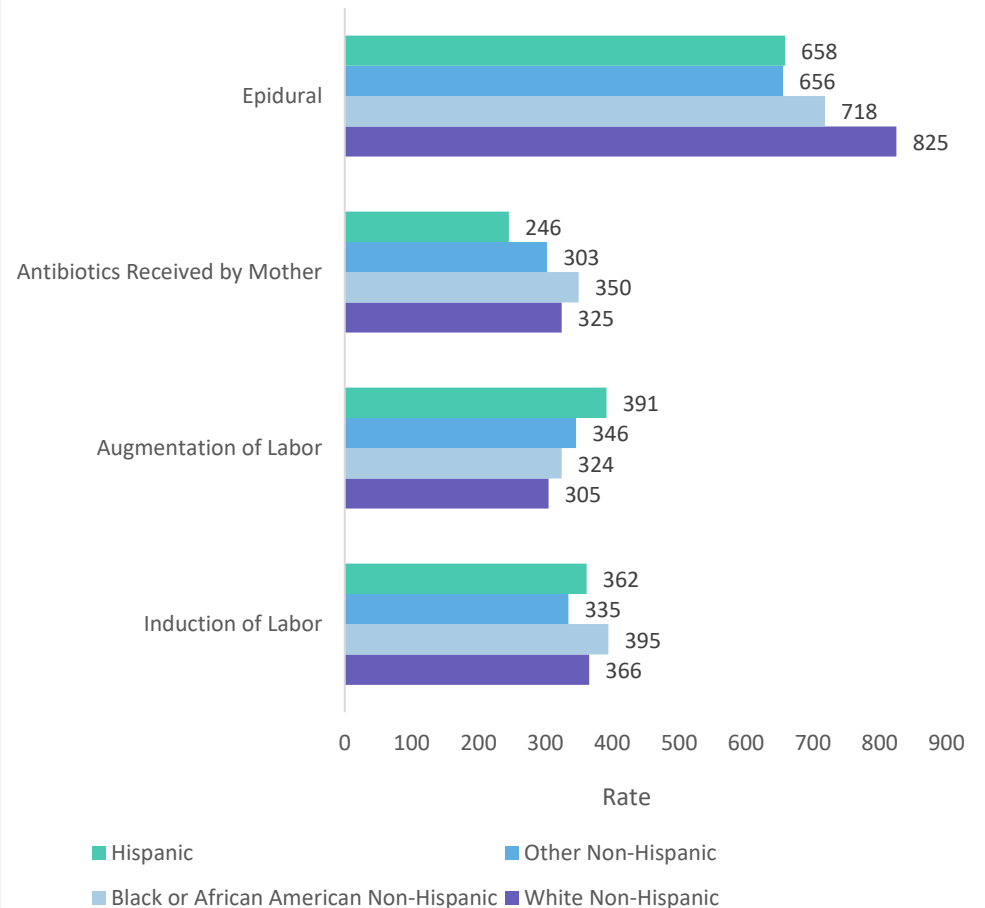
An Epidural: Epidurals are a widely used method of pain management during labor in the U.S., delivered through a spinal injection ⁽⁸⁾.

Antibiotic Administration During Labor: Antibiotics are used during labor to prevent or manage infections, such as Group B Streptococcus, which can pose severe risks to newborns if untreated ⁽⁸⁾.

Labor Augmentation: Labor augmentation includes interventions, such as administering oxytocin or rupturing the amniotic sac, to support or advance labor ⁽⁸⁾.

Labor Induction: Labor induction is a medical intervention used to initiate labor, often in cases where conditions like preeclampsia or gestational diabetes increase risks for mother and infant ⁽⁸⁾.

Figure 12: Characteristics of Labor and Delivery per 1,000 Births by Race and Ethnicity: Wake County, 2023



Epidural Use:

- White Non-Hispanic women had the highest rate of 825 per 1,000 births for epidural use during labor.
- This is compared to 718 per 1,000 births for Black or African American Non-Hispanic women, 658 per 1,000 births for Hispanic women, and 656 per 1,000 births for Other Non-Hispanic women.

Antibiotics Received by Mother:

- Black or African American Non-Hispanic women had the highest rate of 350 per 1,000 births for receiving antibiotics during labor.
- This is followed by 325 per 1,000 births for White Non-Hispanic women, 303 per 1,000 births for Other Non-Hispanic women, and 246 per 1,000 births for Hispanic women.

Augmentation of Labor:

- Hispanic women had the highest rate of 391 per 1,000 births for augmentation of labor.
- This compares to 346 per 1,000 births for Other Non-Hispanic women, 324 per 1,000 births for Black or African American Non-Hispanic women, and 305 per 1,000 births for White Non-Hispanic women.

Induction of Labor:

- Black or African American Non-Hispanic women had the highest rate of 395 per 1,000 births for induced labor.
- This compares to 366 per 1,000 births for White Non-Hispanic women, 362 per 1,000 births for Hispanic women, and 335 per 1,000 births for Other Non-Hispanic women.

5.2 Maternal Risk Factors

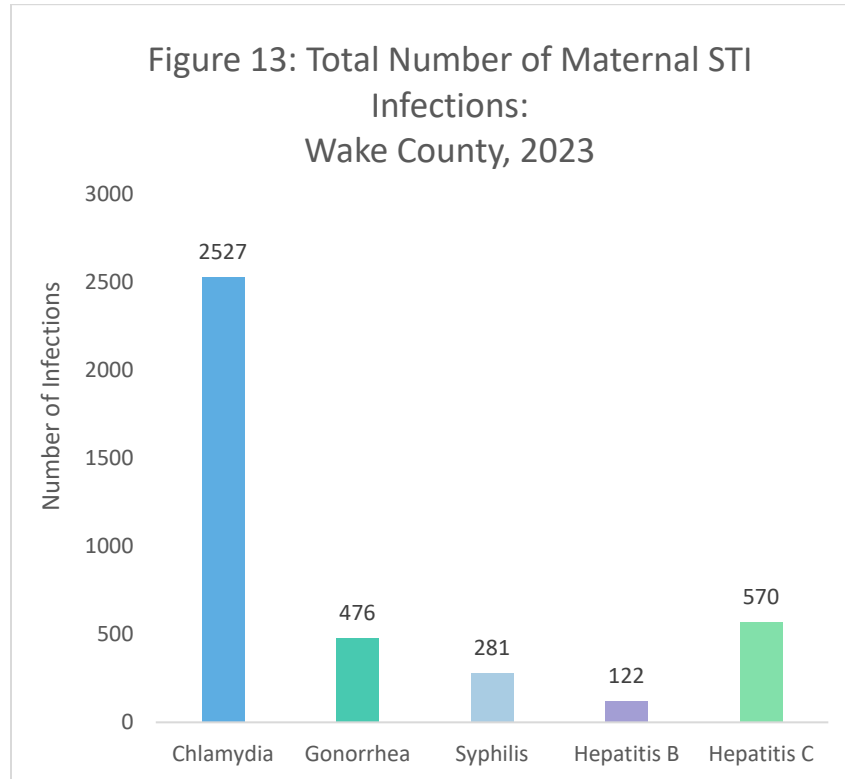


Black Non-Hispanic mothers are **TWICE** as likely as their white counterparts to smoke prior to pregnancy.

American Indian or Alaska Native Non-Hispanic mothers are nearly **FOUR** times more likely to smoke prior to pregnancy than white mothers.

Maternal Infections

The data below display the total number of maternal infections (sexually transmitted and transmitted through contact with infected blood or bodily fluids) in Wake County for 2023. Sexually Transmitted Infections (STIs) affecting mothers include chlamydia (2,527), gonorrhea (476), and syphilis (281), with chlamydia affecting mothers the most. Viral hepatitis infections affecting mothers include hepatitis C (570) and hepatitis B (122) with the lowest infection count for hepatitis B.



In 2023, the incidence rates of STIs among mothers in Wake County highlight differences among racial and ethnic groups. The highest rates of chlamydia and gonorrhea were recorded among Black or African American Non-Hispanic individuals, indicating a concerning trend in STI prevalence within this population. American Indian or Alaska Native Non-Hispanic individuals also showed elevated rates of these infections. In contrast, White Non-Hispanic individuals exhibited lower incidence rates across STIs analyzed. Hispanic populations experienced considerable rates as well, particularly for hepatitis C. The Asian Non-Hispanic population experienced a high rate of hepatitis B.

Figure 14: Chlamydia Infections per 1,000 Births by Race and Ethnicity: Wake County, 2023

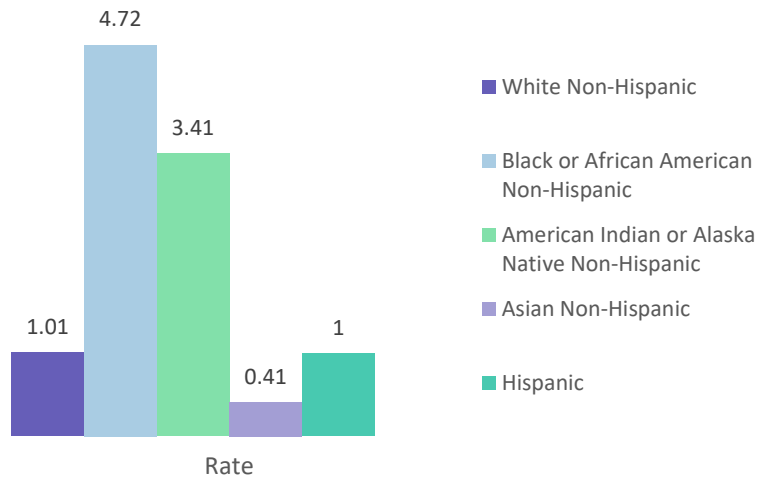


Figure 15: Gonorrhea Infections per 1,000 Births by Race and Ethnicity: Wake County, 2023

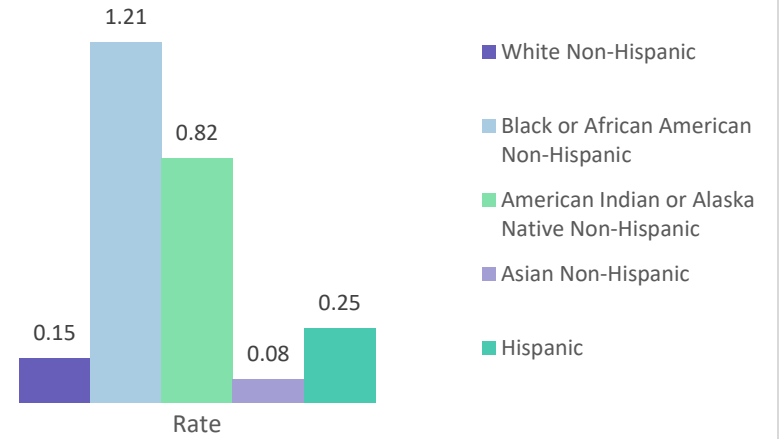


Figure 16: Syphilis Infections per 1,000 Births by Race and Ethnicity: Wake County, 2023

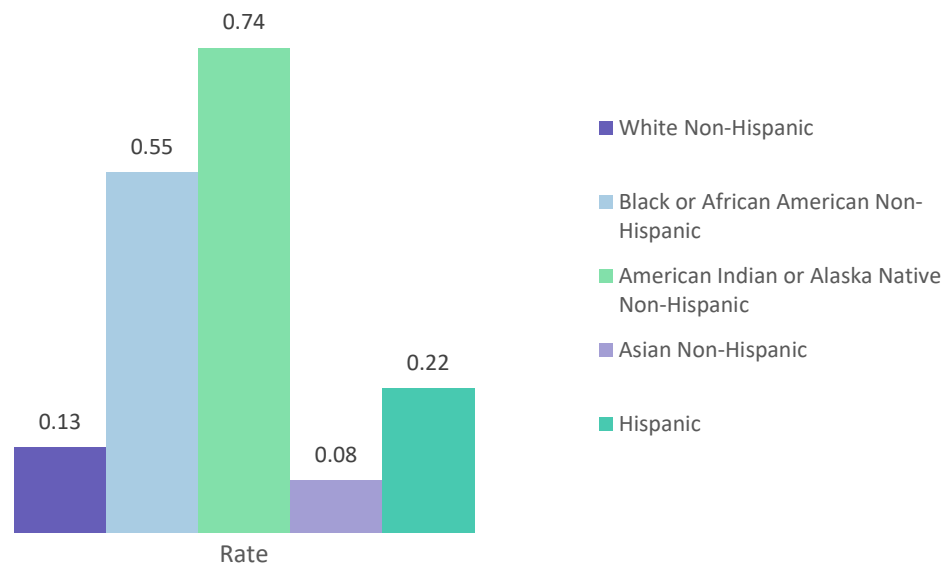


Figure 17: Hepatitis B Infections per 1,000 Births by Race and Ethnicity: Wake County, 2023

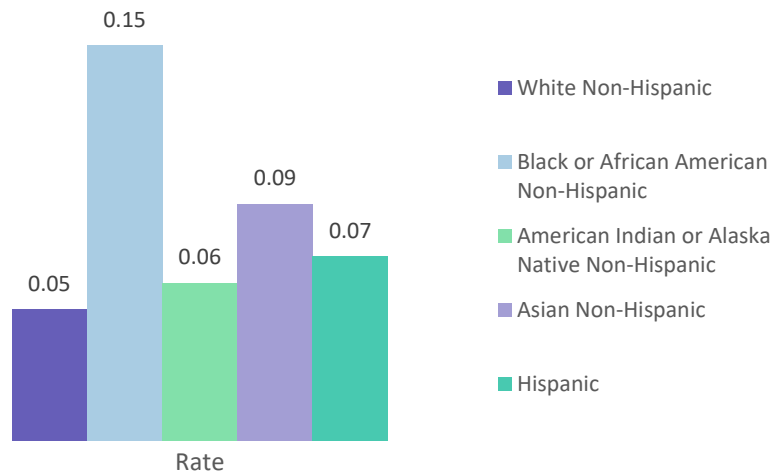
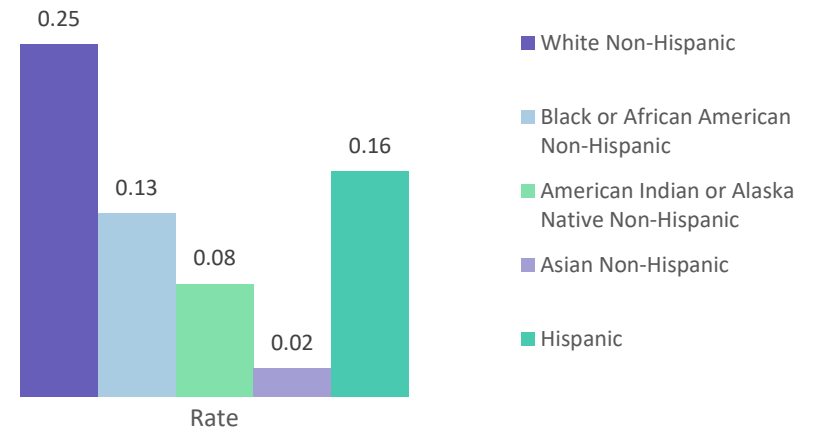


Figure 18: Hepatitis C Infections per 1,000 Births by Race and Ethnicity: Wake County, 2023



Severe Maternal Morbidity

Severe Maternal Morbidity (SMM) encompasses unexpected complications that arise during labor and delivery that pose substantial health risks to mothers. Monitoring SMM is essential, as these serious issues can lead to prolonged hospitalizations, increased healthcare costs, long-term health effects, and even death. Tracking these rates allows for the identification of trends in maternal health and the evaluation of the effectiveness of care practices. Understanding the prevalence and underlying causes of SMM is vital and should enable healthcare providers to develop targeted strategies aimed at improving maternal outcomes and reducing the risks associated with childbirth (9).

Wake County has experienced fluctuations in SMM rates over the past five years. The SMM rate was 73 per 10,000 delivery discharges in 2019, decreasing to 71 in 2020, then rising to 95 in 2021. The rate decreased to 75 in 2022 and increased to 87 in 2023.

Figure 19: Severe Maternal Morbidity Rate:
Wake County, 2019-2023

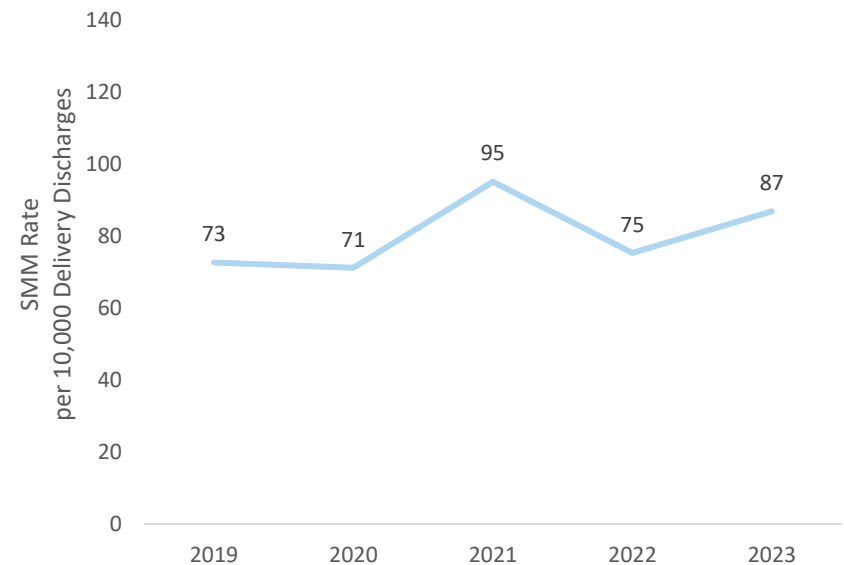
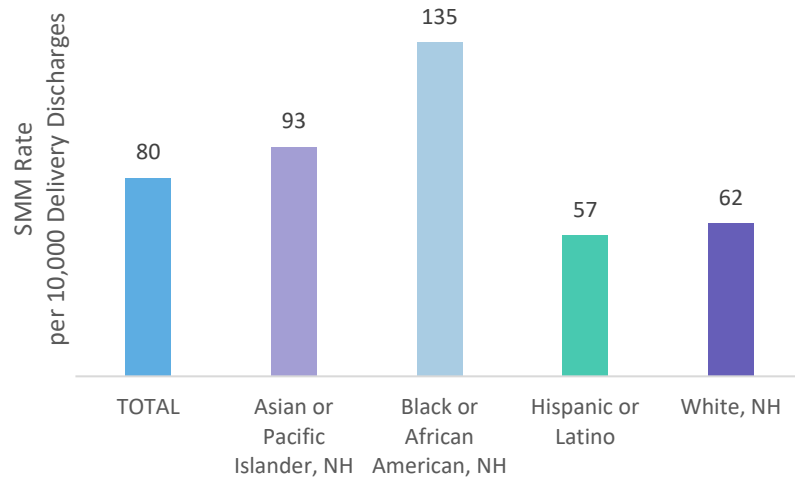


Figure 20: Severe Maternal Morbidity Rate by Race and Ethnicity: Wake County, 2019-2023



These data indicate significant disparities in SMM rates among different racial and ethnic groups in Wake County. Black or African American Non-Hispanic mothers face disproportionately higher rates of severe maternal morbidity compared to other groups, reflecting systemic issues in maternal healthcare access and quality. This disparity underscores the critical challenges that Black or African American mothers encounter in achieving safe delivery outcomes, including heightened risks of complications that can adversely affect both maternal and infant health.



GESTATIONAL DIABETES

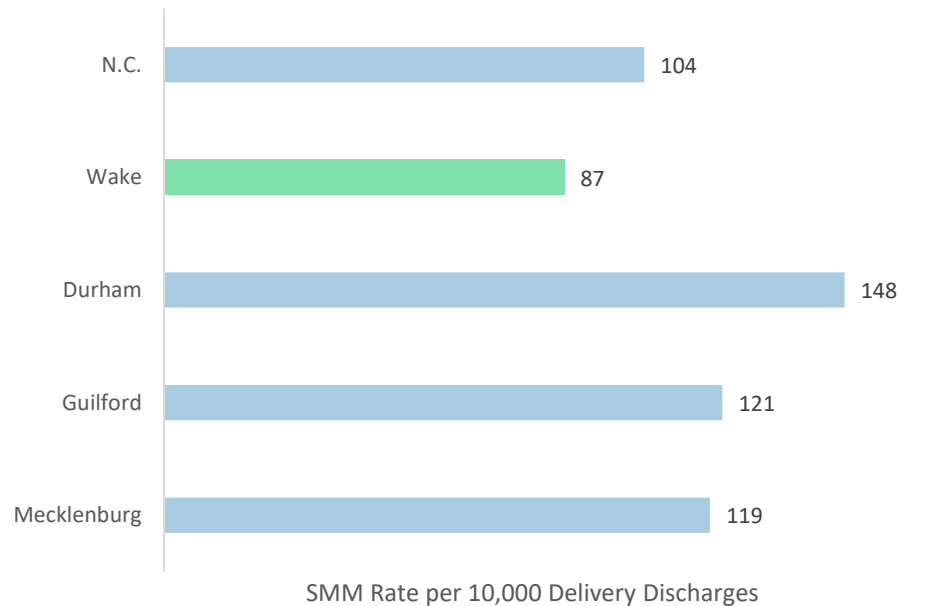
Asian or Pacific Islander Non-Hispanic mothers are nearly

THREE times more likely to have gestational diabetes compared to white mothers. Hispanic mothers

are **TWICE** as likely to have gestational diabetes compared to white mothers.

Wake County's SMM rate of 87 per 10,000 delivery discharges is significantly lower than the North Carolina rate of 104 per 10,000. Among neighboring counties, Wake County has a markedly lower overall SMM rate compared to Durham (148 per 10,000), Guilford (121 per 10,000), and Mecklenburg (119 per 10,000), indicating better maternal health outcomes in Wake County.

Figure 21: Severe Maternal Morbidity Rate by Residency of Mother, 2023



Maternal and Infant Health Disparity tables present detailed breakdowns of preventable health differences across important infant and maternal health outcomes. A disparity ratio greater than 1 indicates that the disadvantaged group experiences a higher rate of the outcome compared to the advantaged group. The following table includes maternal risk factors, based on data from 2019-2023 (*data was suppressed/not available).

Table 4: Maternal Risk Factor Disparity Table, 2019-2023

Maternal Risk Factor	White Non-Hispanic	Black or African American Non-Hispanic			American Indian or Alaska Native Non-Hispanic			Asian or Pacific Islander Non-Hispanic			Hispanic or Latino		
	Rate %	Rate %	Disparity Ratio	Disparity Grade	Rate %	Disparity Ratio	Disparity Grade	Rate %	Disparity Ratio	Disparity Grade	Rate %	Disparity Ratio	Disparity Grade
Late or No Prenatal Care	18.5	39	2.1	C	31	1.7	B	25.4	1.4	B	43.1	2.3	C
Maternal Smoking Prior to Pregnancy	2.2	4.7	2.1	C	7.8	3.5	F	*	*	A	1.1	0.5	A
Gestational Hypertension	12	17.3	1.4	B	14	1.2	A	5.9	0.5	A	10.7	0.9	A
Gestational Diabetes	5.5	7.1	1.3	B	7.8	1.4	B	15.1	2.7	D	11.6	2.1	C

Disparity Grade (color)	A (dark blue)	B (pale blue)	C (yellow)	D (pink)	F (red)
Disparity Ratio	0.0-1.24	1.24-1.9	2.0-2.4	2.5-2.9	Greater or equal to 3.0
Meaning	Little or no disparity	A disparity exists, should be monitored and may require intervention.	The disparity requires intervention.	Major interventions are needed.	Significant interventions are needed.

Equity Lens: Maternal Health and Pregnancy Care

The findings above underscore disparities that exist across maternal health and pregnancy care in Wake County. Using an equity lens, below are specific examples affecting individuals among different racial and ethnic groups.

- **Severe Maternal Morbidity (SMM) Disparities:** Black or African American mothers experience disproportionately higher rates of severe maternal morbidity, reflecting systemic inequities in access to quality healthcare and the management of pregnancy-related complications.
- **Lower Early Prenatal Care Rates:** Black or African American, American Indian or Alaska Native, and Hispanic mothers face lower rates of early prenatal care initiation, underscoring barriers to timely and comprehensive care during pregnancy.
- **Disparities in Pain Management:** Black or African American and Hispanic mothers are less likely to receive pain management interventions during labor, indicating potential disparities in how care is delivered and perceived.
- **Higher Maternal Infection Rates:** Black or African American mothers have some of the highest rates of maternal infections, further illustrating inequities in preventative care, screening, and treatment during pregnancy.
- **Impact of Systemic Barriers:** These disparities highlight the significant impact of systemic barriers, such as structural racism, implicit bias, and unequal access to resources and quality of care, which adversely affect maternal health outcomes for these populations ^(1,2,3,4).

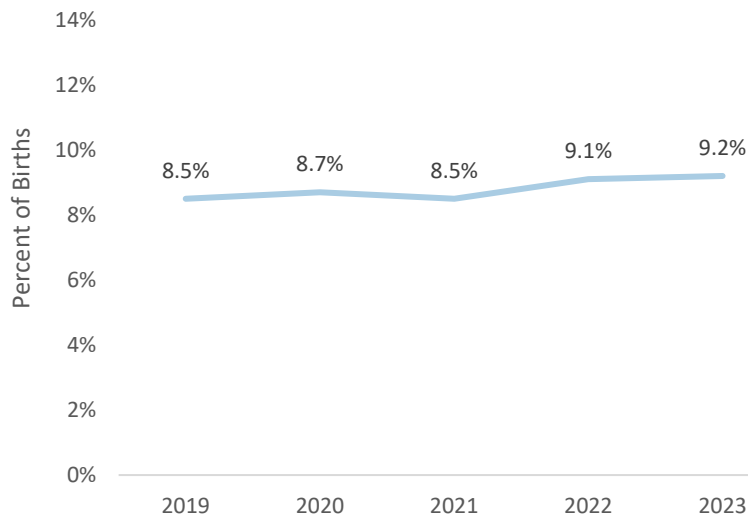
6.0 OVERVIEW OF INFANT HEALTH OUTCOMES

Infant health outcomes are critical indicators of both maternal and infant well-being. They reflect not only the immediate health of newborns but also the quality of prenatal care, the mother's health status, and access to resources before and after birth. Tracking these outcomes allows us to identify areas for improvement and implement strategies that support healthier futures for both mothers and their children. In this section, metrics related to infant morbidity and mortality are summarized.

Preterm Births

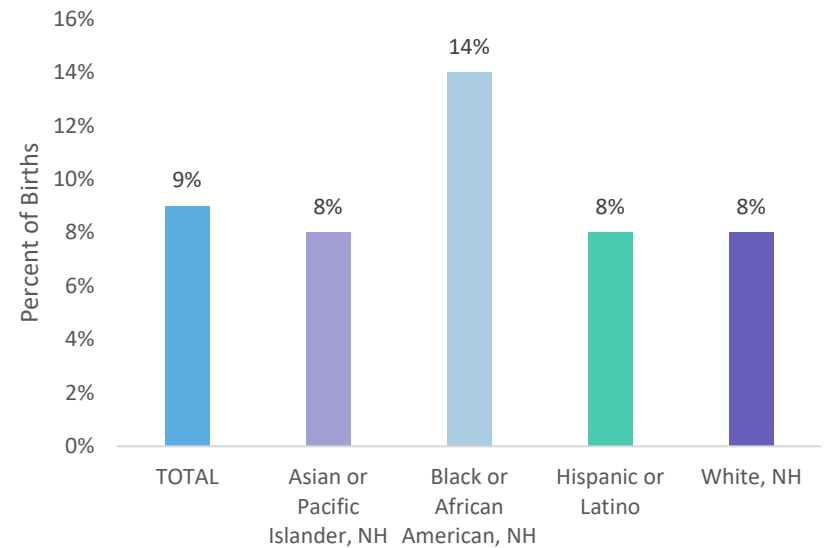
Preterm birth, defined as giving birth before 37 weeks, poses major risks to maternal health and is the leading cause of neonatal mortality. The 2023 birth data for Wake County reveal an overall preterm birth rate of 9.2%, with notable disparities between racial and ethnic groups.

Figure 22: Percent of Births that were Preterm: Wake County, 2019-2023



A gradual increase in preterm births has been observed in Wake County over the past five years, rising from 8.5% in 2019 to 9.2% in 2023.

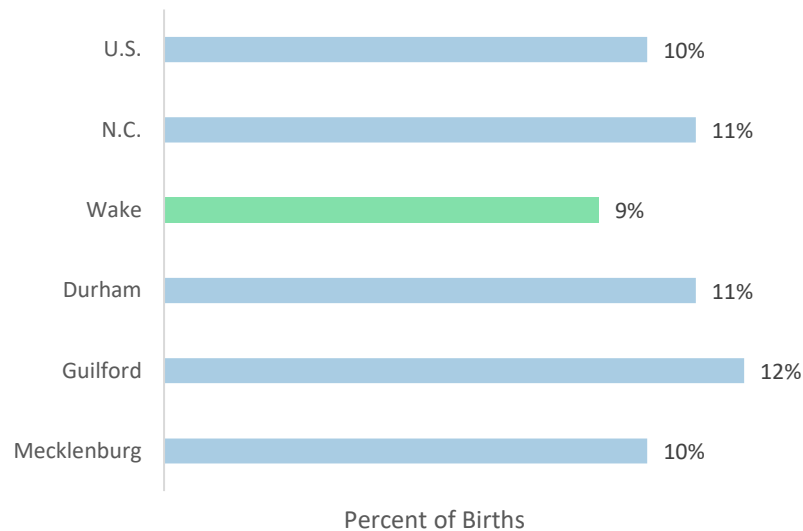
Figure 23: Percent of Births that were Preterm by Race and Ethnicity: Wake County, 2023



Black or African American Non-Hispanic mothers experience the highest percentage of preterm births at 14%, which is significantly higher than White Non-Hispanic (8%), Asian or Pacific Islander Non-Hispanic (8%), and Hispanic or Latino (8%) mothers. These data highlight the increased likelihood of Black or African American Non-Hispanic mothers giving birth before 37 weeks compared to other groups.

Wake County's preterm birth rate of 9% is lower than the rates for North Carolina (11%) and the United States (10%). Among neighboring counties, Wake County's rate is also lower than Durham (11%), Guilford (12%), and Mecklenburg (10%).

Figure 24: Percent of Births that were Preterm by Residency of Mother, 2023



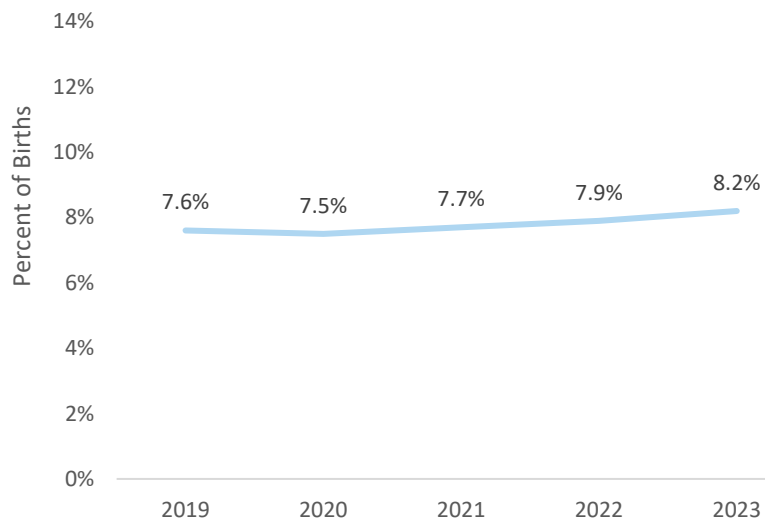
Birthweight

Low birthweight, defined as a birth weight below 2,500 grams, is linked to a range of health concerns, including increased risk of developmental issues, respiratory problems, and a higher likelihood of neonatal mortality. The 2023 birth data for Wake County indicate an overall low birthweight rate of 8.2%, with disparities observed among racial and ethnic groups.



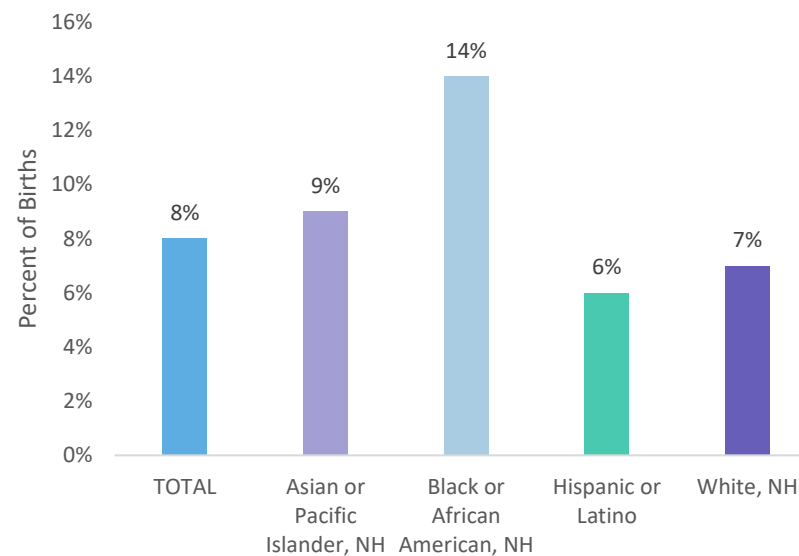
Black or African American infants are **TWICE** as likely as white infants to have low birthweights (<2500 grams)

Figure 25: Percent of Births with Low Birthweight: Wake County, 2019-2023



Over the past five years, Wake County has seen a gradual increase in low birthweight rates, rising from 7.6% in 2019 to 8.2% in 2023.

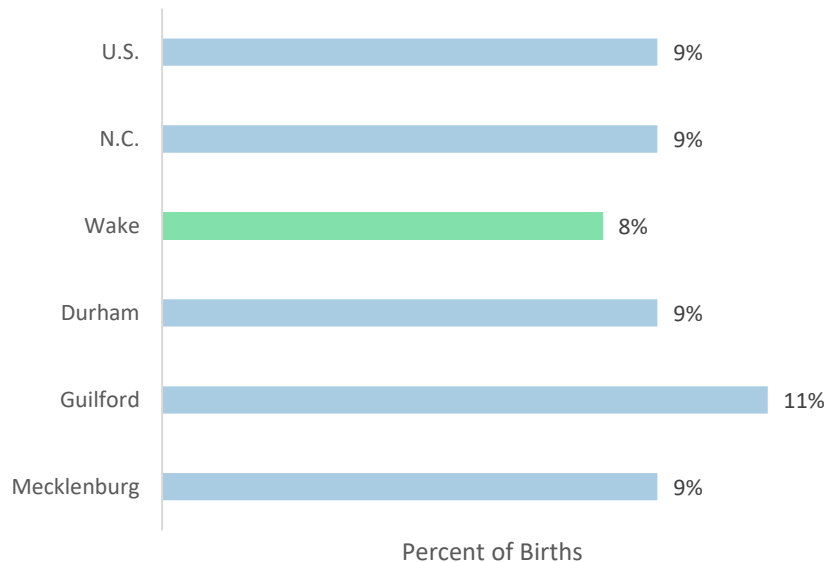
Figure 26: Percent of Births with Low Birthweight by Race and Ethnicity: Wake County, 2023



Black or African American Non-Hispanic mothers experience the highest percentage of low birthweight infants at 14%, significantly higher than White Non-Hispanic (7%), Asian or Pacific Islander Non-Hispanic (9%), and Hispanic (6%) mothers. These data suggest that African American Non-Hispanic mothers are more likely to give birth to infants with low birthweight compared to other groups.

Wake County's low birthweight rate of 8% is lower than North Carolina's (9%) and the United States (9%). Among neighboring counties, Wake County's rate is also lower than Durham (9%), Guilford (11%), and Mecklenburg (9%).

Figure 27: Percent of Births with Low Birthweight by Residency of Mother, 2023

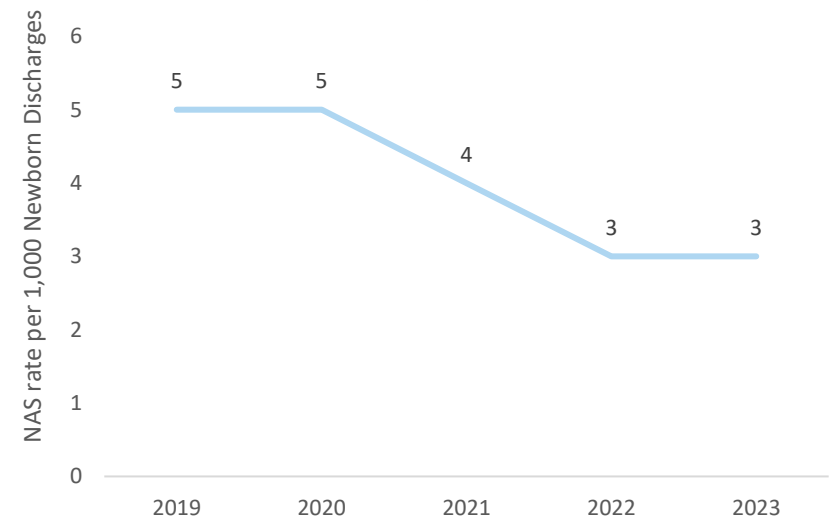


Neonatal Abstinence Syndrome (NAS)

Neonatal Abstinence Syndrome (NAS) occurs when newborns experience withdrawal symptoms due to prenatal exposure to certain substances, often opioids. This condition can lead to respiratory issues, feeding difficulties, and prolonged hospital stays, placing a substantial burden on families and healthcare systems.

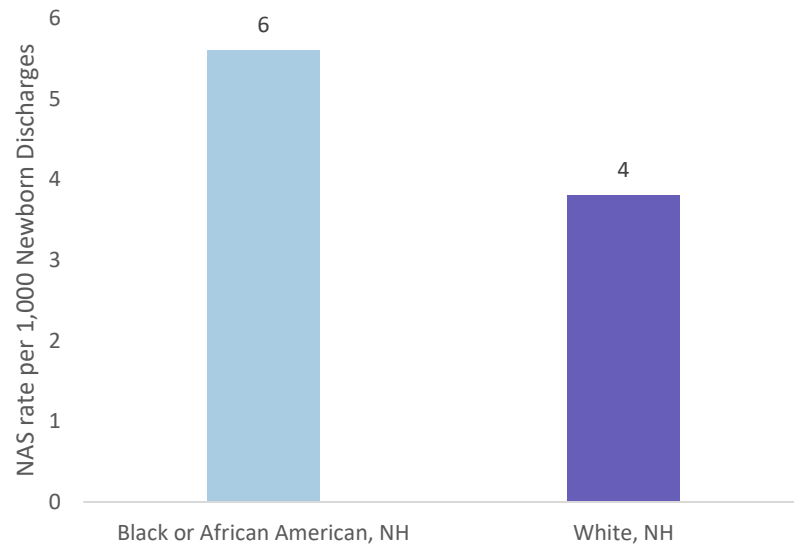
Wake County has seen a gradual decline in NAS rates over the past five years, decreasing from 5 per 1,000 newborns in 2019 to 3 per 1,000 newborns in 2023.

Figure 28: Neonatal Abstinence Syndrome (NAS) Rates: Wake County, 2019-2023



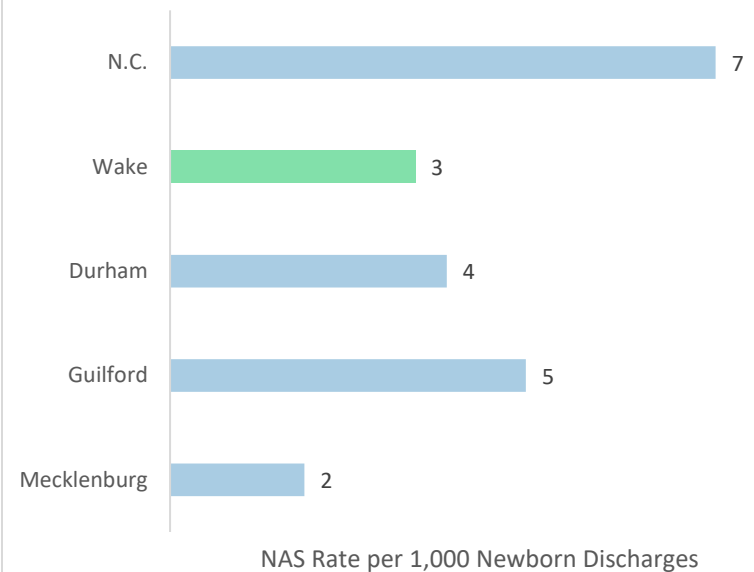
The 2023 data for NAS in Wake County reveal disparities across different racial and ethnic groups. Black or African American Non-Hispanic infants have the highest NAS rate, at 6 per 1,000, compared to 4 per 1,000 among White Non-Hispanic infants.

Figure 29: Neonatal Abstinence Syndrome (NAS) Rates by Race and Ethnicity: Wake County, 2023



When comparing Wake County's NAS rate to the state rate, Wake County's rate of 3 per 1,000 newborns is lower than the state rate of 7 per 1,000. Among neighboring counties, NAS rates vary, with Durham at 4 per 1,000, Guilford at 5 per 1,000, and Mecklenburg at 2 per 1,000 newborns.

Figure 30: Neonatal Abstinence Syndrome (NAS) Rates by Residency of Mother, 2023



Infant Health Conditions at Delivery

Understanding key interventions used to support newborn health at delivery provides insight into the challenges faced by infants requiring specialized care. The following analysis outlines common procedures used to manage complications, prevent infections, and provide respiratory support to newborns.

Neonatal Intensive Care Unit (NICU) Admissions: NICU care provides intensive support for newborns with severe complications, such as respiratory issues or preterm birth ⁽¹⁰⁾.

Antibiotic Use with Newborns: Antibiotics are administered to newborns to treat or prevent bacterial infections that could pose serious health risks ⁽¹⁰⁾.

Surfactant Therapy: Surfactant is given to premature infants with underdeveloped lungs to help with breathing ⁽¹⁰⁾.

Assisted Ventilation: Assisted ventilation provides respiratory support to newborns who cannot breathe adequately on their own ⁽¹⁰⁾.

NICU Admissions:

- Black or African American Non-Hispanic infants experienced the highest rate of NICU admissions at 129 per 1,000 births, significantly higher than other groups.

Antibiotics Received by Newborns:

- The rate of antibiotic administration among Black or African American Non-Hispanic infants was 47 per 1,000 births, the highest among racial and ethnic groups.

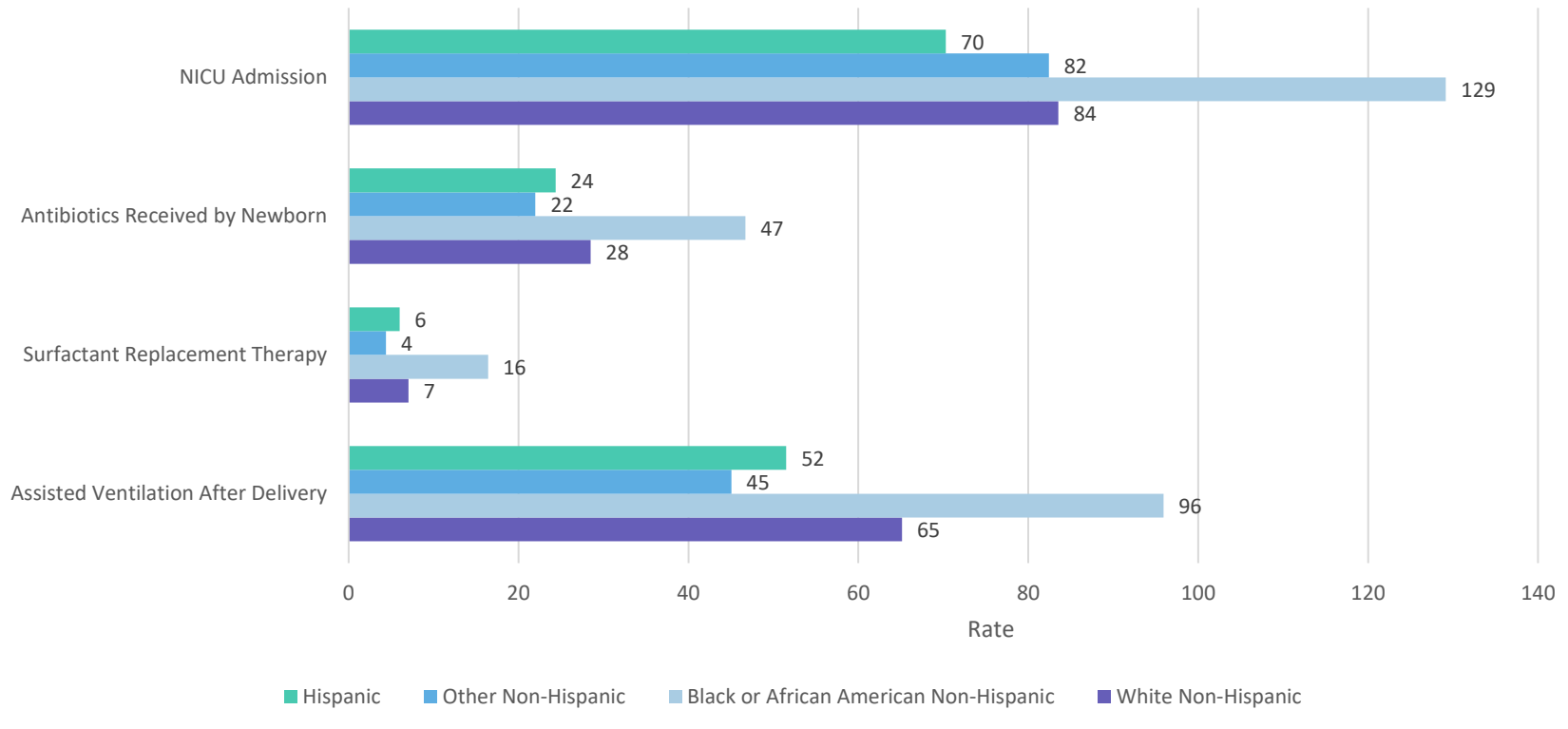
Assisted Ventilation After Delivery:

- Assisted ventilation was most common among Black or African American Non-Hispanic infants, with a rate of 96 per 1,000 births.

Surfactant Replacement Therapy:

- Black or African American Non-Hispanic infants had the highest rate of surfactant therapy at 16 per 1,000 births.

Figure 31: Infant Health Conditions at Delivery per 1,000 Births by Race and Ethnicity:
Wake County, 2023





Black or African American infants are **TWICE** as likely as white infants not to be breastfed at discharge.

Infant Death

In 2022, there were a total of 64 infant deaths in Wake County. These deaths resulted from various causes, including perinatal conditions, congenital abnormalities, infections, and ill-defined causes. The most common cause of infant death was conditions originating in the perinatal period (including disorders of newborn related to short gestation and low birthweight), which accounted for 34 deaths.

Table 5: Detailed Infant Causes of Death, Wake County 2022

Cause of Death	Infant Deaths
Infections and Specific Diseases	8
Conditions Originating in the Perinatal Period (including disorders of newborn related to short gestation and low birthweight)	34
Congenital Malformations and Chromosomal Abnormalities	9
Ill-defined and Unknown Cause of Mortality	13
Total Infant Deaths	64

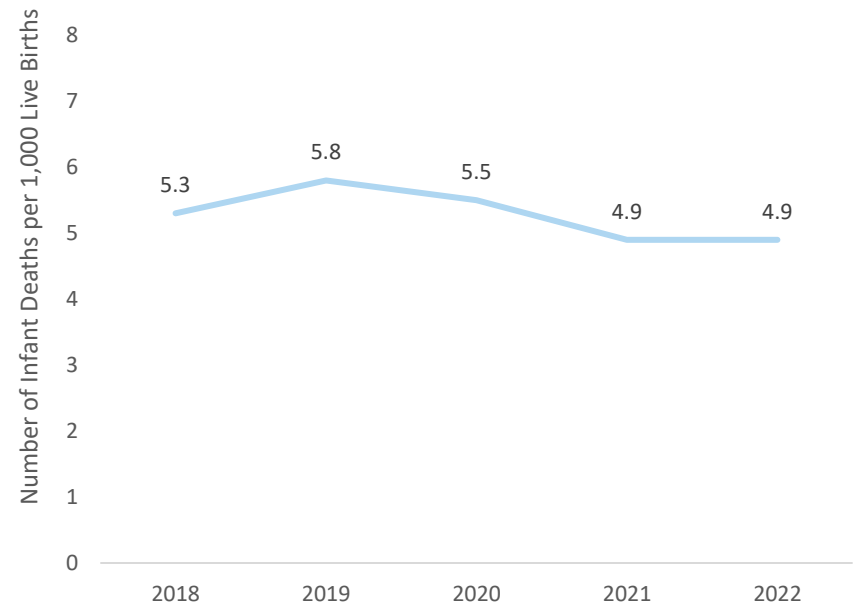
Source: NC State Center of Health Statistics 2022 Detailed Mortality Statistics Report • Created with Datawrapper



Black or African American infants experience a mortality rate nearly **FOUR** times higher than that of white infants, measured as deaths per 1,000 live births.

The 2022 infant death data for Wake County reveal an overall death rate of 4.9 per 1,000 births. Wake County's infant death rate has shown a slight decrease over recent years, dropping from 5.3 per 1,000 births in 2018 to 4.9 per 1,000 births in 2022.

Figure 32: Infant Death Rate: Wake County, 2018-2022



Among racial and ethnic groups, Black or African American Non-Hispanic infants had the highest infant death rate at 11 per 1,000 births, significantly higher than White Non-Hispanic (3 per 1,000), Asian or Pacific Islander Non-Hispanic (4 per 1,000), and Hispanic (6 per 1,000) infants. This data indicates a higher risk of infant death for Black or African American Non-Hispanic infants compared to other groups.

From 2018-2022, Wake County's infant death rate was 5 per 1,000 births, which is lower than North Carolina's overall rate of 7 per 1,000 births and the United States overall rate of 6 per 1,000 births. Among neighboring counties, Wake County's rate is also lower than Durham (6 per 1,000) and Guilford (8 per 1,000) and is the same as Mecklenburg County (5 per 1,000).

Figure 33: Infant Death Rate per 1,000 Births by Race and Ethnicity: Wake County, 2018-2022

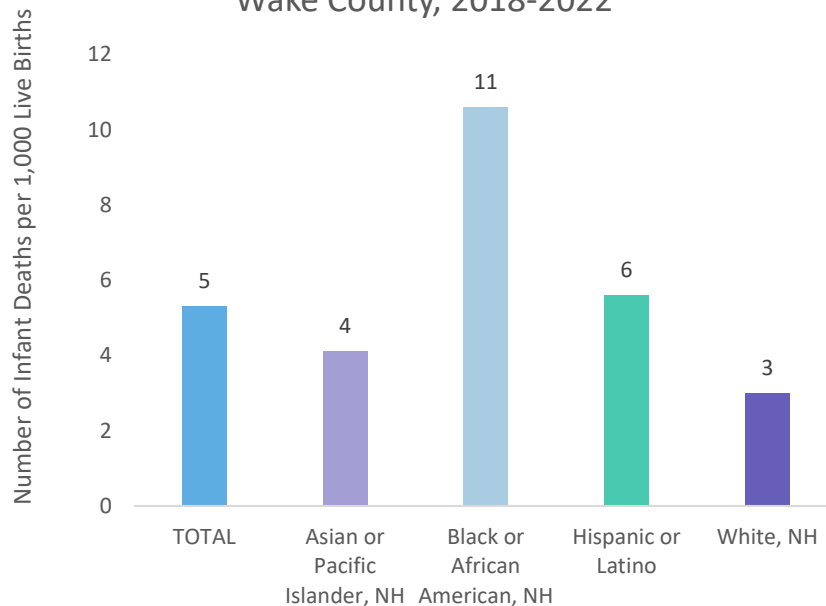
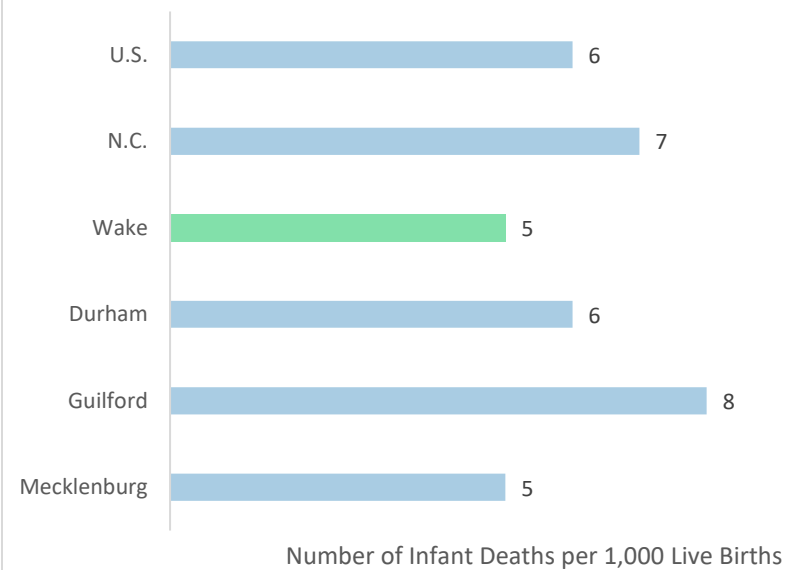


Figure 34: Infant Death Rate by Residency of Mother, 2018-2022



The following maternal and infant health disparity table includes infant health outcomes, based on data from 2019-2023.

Table 6: Infant Health Outcomes Disparity Table, 2019-2023

Infant Risk Factor	White Non-Hispanic	Black or African American Non-Hispanic			American Indian or Alaska Native Non-Hispanic			Asian or Pacific Islander Non-Hispanic			Hispanic or Latino		
	Rate %	Rate %	Disparity Ratio	Disparity Grade	Rate %	Disparity Ratio	Disparity Grade	Rate %	Disparity Ratio	Disparity Grade	Rate %	Disparity Ratio	Disparity Grade
Infant Deaths per 1,000 Births	3	10.6	3.5	F	0	0.0	A	4.1	1.4	B	5.6	1.9	B
Low Birthweight <2,500 grams	5.7	13.6	2.4	C	9.3	1.6	B	8	1.4	B	6.8	1.2	A
Preterm Births	7.6	12.9	1.7	B	14	1.8	B	7.3	1.0	A	8.2	1.1	A
Infant Not Breastfed at Discharge	6.3	14.4	2.3	C	10.9	1.7	B	4	0.6	A	6.5	1.0	A

Disparity Grade (color)	A (dark blue)	B (pale blue)	C (yellow)	D (pink)	F (red)
Disparity Ratio	0.0-1.24	1.24-1.9	2.0-2.4	2.5-2.9	Greater or equal to 3.0
Meaning	Little or no disparity	A disparity exists, should be monitored and may require intervention.	The disparity requires intervention.	Major interventions are needed.	Significant interventions are needed.

Equity Lens: Infant Health Outcomes

The findings above illustrate that differences and disparities related to infant health outcomes exist across different racial and ethnic groups in Wake County. Using an equity lens, below are specific examples and contributing factors to disparities:

- **Preterm Births and Low Birthweight:** Black or African American infants are more likely to be born preterm or at low birthweight, which increases their risk for long-term developmental and health challenges. These outcomes reflect disparities in maternal health and access to prenatal care.
- **Neonatal Abstinence Syndrome (NAS):** Black or African American infants experience higher rates of NAS compared to other groups, underscoring inequities in maternal substance use treatment and preventative care.
- **NICU Admissions and Ventilation Assistance:** Black or African American infants have higher rates of neonatal intensive care unit (NICU) admissions and are more likely to require assisted ventilation, indicating greater prevalence of severe birth complications.
- **Antibiotics and Surfactant Therapy:** Black or African American infants also have the highest rates of receiving antibiotics and surfactant therapy at birth, reflecting increased health challenges that require intensive medical interventions.
- **Infant Mortality:** The infant mortality rate is highest among Black or African American infants, pointing to systemic inequities in maternal and infant health care and access to resources before and after birth.
- **Impact of Systemic Inequities:** These disparities highlight the broader impact of systemic inequities, including barriers to high-quality maternal and infant care, resulting in worse birth and health outcomes for Black or African American infants ^(1,2,3,4,5).

7.0 OVERVIEW OF REPRODUCTIVE HEALTH AND TEEN PREGNANCY

Reproductive health encompasses the well-being of individuals in matters related to the reproductive system, including the ability to make informed decisions about family planning, access necessary healthcare, and maintain a safe and healthy pregnancy. It plays a critical role in reducing disparities, improving maternal and child health outcomes, and addressing social and economic factors that influence reproductive choices. Examining indicators such as teen birth rates and abortion trends can assist with better understanding the landscape of reproductive health in Wake County.

Teenage Births

Teenage births are correlated with a range of challenges for both the mother and their offspring, including lower educational attainment for the mother, increased likelihood of living in poverty, and poorer health outcomes for both the mother and child (¹¹). In recent years, teenage birth rates in Wake County have declined.

In Wake County, teenage birth rates have decreased from 10 births per 1,000 females aged 15-19 in 2019 to 8 per 1,000 in 2023. From 2019-2023, Hispanic teenagers had the highest birth rate among racial and ethnic groups, with a rate of 26 per 1,000.

Figure 35: Teenage Birth Rates Ages 15-19, Wake County, 2019-2023

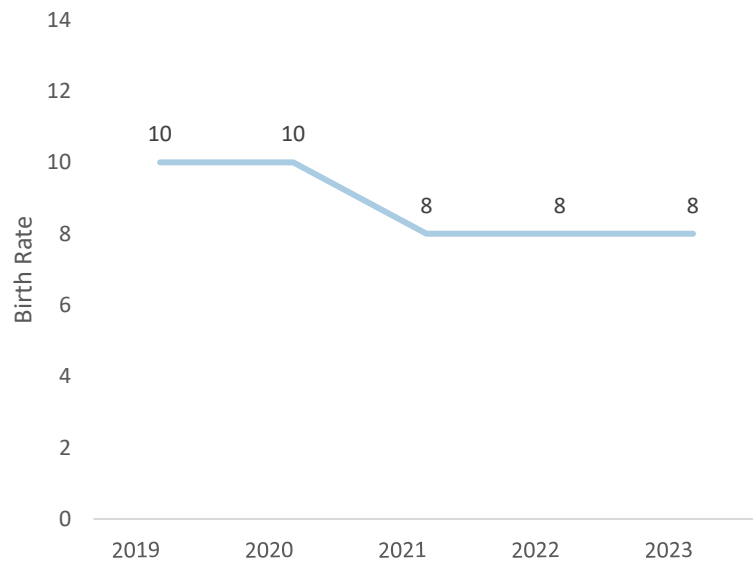
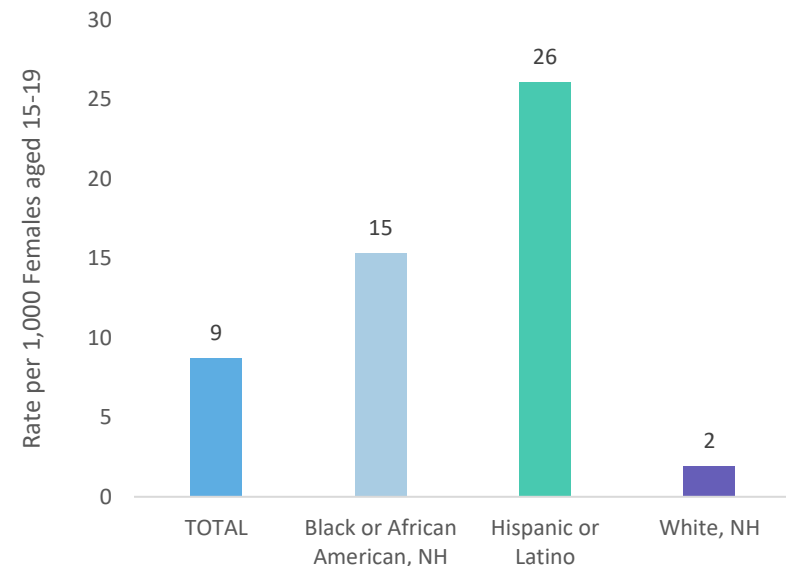
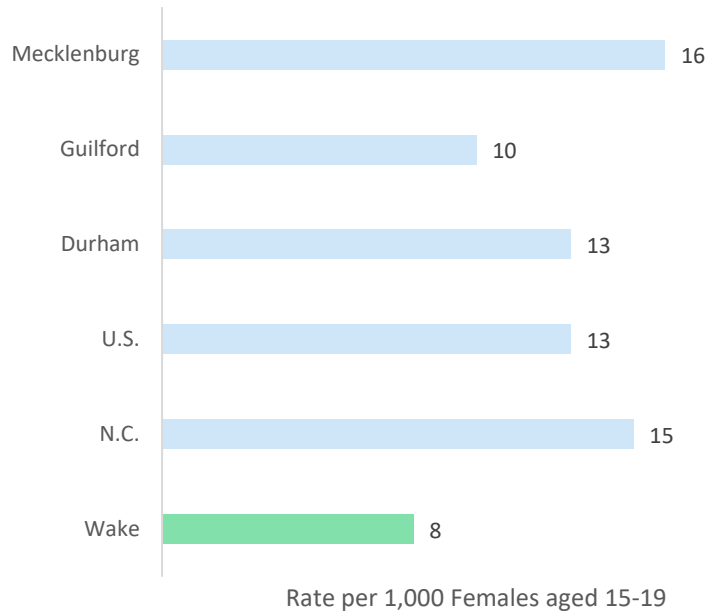


Figure 36: Teenage Birth Rates Ages 15-19 by Race and Ethnicity: Wake County, 2019-2023



Wake County's teenage birth rate of 8 per 1,000 remains lower than both the North Carolina's rate of 15 and the national rate of 13. Compared to other large counties in North Carolina, Wake County also has consistently lower teenage birth rates than Mecklenburg (16 per 1,000), Durham (13 per 1,000), and Guilford (10 per 1,000).

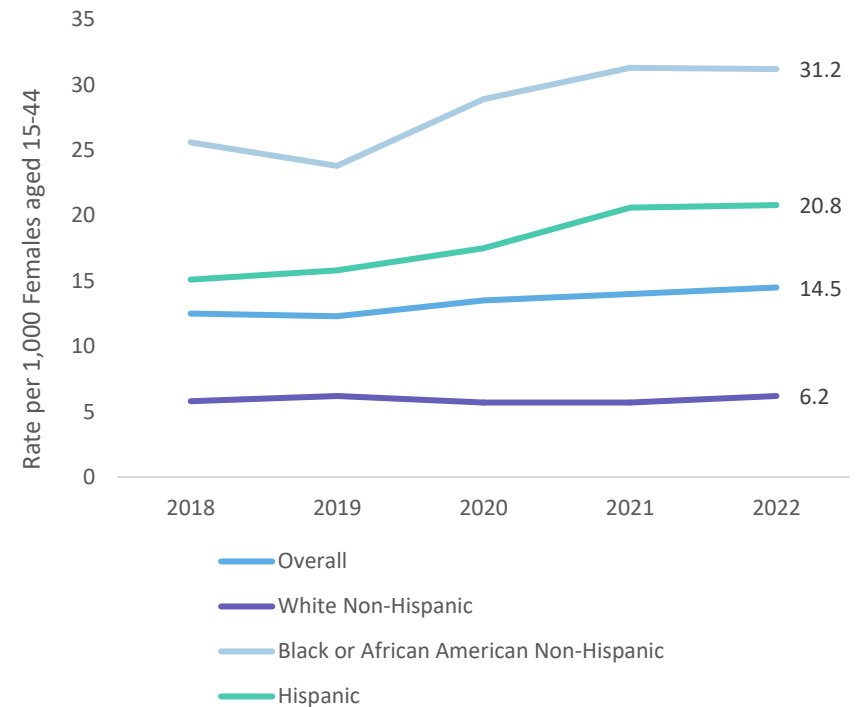
Figure 37: Teenage Birth Rates Ages 15-19 by Residency of Mother, 2023



Abortion

Between 2018 and 2022, abortion rates among females aged 15 to 44 in Wake County increased from 12.5 to 14.5 per 1,000. Throughout the five-year period (2018-2022), Black or African American Non-Hispanic abortion rates were 4 to 5 times higher than those of White Non-Hispanic females.

Figure 38: Abortion Rates Ages 15-44 by Race and Ethnicity, Wake County, 2018-2022



8.0 ENHANCING MATERNAL AND CHILD HEALTH THROUGH NON-BIRTHING SUPPORT: DOULAS AND FATHER ENGAGEMENT SERVICES

Non-birthing support partners, family members, and other supportive individuals play a critical role in improving maternal and child health outcomes.

Doulas: Comprehensive Non-Birthing Support:

Doulas are trained professionals who provide continuous physical, emotional, and informational support to individuals before, during, and after childbirth. While their primary focus is on the birthing individual, doulas also offer guidance to partners, family members, and friends, fostering a well-rounded support network. This inclusive care enables mothers and partners to feel more prepared and confident, allowing them to actively contribute to the pregnancy and birthing experience ⁽¹³⁾.

Research indicates that doula-supported births are associated with lower cesarean section rates, shorter labor durations, and higher overall satisfaction with the birthing process. Additionally, postpartum doulas assist families in adjusting to new roles, promoting maternal mental health, and enhancing infant well-being ⁽¹³⁾. Wake County has recognized the value of doula care and is actively working to establish an emerging doula program aimed at increasing access to this critical form of non-birthing support.

Wake County's Father Engagement Services:

Recognizing the pivotal role fathers play in family dynamics and child development, Wake County Health and Human Services established the Father Engagement Services program. This initiative is committed to providing education, intervention, and advocacy to and for fathers working toward reunification and family preservation. The program's goals include:

- **Increasing Reunification Rates:** Facilitating stronger bonds between fathers and their children to promote family stability.
- **Enhancing Father Engagement:** Encouraging active participation of fathers in their children's lives to support healthy development.
- **Providing Culturally Relevant Services:** Offering father-friendly resources tailored to the diverse population of Wake County.

Services offered include one-on-one coaching, support groups, and community education, all aimed at empowering fathers to be positive influences in their families and communities ⁽¹⁴⁾.

Impact of Non-Birthing Support on Maternal and Child Health:

The integration of doula care and father engagement services contributes profoundly to maternal and child health outcomes. Doulas provide continuous support that enhances the birthing experience and postpartum adjustment, while engaged partners contribute to better maternal mental health, increased breastfeeding rates, and improved child development ^(13,14).

By fostering inclusive support systems that involve both doulas and non-birthing partners, Wake County aims to create a nurturing environment for families, ultimately leading to healthier mothers, infants, and communities.

9.0 PATERNITY STATUS AND BIRTH OUTCOMES

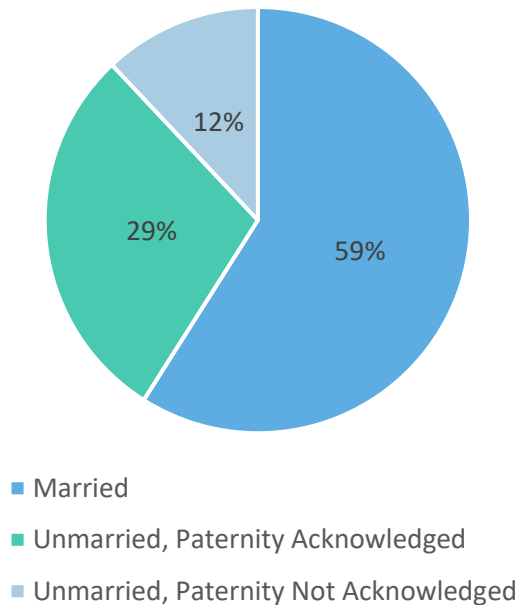
This analysis of health outcomes by paternity status examines data from birth certificates to capture marital and paternity status at the time of birth. These data include three categories: births within married families, unmarried births with paternity acknowledged on the birth certificate, and unmarried births with no paternity acknowledgment on the birth certificate.

The goal of this analysis is to better understand potential associations between non-birthing support, including paternal involvement, on maternal and child health outcomes. By identifying patterns associated with paternity acknowledgment, the data can inform how having a supportive partner or individual during prenatal care, labor and delivery, and postpartum recovery may influence health advocacy and outcomes. These observed patterns likely reflect broader social and economic factors shaping family support structures, reinforcing the need for comprehensive support for mothers and infants across different communities in Wake County ⁽¹²⁾.

Births by Paternity Status

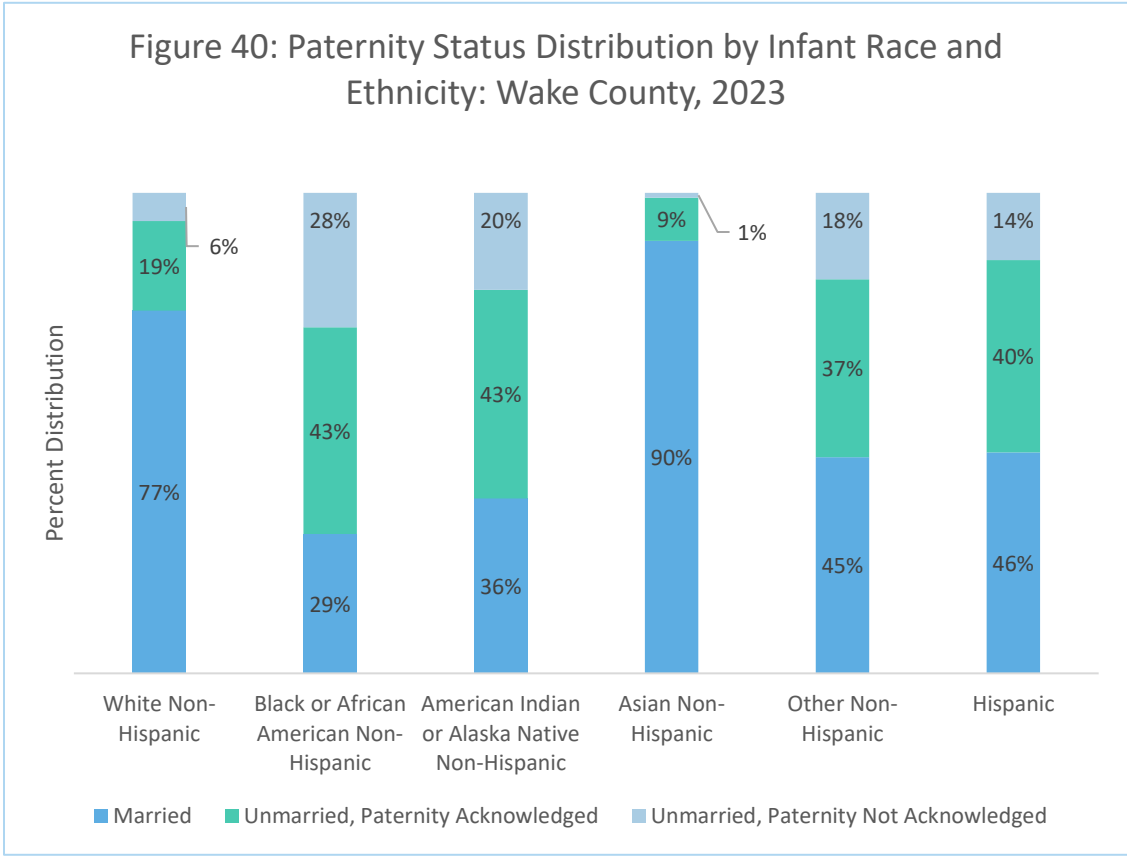
In 2023, the distribution of live births reveals that a majority were to married parents (59%), with a significant portion to unmarried parents where the father's name was acknowledged (29%). A smaller but notable percentage of live births occurred without recorded paternal acknowledgment (12%).

Figure 39: Percent of Births by Paternity Status:
Wake County, 2023

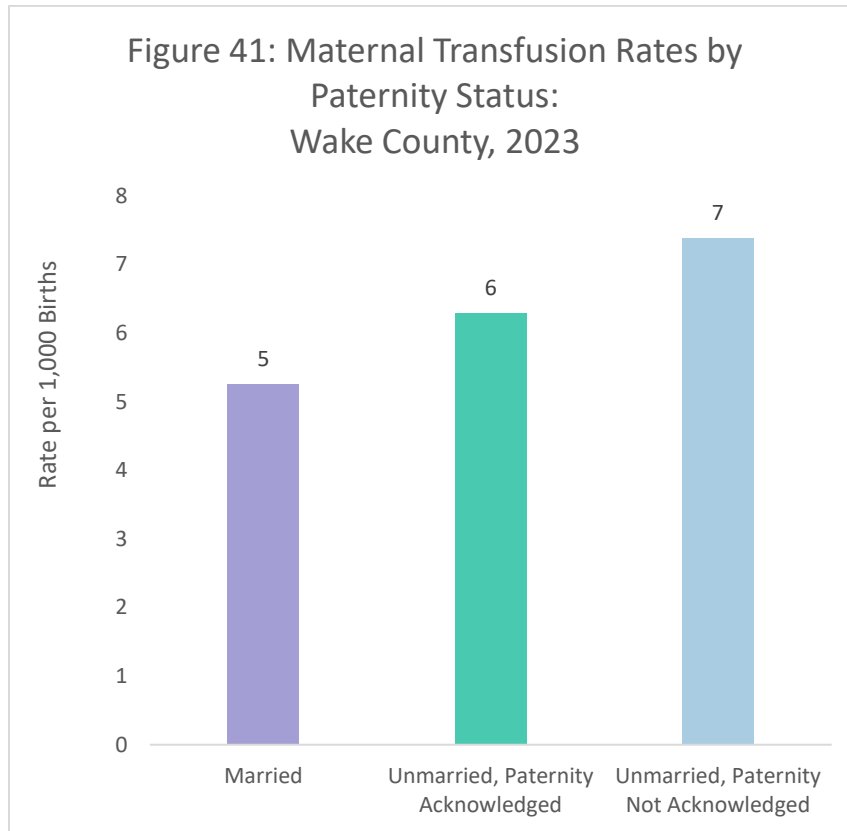


Births by Paternity Status and Infant Race and Ethnicity

The 2023 data for paternity status distribution by infant race and ethnicity in Wake County reveal notable disparities. Asian Non-Hispanic infants have the highest percentage of births within married parents (90%) followed by White Non-Hispanic infants (77%). Black or African American Non-Hispanic infants have the lowest rate of 29%. In terms of unmarried parents with paternity acknowledged on the birth certificate, Black or African American Non-Hispanic and American Indian or Alaska Native Non-Hispanic infants have the highest rate at 43%, followed by Hispanic infants (40%). Black or African American Non-Hispanic infants had the highest rate of unmarried parents without paternity acknowledgement (28%) followed by American Indian or Alaska Native Non-Hispanic infants (20%) and Other Non-Hispanic infants (18%). These variations highlight different family structures and patterns of paternity acknowledgment across racial and ethnic groups.



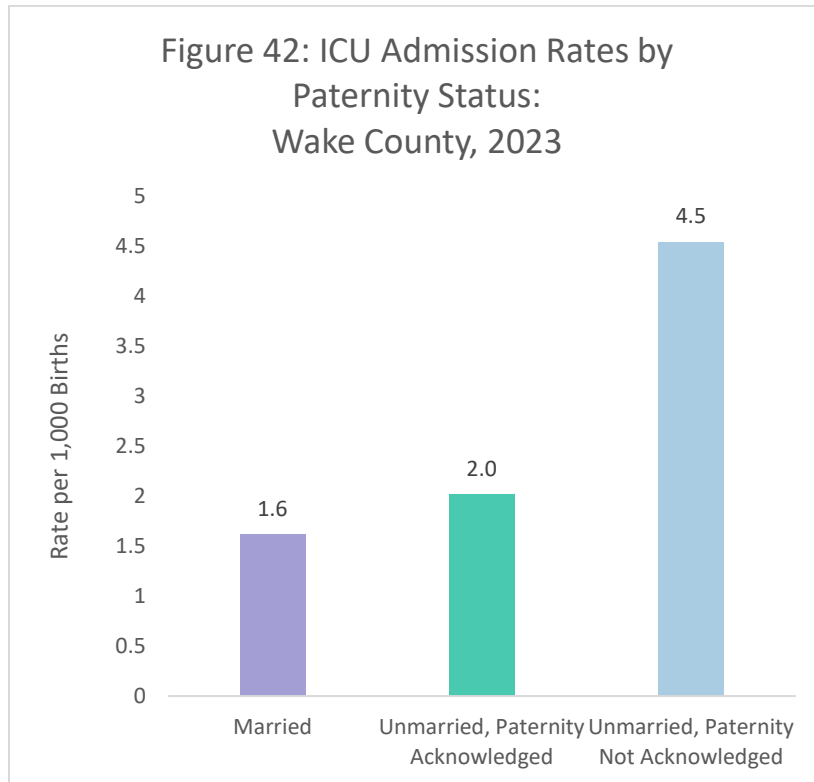
Maternal Transfusion Rates by Paternity Status



- **Married:** Approximately 5 mothers per 1,000 births required a transfusion.
- **Unmarried, Paternity Acknowledged:** Approximately 6 mothers per 1,000 births required a transfusion.
- **Unmarried, Paternity not Acknowledged:** Approximately 7 mothers per 1,000 births required a transfusion.

Maternal transfusion rates are higher for unmarried mothers, especially those without paternity acknowledgment.

Maternal ICU Admission Rates by Paternity Status

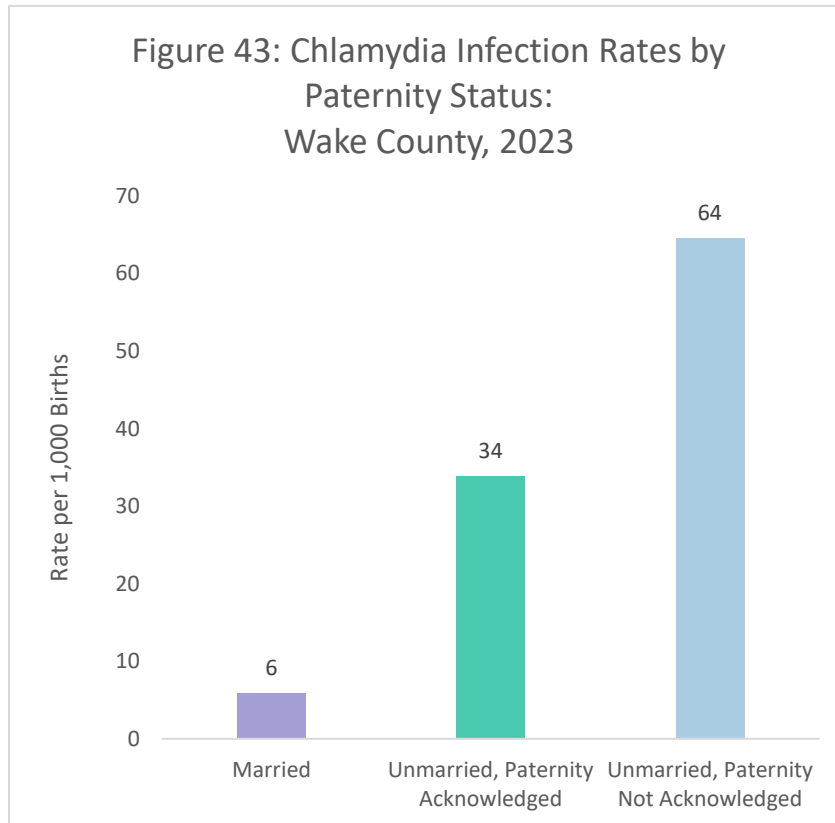


- **Married:** Approximately 1.6 mothers per 1,000 births required ICU admission.
- **Unmarried, Paternity Acknowledged:** Approximately 2 mothers per 1,000 births required ICU admission.
- **Unmarried, Paternity not Acknowledged:** Approximately 4.5 mothers per 1,000 births required ICU admission.

Maternal ICU Admission rates are higher for unmarried mothers, especially those without paternity acknowledgment.

Maternal Infections by Paternity Status

The following analysis presents the rates of chlamydia, hepatitis B, hepatitis C, gonorrhea, and syphilis infections per 1,000 births across different paternity statuses. The data highlights significant disparities in infection rates among married mothers and unmarried mothers, with or without paternity acknowledgment on the birth certificate.

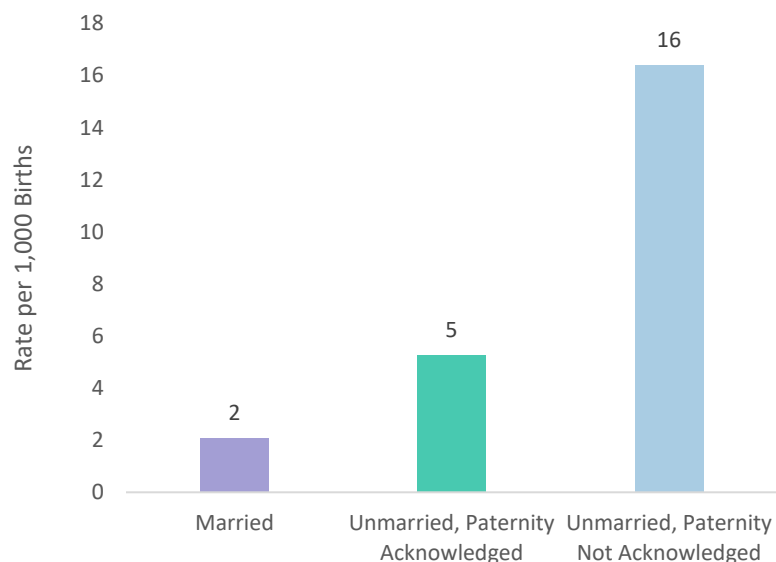


Chlamydia Infection Rates:

- **Married:** 6 per 1,000 births
- **Unmarried, Paternity Acknowledged:** 34 per 1,000 births
- **Unmarried, Paternity not Acknowledged:** 64 per 1,000 births

Chlamydia rates are higher for unmarried mothers, especially those without paternity acknowledgment.

Figure 44: Hepatitis C Infection Rates by Paternity Status: Wake County, 2023

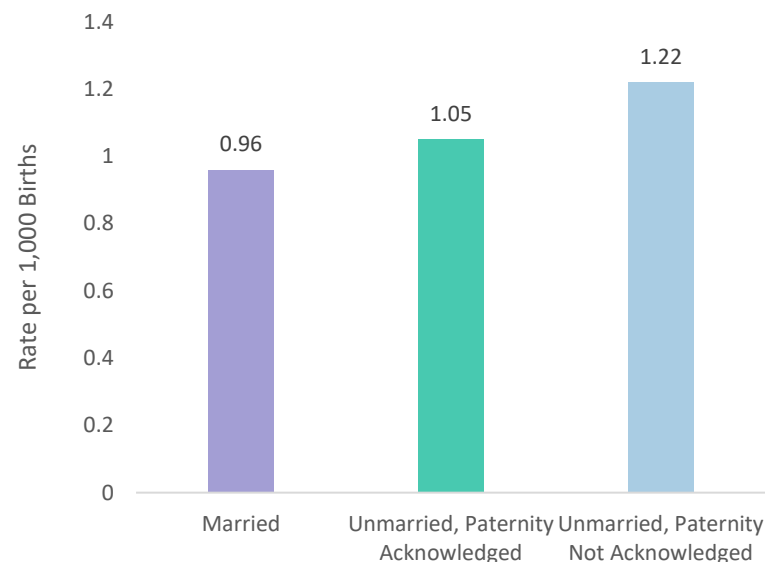


Hepatitis C Infection Rates:

- **Married:** 2 per 1,000 births
- **Unmarried, Paternity Acknowledged:** 5 per 1,000 births
- **Unmarried, Paternity not Acknowledged:** 16 per 1,000 births

Hepatitis C infection rates are elevated for unmarried mothers, particularly those without paternity acknowledgment.

Figure 45: Hepatitis B Infection Rates by Paternity Status: Wake County, 2023

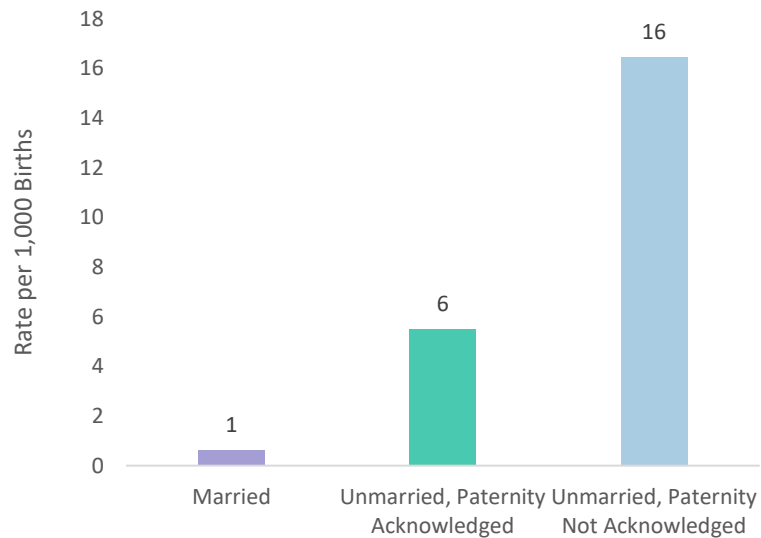


Hepatitis B Infection Rates:

- **Married:** 0.96 per 1,000 births
- **Unmarried, Paternity Acknowledged:** 1.05 per 1,000 births
- **Unmarried, Paternity not Acknowledged:** 1.22 per 1,000 births

Hepatitis B infection rates show a slight increase among unmarried mothers, particularly those without paternity acknowledgment compared to other groups.

Figure 46: Gonorrhea Infection Rates by Paternity Status: Wake County, 2023

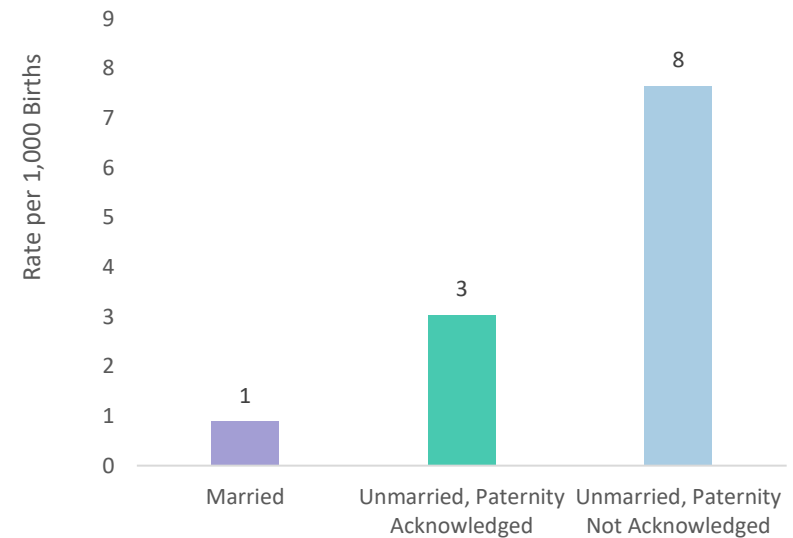


Gonorrhea Infection Rates:

- **Married:** 1 per 1,000 births
- **Unmarried, Paternity Acknowledged:** 6 per 1,000 births
- **Unmarried, Paternity not Acknowledged:** 16 per 1,000 births

Gonorrhea infection rates for unmarried mothers, particularly those without paternity acknowledgment, experienced substantially higher rates.

Figure 47: Syphilis Infection Rates by Paternity Status: Wake County, 2023

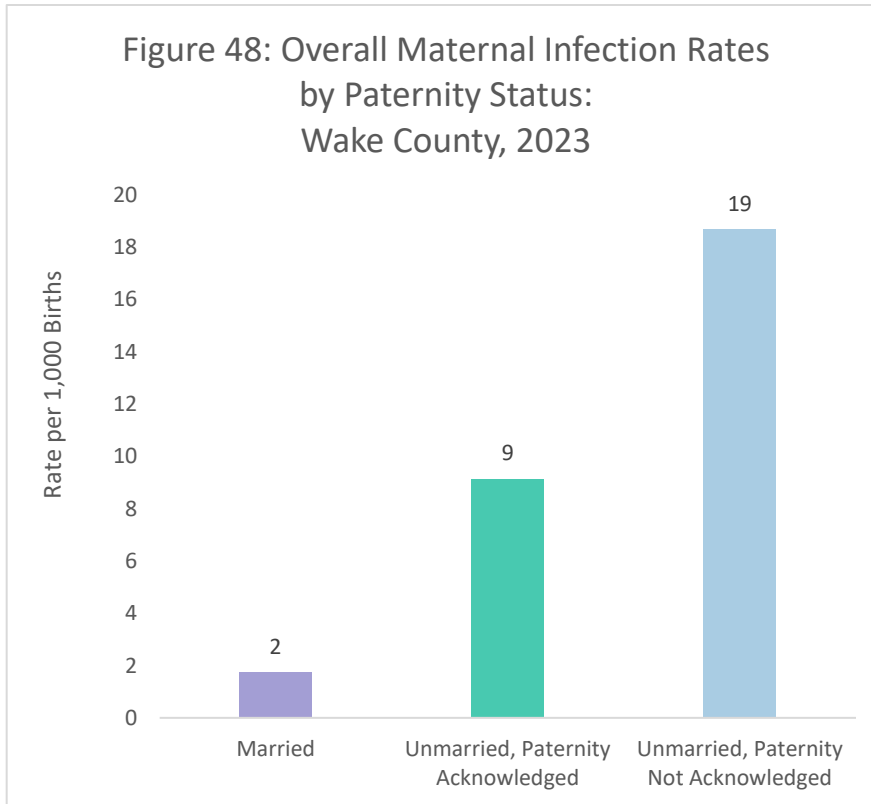


Syphilis Infection Rates:

- **Married:** 1 per 1,000 births
- **Unmarried, Paternity Acknowledged:** 3 per 1,000 births
- **Unmarried, Paternity not Acknowledged:** 8 per 1,000 births

Syphilis infections also show a higher prevalence among unmarried mothers, particularly those without paternity acknowledgment.

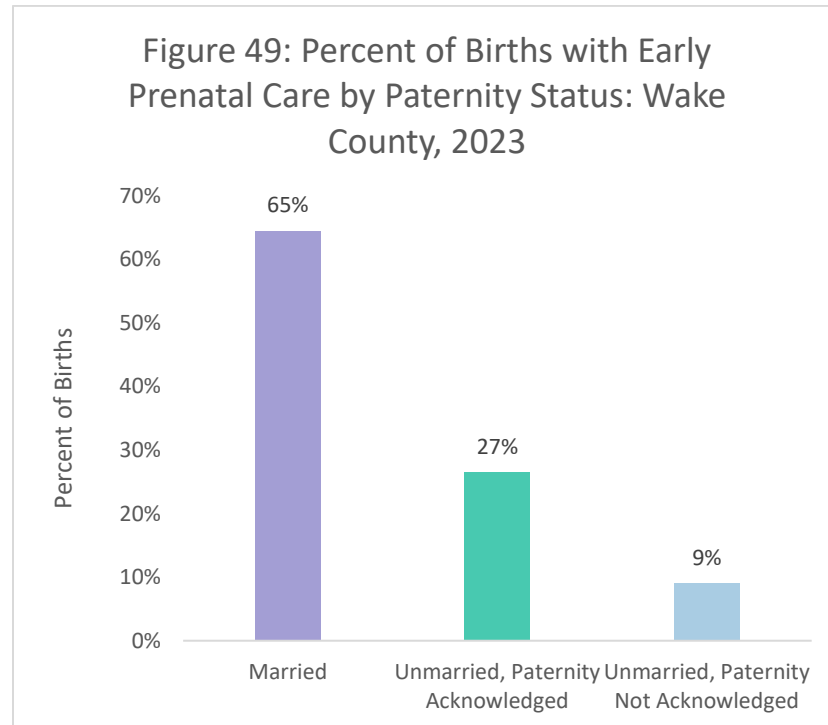
Overall Maternal Infection Rates by Paternity Status



- **Married:** 2 maternal infections per 1,000 births
- **Unmarried, Paternity Acknowledged:** 9 maternal infections per 1,000 births
- **Unmarried, Paternity not Acknowledged:** 19 maternal infections per 1,000 births

Across all infections studied (chlamydia, hepatitis B, hepatitis C, gonorrhea, and syphilis), unmarried mothers, and especially those without paternity acknowledgment on the birth certificate, experience higher infection rates compared to married mothers.

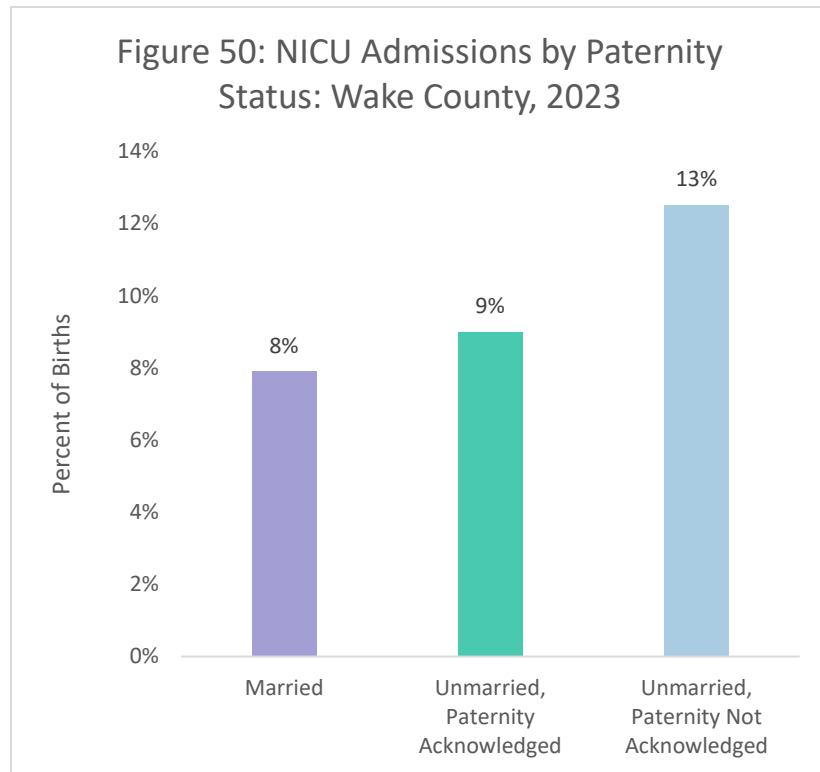
Early Prenatal Care by Paternity Status



Across all groups, married mothers have the highest rate of initiating early prenatal care, with 65% starting care in the first trimester. Unmarried mothers who have acknowledged paternity have a lower rate at 27%, and those with no paternity acknowledgment show the lowest rate at 9%.

- **Married:** 65% of mothers initiated prenatal care in the first trimester
- **Unmarried, Paternity Acknowledged:** 27% of mothers initiated prenatal care in the first trimester
- **Unmarried, Paternity Not Acknowledged:** 9% of mothers initiated prenatal care in the first trimester

NICU Admissions by Paternity Status



- **Married:** 8% of infants were admitted to the NICU
- **Unmarried, Paternity Acknowledged:** 9% of infants were admitted to the NICU
- **Unmarried, Paternity Not Acknowledged:** 13% of infants were admitted to the NICU

Across all groups, infants born to married mothers has the lowest percentage of NICU admissions, with 8% being admitted. Infants born to unmarried mothers with paternity acknowledgement have a higher rate of 9% and infants born to unmarried mothers without paternity acknowledgement had the highest rate of 13%.

Across all risk factors including maternal morbidities, maternal ICU admissions, maternal infections, no early prenatal care, and infant NICU admissions, unmarried mothers and their infants experienced higher rates of unfavorable outcomes and health conditions, especially those without paternity acknowledgement. The data suggest that paternal support may influence access to early prenatal care, encourage healthcare advocacy, reduce maternal stress and financial burden, and potentially improve health outcomes for both mothers and infants ^(12,13). Additionally, any support to mothers and babies is essential during pregnancy, labor, and delivery and as the child grows and can encompass paternal and non-birthing support. Addressing the gaps found can support healthier beginnings for families in Wake County.

10.0 WAKE COUNTY MATERNAL AND CHILD HEALTH PROGRAM PERFORMANCE OUTCOMES AND PROGRESS

Nurse Family Partnership

The Nurse-Family Partnership (NFP) is a community healthcare initiative that empowers low-income, first-time mothers by pairing them with registered nurses. This evidence-based program focuses on improving pregnancy outcomes, enhancing child health and development, and fostering economic self-sufficiency. By providing personalized guidance and support, NFP aims to instill confidence in mothers, helping them navigate the challenges of early parenthood and set a strong foundation for their children's future.

The NFP program serves as a vital resource for families, demonstrating significant reach and positive outcomes.

In 2023:

- **Families Served:** A total of 33 families were served.
- **Referrals:** NFP received 50 referrals, indicating a robust network of community engagement.
- **New Enrollees:** 6 new enrollees joined the program, receiving essential support during pregnancy and early parenthood.

- **Birth Outcomes:** Births enrolled in the program included:
 - 100% of babies were born at a healthy birth weight and breastfeeding occurred.
 - 75% of infants were born at term, demonstrating the effectiveness of the program in promoting healthy pregnancies and births.
- **Graduates:** The program successfully transitioned 12 families out of the program.

The Nurse-Family Partnership stands as a beacon of support for first-time mothers, effectively transforming challenges into opportunities for growth. Through this program, Wake County not only promotes healthy pregnancies but also cultivates resilient families capable of achieving long-term well-being.

Maternal Home Visiting Program

The Maternal Home Visiting (MHV) program offers comprehensive prenatal and postpartum care to high-risk mothers and their infants. Through regular home visits, trained professionals assess health needs, provide education on prenatal care, infant care, and parenting skills, and connect families with community resources. This proactive approach aims to reduce health disparities, promote positive health outcomes, and support families in achieving optimal well-being. This program is dedicated to providing comprehensive maternal support.

In 2023:

- **High-Risk Prenatal Patients:** MHV served 357 high-risk prenatal patients, ensuring that those with increased needs received specialized attention.
- **Completed Visits:**
 - 864 high-risk prenatal visits were completed.
 - 1,848 postpartum visits provided necessary follow-up care to new mothers.
 - 1,767 newborn visits were conducted to ensure the health and well-being of infants.
 - 77 follow-up visits were completed, reinforcing continuous care.

Other Outcomes and Activities of the Maternal Home Visiting Program:

The following MHV program outcomes illustrate additional proactive approaches to maternal and infant health:

- **Mental Health Support:** 68 high Edinburgh scores were reported to medical providers, and 52 referrals were made to mental health services.
- **Blood Pressure Monitoring:** 91 elevated blood pressure readings were reported, ensuring timely medical intervention.
- **Emergency Responses:** 26 postpartum patients were sent to the Emergency Department (ED) or clinic for urgent needs, demonstrating effective triage and support.
- **Education and Support:**
 - 146 instances of unsafe sleep practices were noted, with education provided to correct these behaviors.
 - 115 patients received breastfeeding assistance from nurses, highlighting support for new mothers.
- **Newborn Appointments:** The program assisted 39 newborns in securing their first pediatrician appointment, promoting early health monitoring.

The Maternal Home Visiting program serves as a critical safety net for vulnerable families, delivering essential care in their homes. This initiative not only enhances maternal and infant health outcomes but also empowers families to thrive by connecting them to vital resources and support systems within the community.

Highlight Story: Ashanti's Journey Through MCH Programs

Ashanti, a 22-year-old African American single mother, faced significant challenges during her pregnancy. With high blood pressure and other high-risk health issues, she was worried about her health and her ability to care for her baby. Financial concerns weighed heavily on her, especially as she navigated pregnancy without the support of a partner or family.

Through the Care Management for High-Risk Pregnancy (CMHRP) program, Ashanti connected with a dedicated care manager who provided ongoing support and guidance. "My care manager would call me at least twice a month, and we would talk about the different programs offered by Maternal and Child Health," Ashanti recalls. These conversations eased her worries and helped her feel more prepared.

With the encouragement of her care manager, Ashanti enrolled in a range of classes and services, all at no cost to her. She attended childbirth classes that boosted her confidence in her ability to give birth and care for her baby. In addition, she participated in programs focused on safe sleep practices, car seat safety, and accessing essential supplies through the Diaper Train program.

Reflecting on her experience, Ashanti emphasizes how these services empowered her throughout her pregnancy and into new motherhood. Her story is a testament to the positive impact of personalized support and access to resources for those facing high-risk pregnancies.

11.0 CONCLUSION

Wake County has made meaningful progress in maternal and child health outcomes, including maintaining a teenage birth rate consistently lower than both state and national averages and achieving a steady decline in neonatal abstinence syndrome (NAS) cases over recent years. Infant death rates in Wake County remain below state and national averages, and the county performs better than both in preterm birth rates. Wake County also has a markedly lower overall severe maternal morbidity (SMM) rate compared to the state and neighboring counties, reflecting its commitment to improving maternal health outcomes and ensuring safer pregnancies and deliveries. These achievements highlight the county's dedication to promoting healthier beginnings for families and addressing critical health concerns.

Despite this progress, disparities persist. Black or African American Non-Hispanic mothers and infants face the greatest challenges, including higher rates of severe maternal morbidity, preterm birth, low birthweight, and infant mortality. Hispanic mothers also experience disparities, particularly in access to early prenatal care, while American Indian or Alaska Native mothers show elevated risks in some maternal health outcomes.

The success, impact, and reach of programs such as the Nurse-Family Partnership, Maternal Home Visiting, Father Engagement Services, and the emerging Doula Program demonstrate the value of targeted interventions in improving maternal and child health outcomes. These programs provide essential support by addressing maternal and infant health needs, fostering stronger family dynamics, and delivering culturally relevant care tailored to Wake County's diverse population. By continuing to prioritize equity-focused strategies, expanding access to early prenatal care, and strengthening proven interventions, Wake County can build on its progress and strive for healthier outcomes for all families.

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