

NC Department of Health and Human Services

# Data Perspective

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**Health Section**

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# On a Typical Day in North Carolina

Resident Events	1997	2017
Live Births	293	329
Low Birthweight Births (<2500 grams)	26	31
Teen Births, Ages 15 - 19	41	19
Infant Deaths	3	2

Source: NC State Center for Health Statistics, Vital Statistics

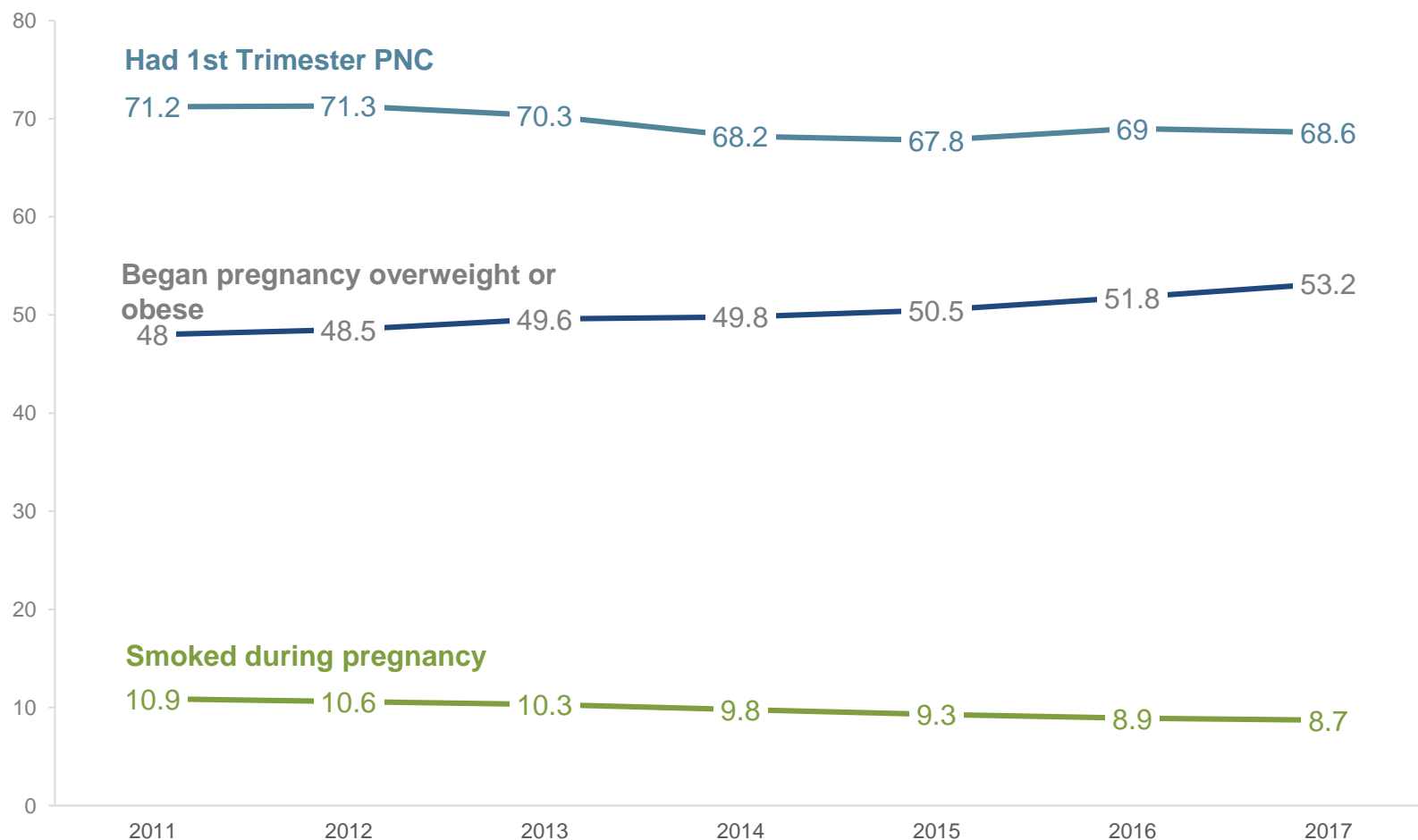
# Yearly Totals in North Carolina

Resident Events	1997	2017
Live Births	106,949	120,099
% of Low Birthweight Births (<2500 grams)	8.8	9.4
% of Births to Women <18 years	5.5	1.5
Infant Death Rate	9.2	7.1

Source: NC State Center for Health Statistics, Vital Statistics

# Characteristics of NC Women Giving Birth

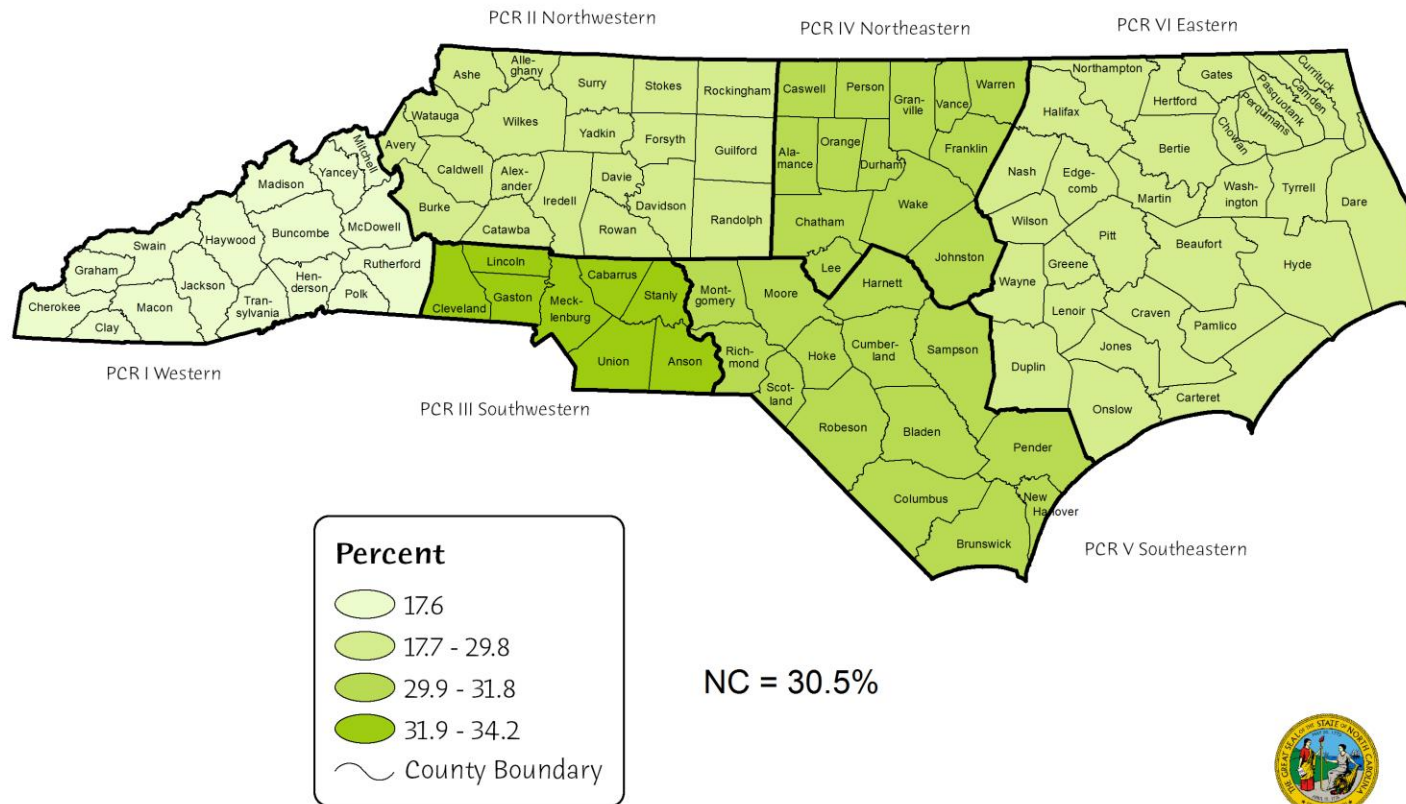
Percent of women giving birth who ...



Source: NC State Center for Health Statistics, Vital Statistics

# North Carolina

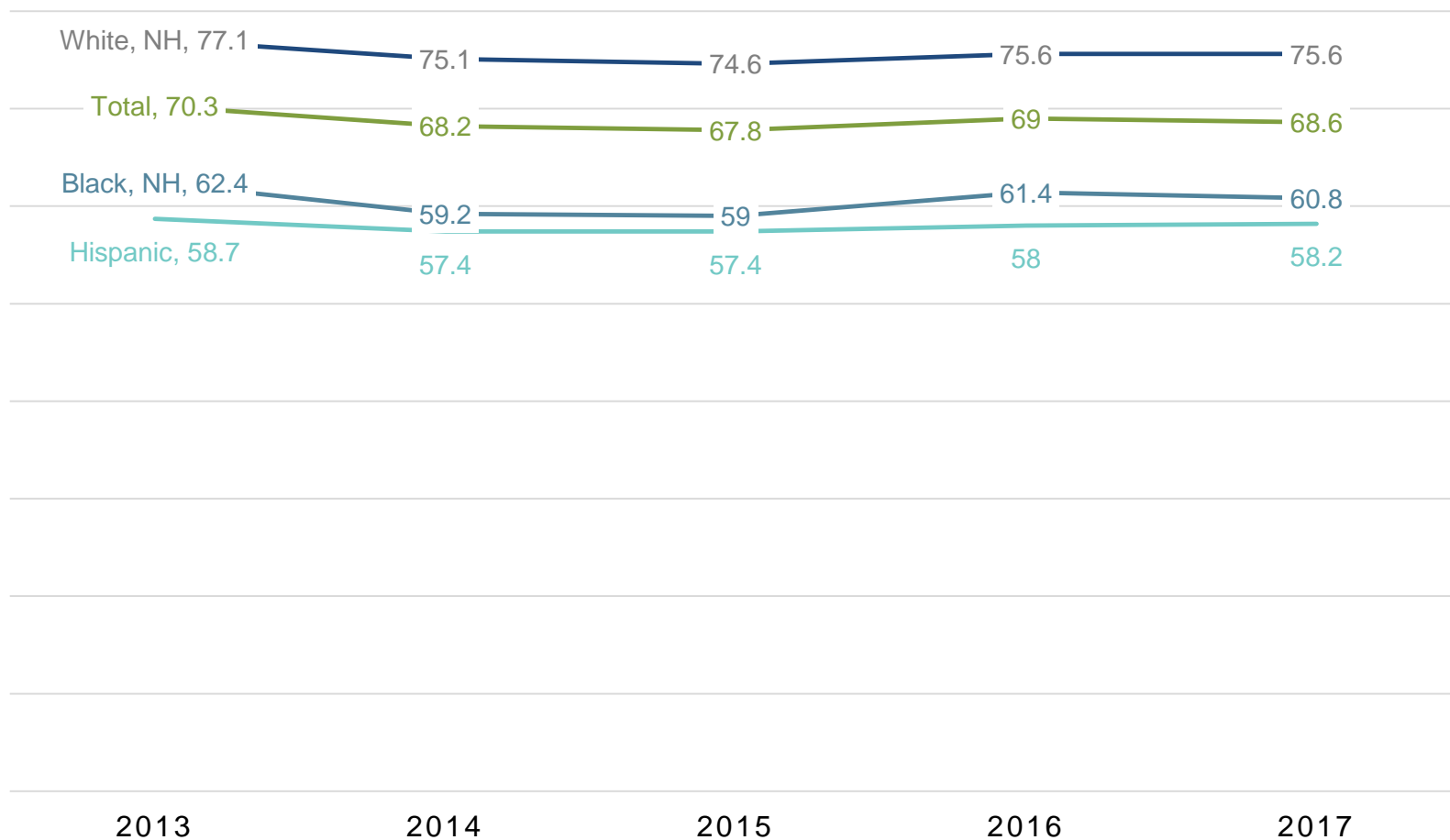
## Percent 2017 Births to Mothers with Late or No Prenatal Care by Perinatal Care Regions (PCR)



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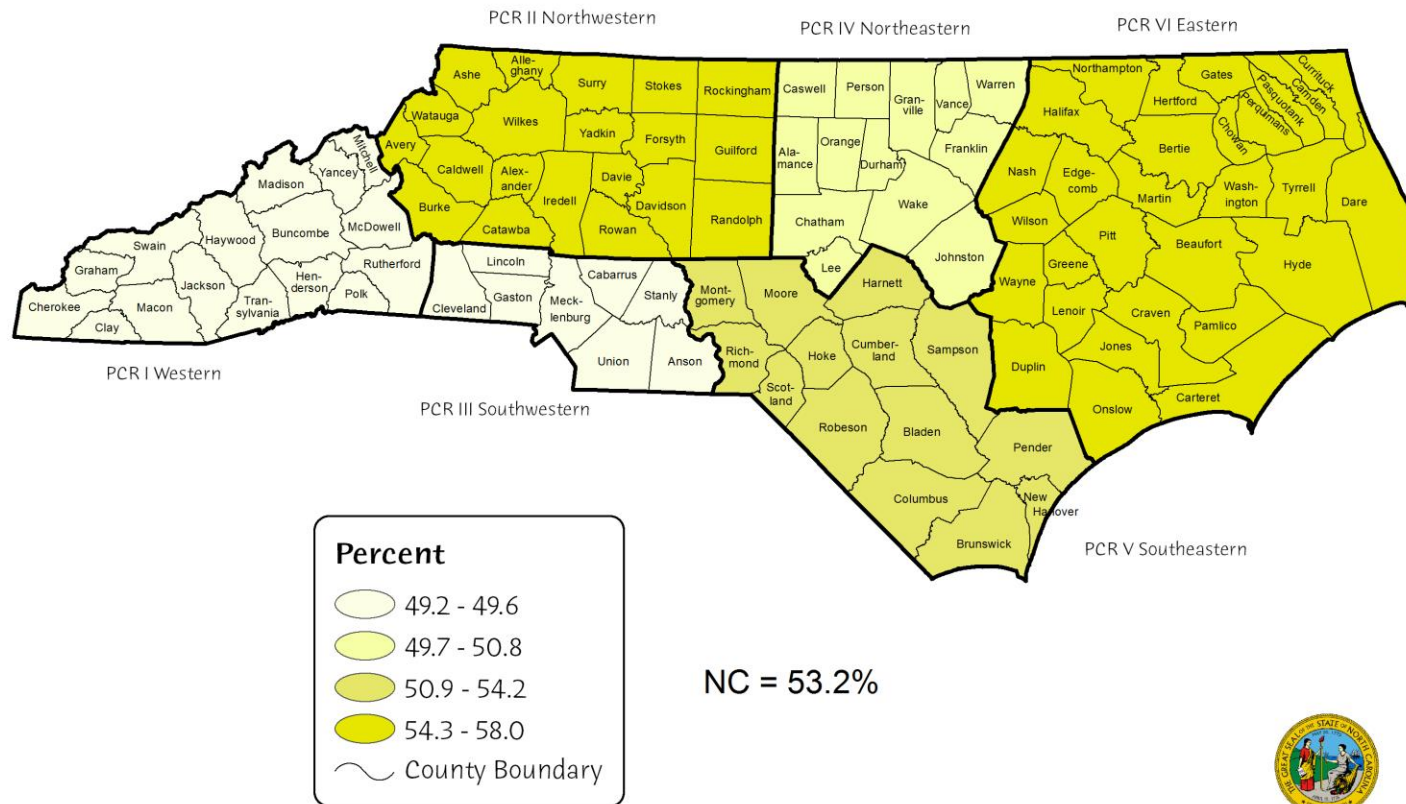
# Percent of NC Women Receiving 1<sup>st</sup> Trimester Prenatal Care



Source: NC State Center for Health Statistics

# North Carolina

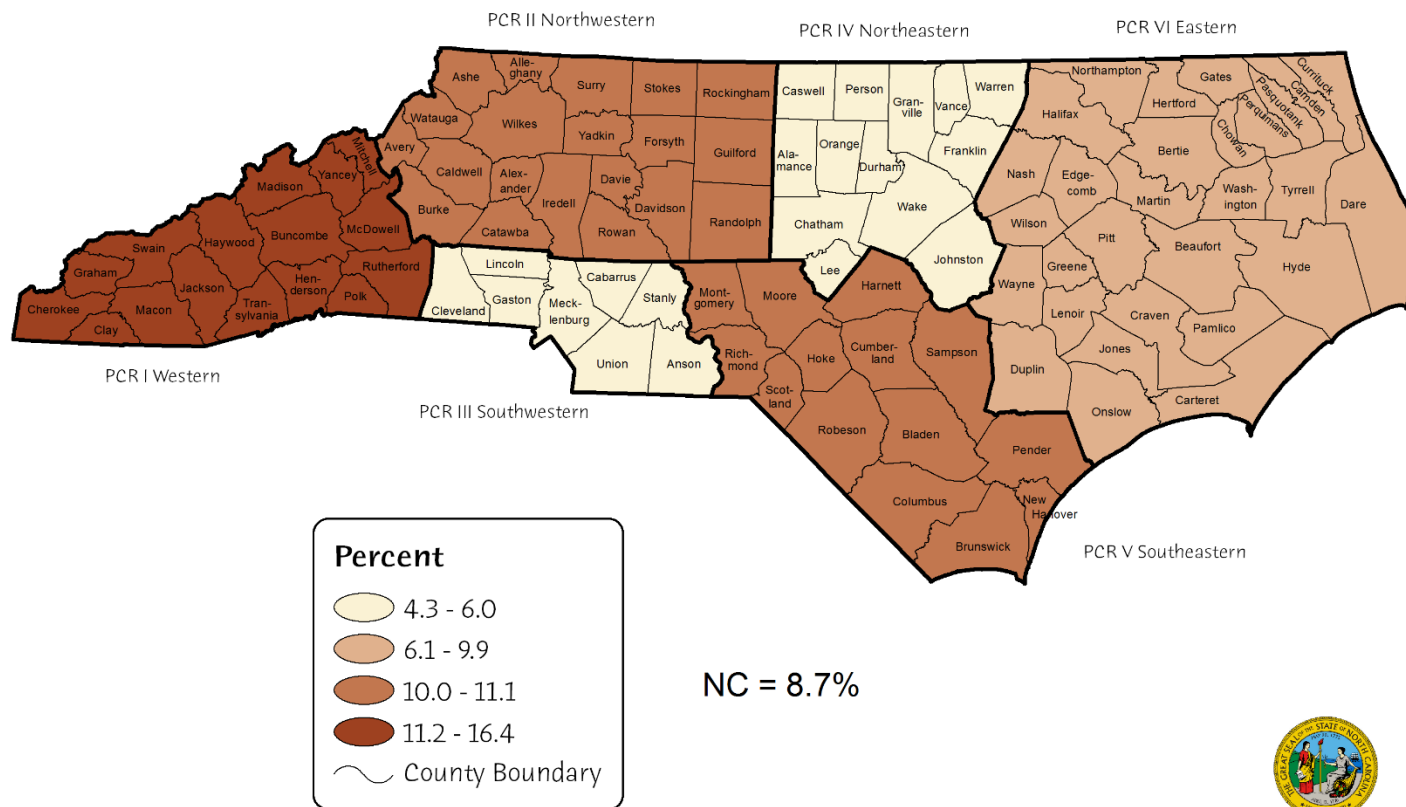
## Percent 2017 Births to Mothers Who Are Overweight or Obese by Perinatal Care Regions (PCR)



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# North Carolina Percent 2017 Births to Mothers Who Smoke by Perinatal Care Regions (PCR)

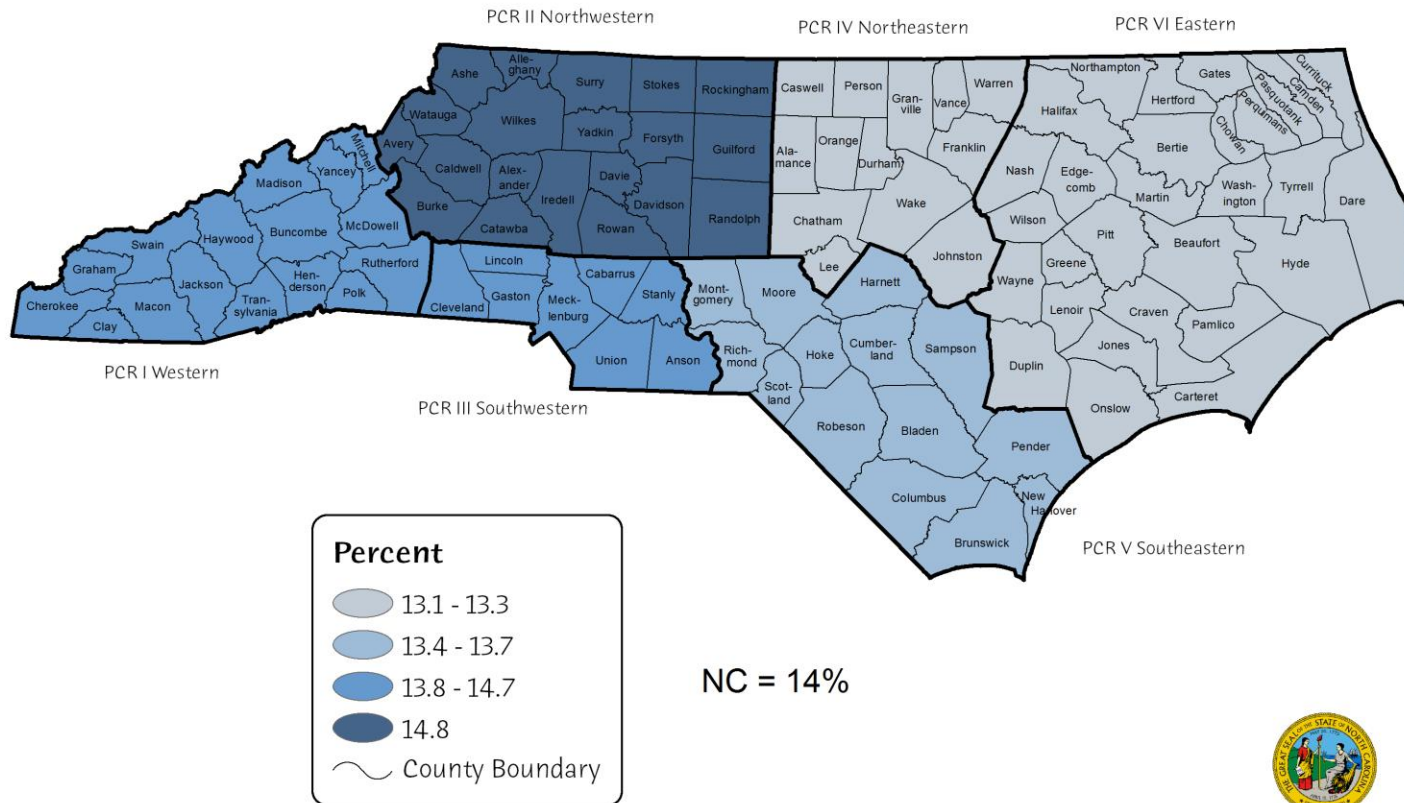


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# North Carolina

## Percent 2017 Births to Mothers with Less Than High School Graduate Education by Perinatal Care Regions (PCR)

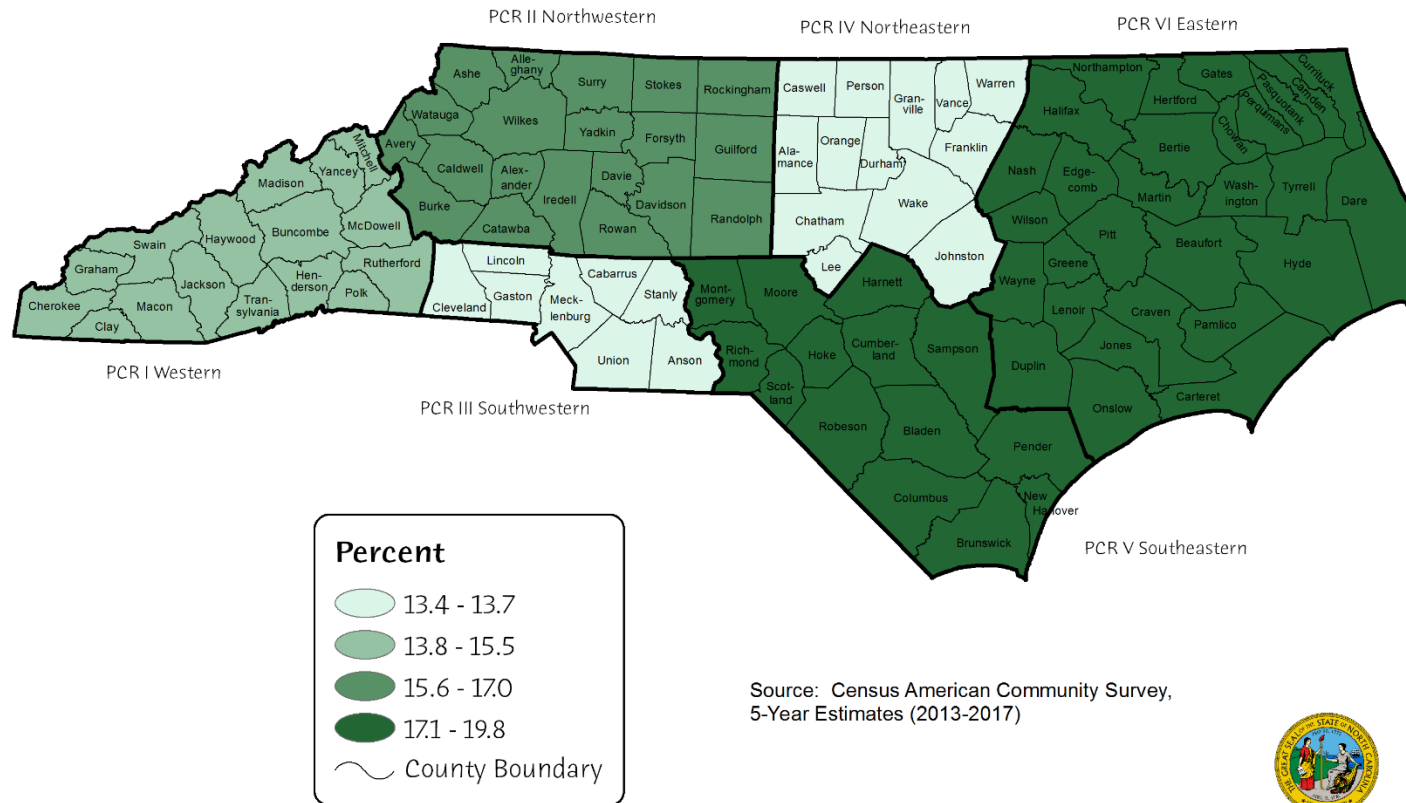


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# North Carolina

## 2017 Percent Total Population Below Poverty by Perinatal Care Regions (PCR)



Source: Census American Community Survey,  
5-Year Estimates (2013-2017)

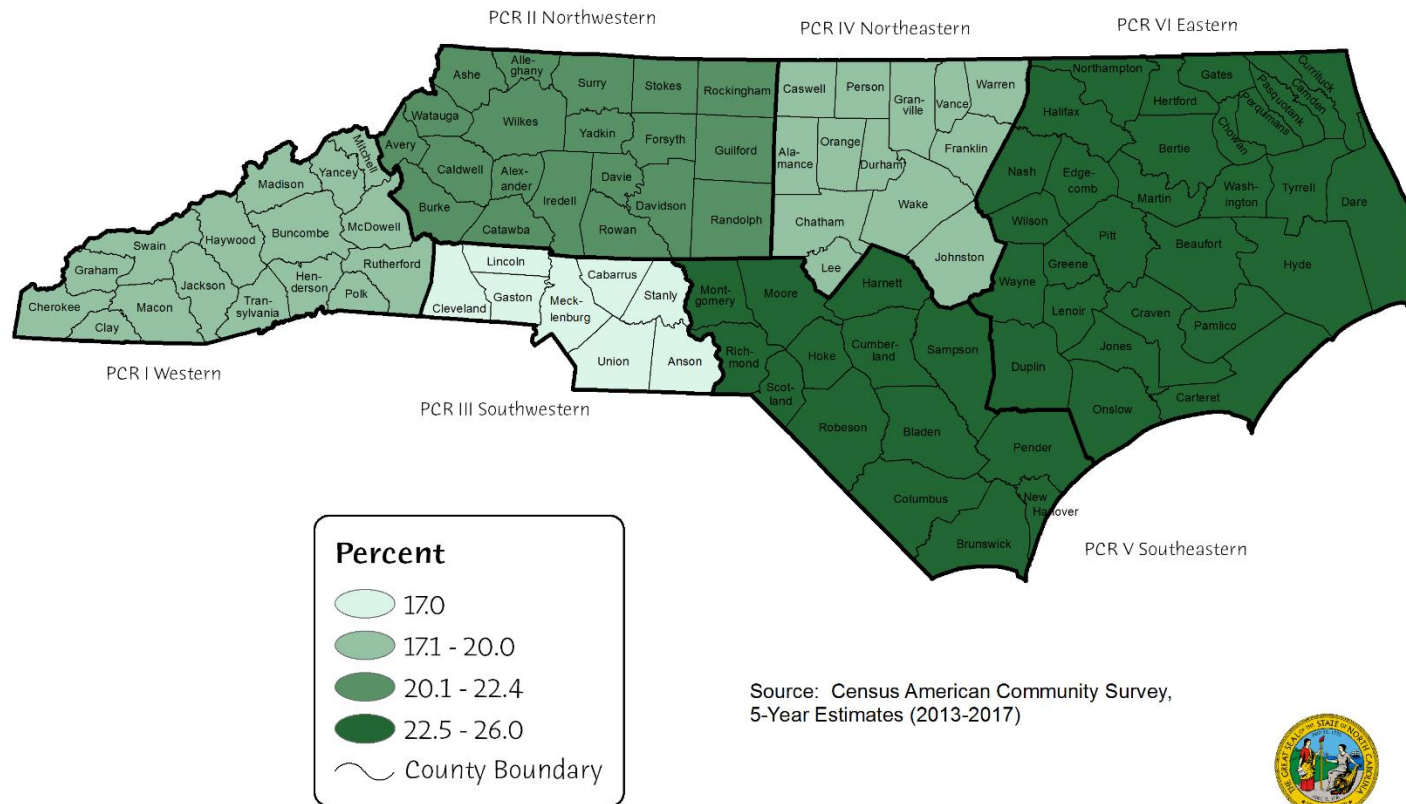


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# North Carolina

## 2017 Percent Female Population Ages 18 to 44 Below Poverty by Perinatal Care Regions (PCR)



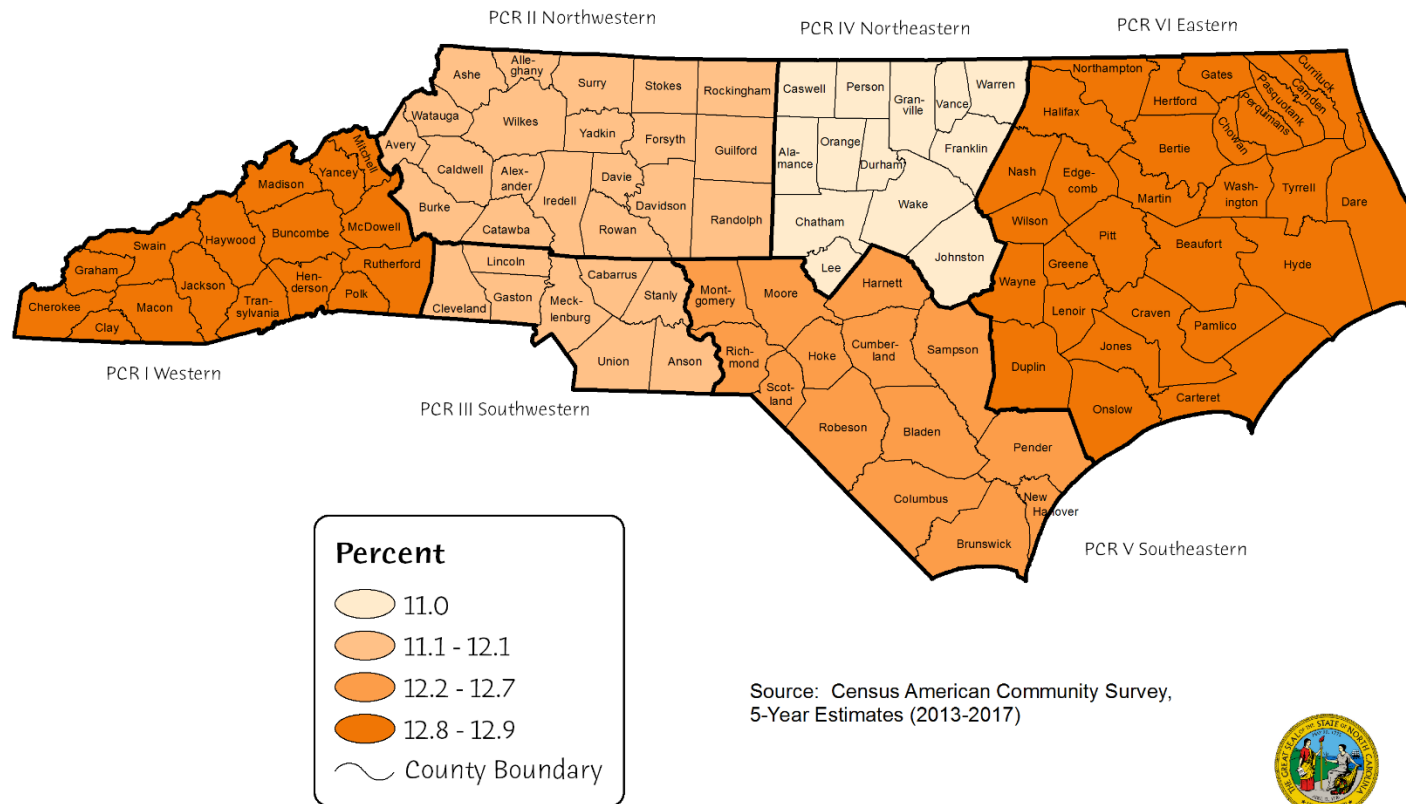
Source: Census American Community Survey,  
5-Year Estimates (2013-2017)



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# North Carolina 2017 Percent Population Uninsured by Perinatal Care Regions (PCR)



Source: Census American Community Survey,  
5-Year Estimates (2013-2017)

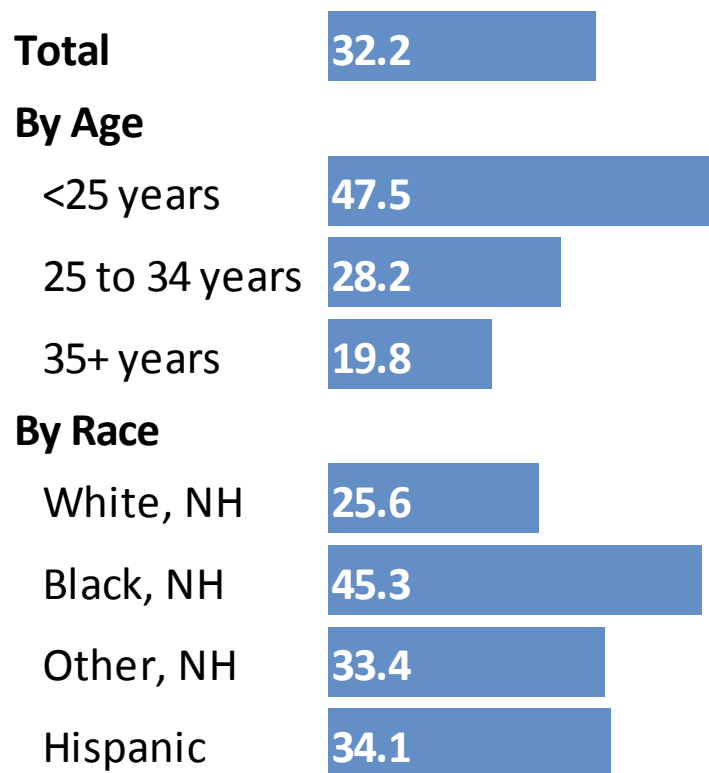


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# NC Percent of Unintended Pregnancies, 2016

## NC Pregnancy Risk Assessment Monitoring System (PRAMS)

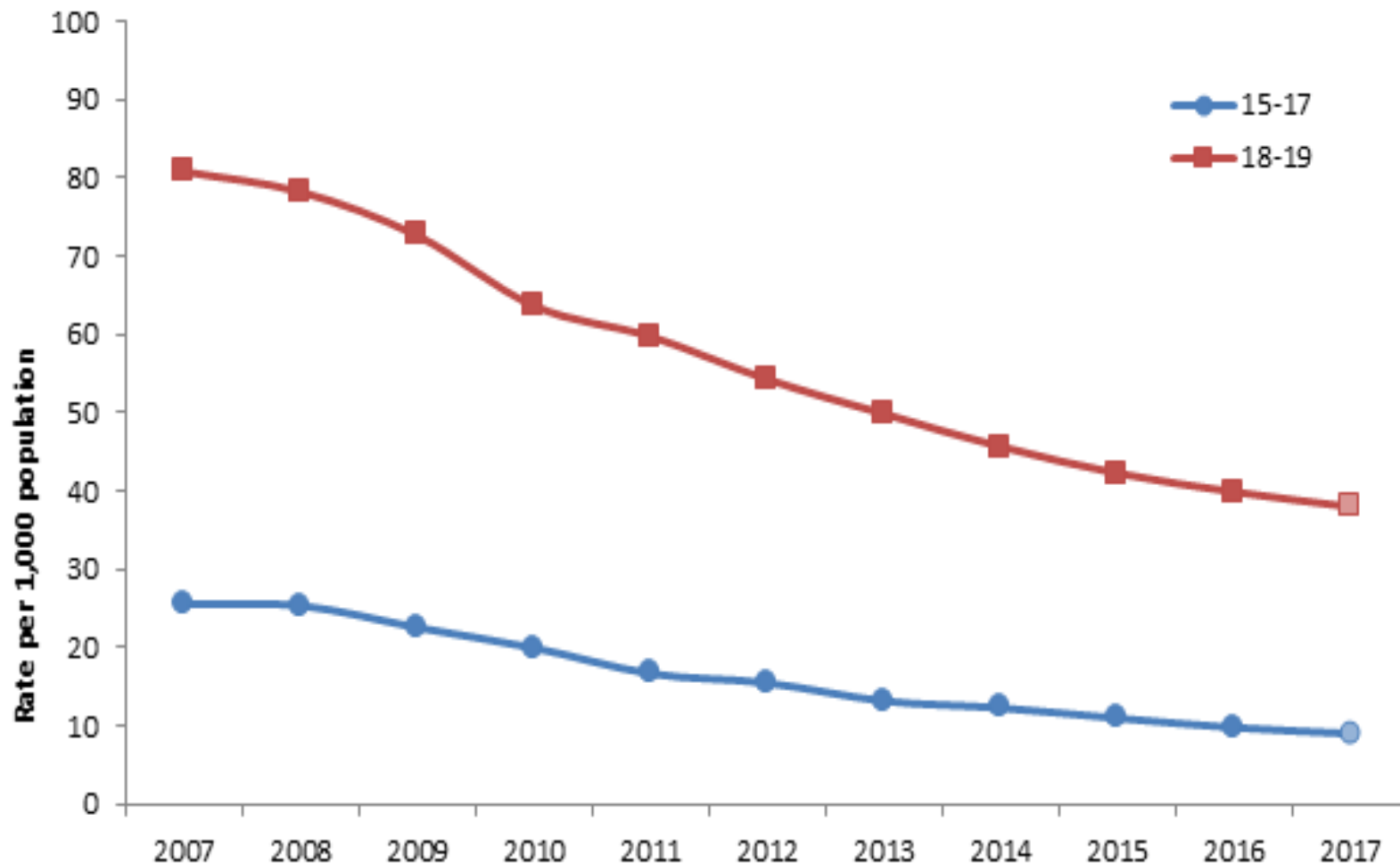


Unintended Pregnancy Question: Thinking back to just before you got pregnant with your new baby how did you feel about becoming pregnant?

Those who chose “I wanted to be pregnant later” or “I did not want to be pregnant then or at any time in the future” were classified UNINTENDED PREGNANCY.

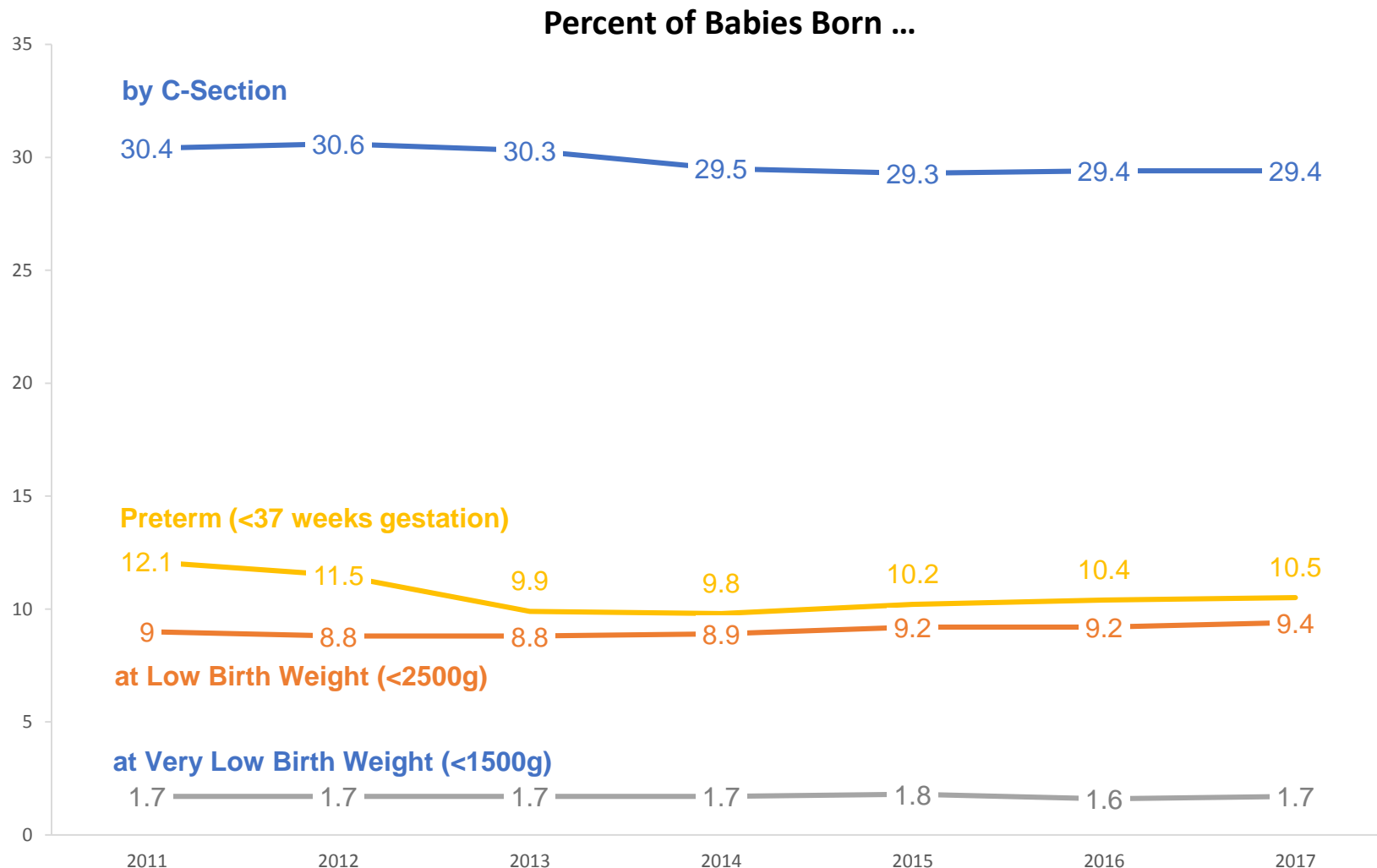
**Source: NC State Center for Health Statistics, PRAMS**

## NC Birth Rates for Teens Ages 15 to 17 and 18 to 19 2007 to 2017



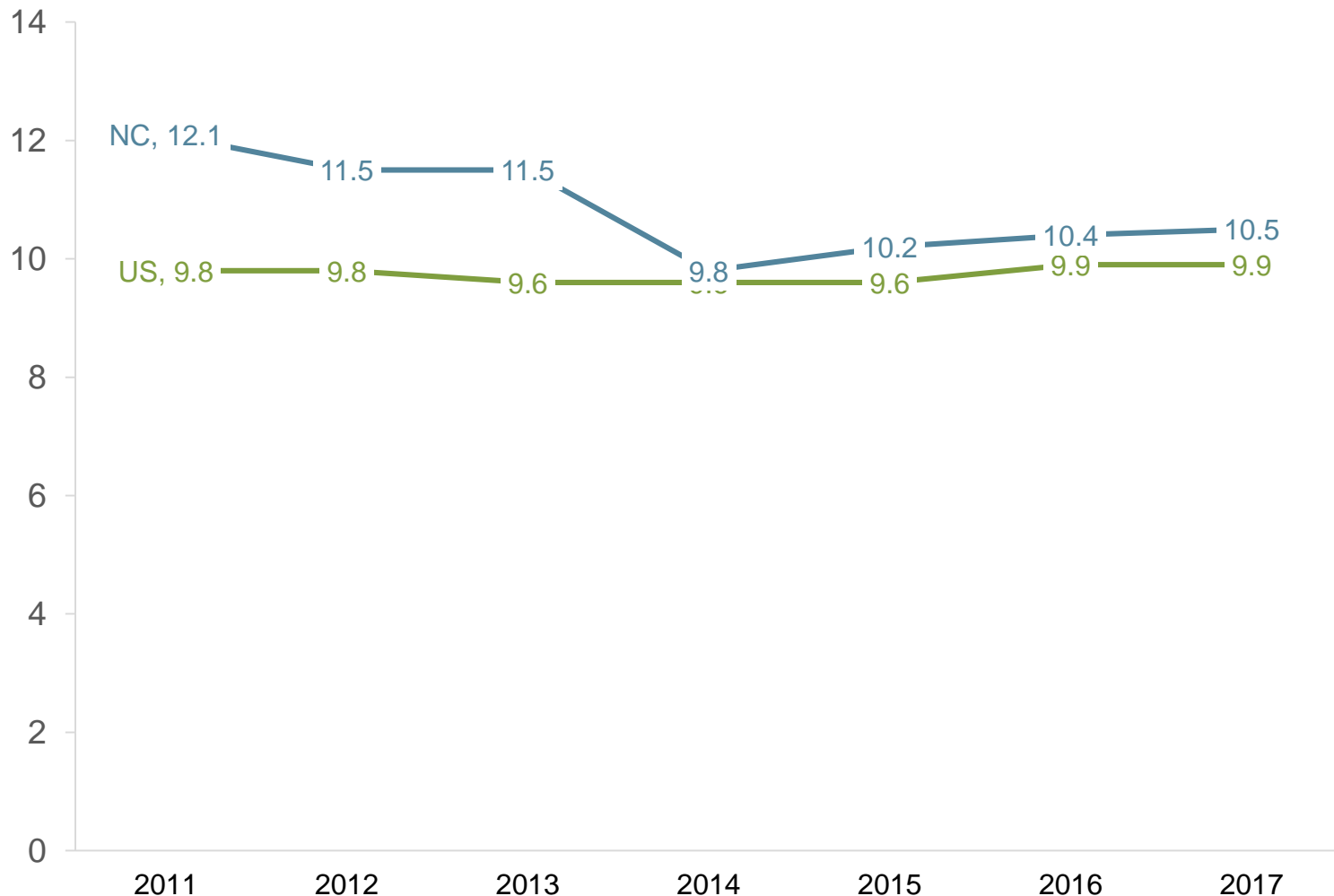
Source: NC State Center for Health Statistics

# Characteristics of NC Infants



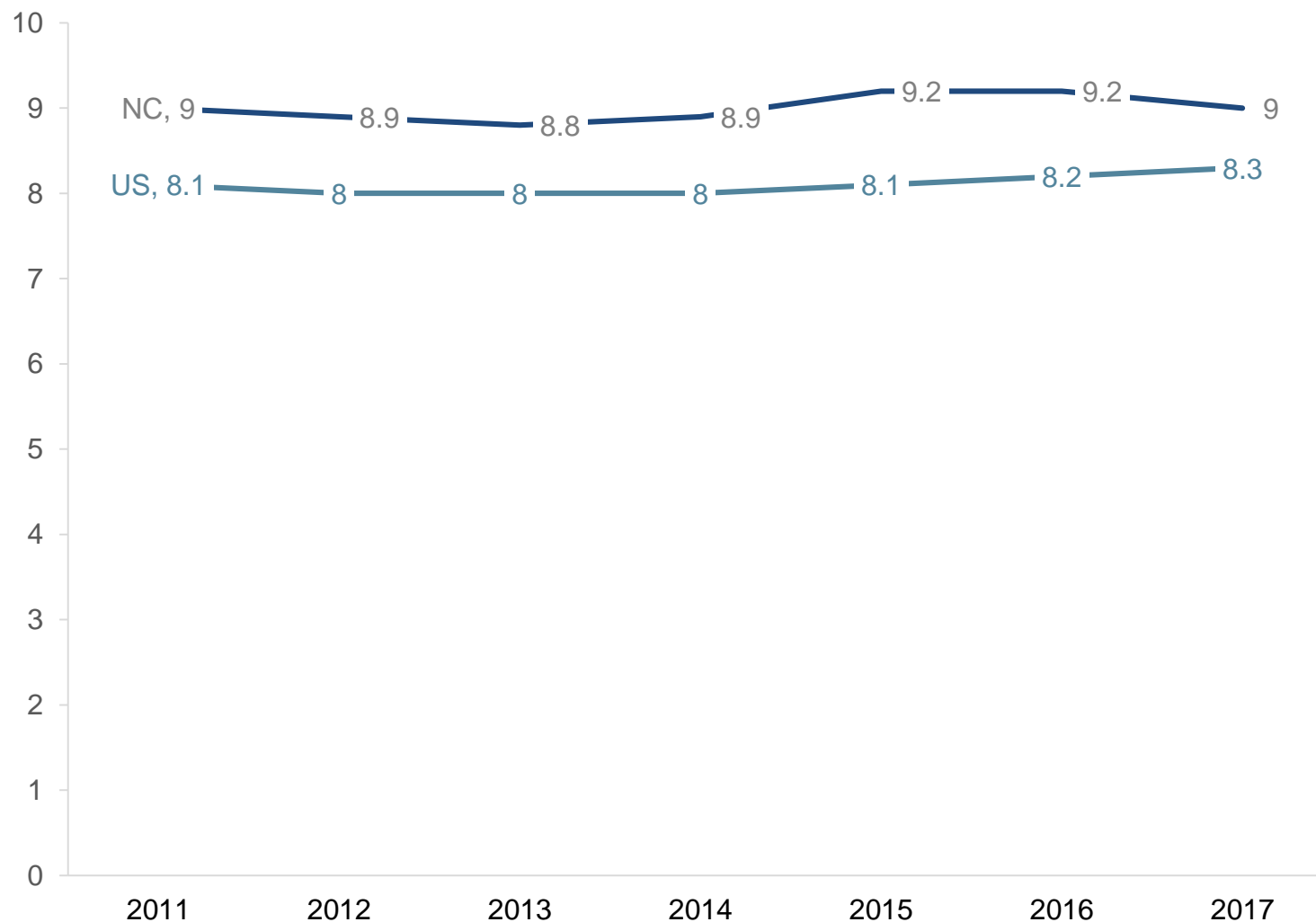
Source: NC State Center for Health Statistics, Vital Statistics

## Percentage of Live Births Born Preterm (<37 weeks) 2010-2017: US and NC



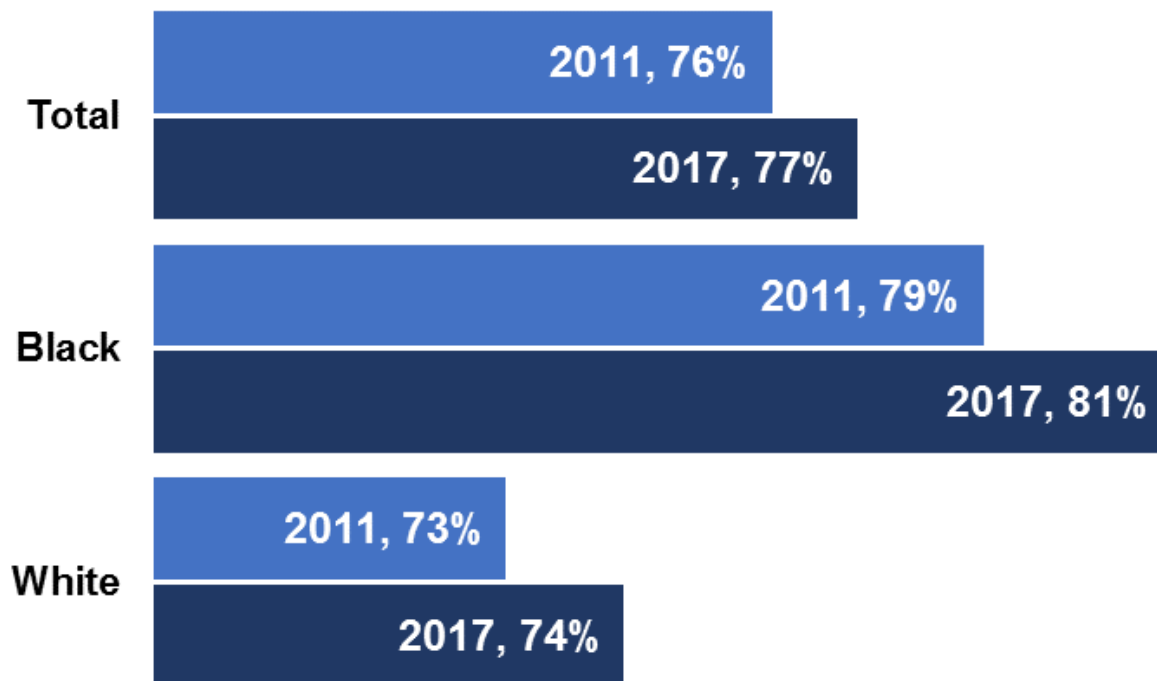
Source: NC State Center for Health Statistics & National Center for Health Statistics

## Percentage of Low Birth Weight Births (<2500g) 2010-2017: US and NC



Source: NC State Center for Health Statistics & National Center for Health Statistics

## North Carolina Percent of Very Low Birth Weight (<1500g) Infants Born at Level 3\* Hospitals



\*Using current classifications

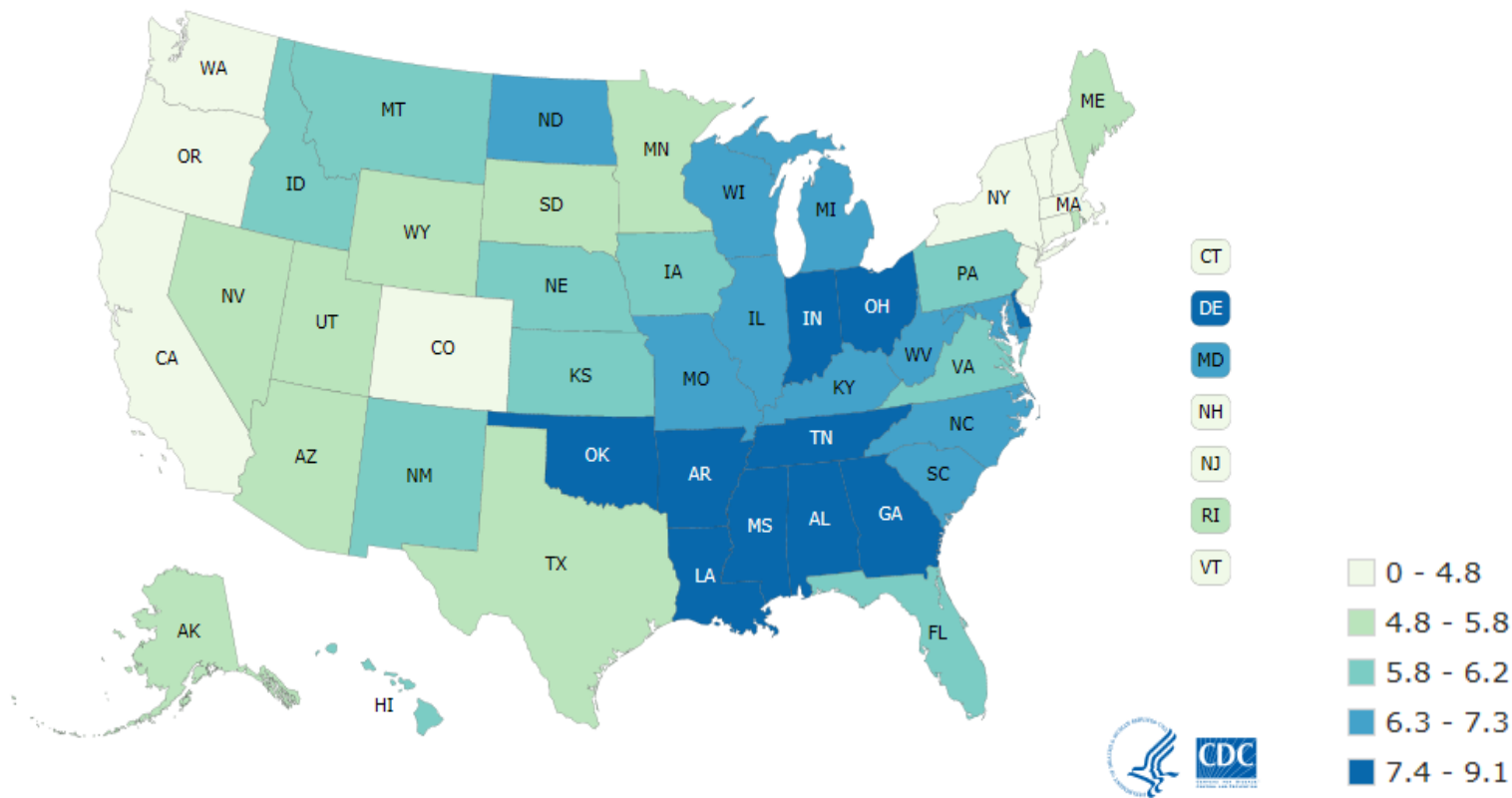
Source: Nc State Center for Health Statistics

# Infant Mortality Data

# Infant Mortality by State 2016

US Rate: 5.9/1,000 live births

NC Rate: 7.2/1,000 live births  
Ranked 12<sup>th</sup> in US

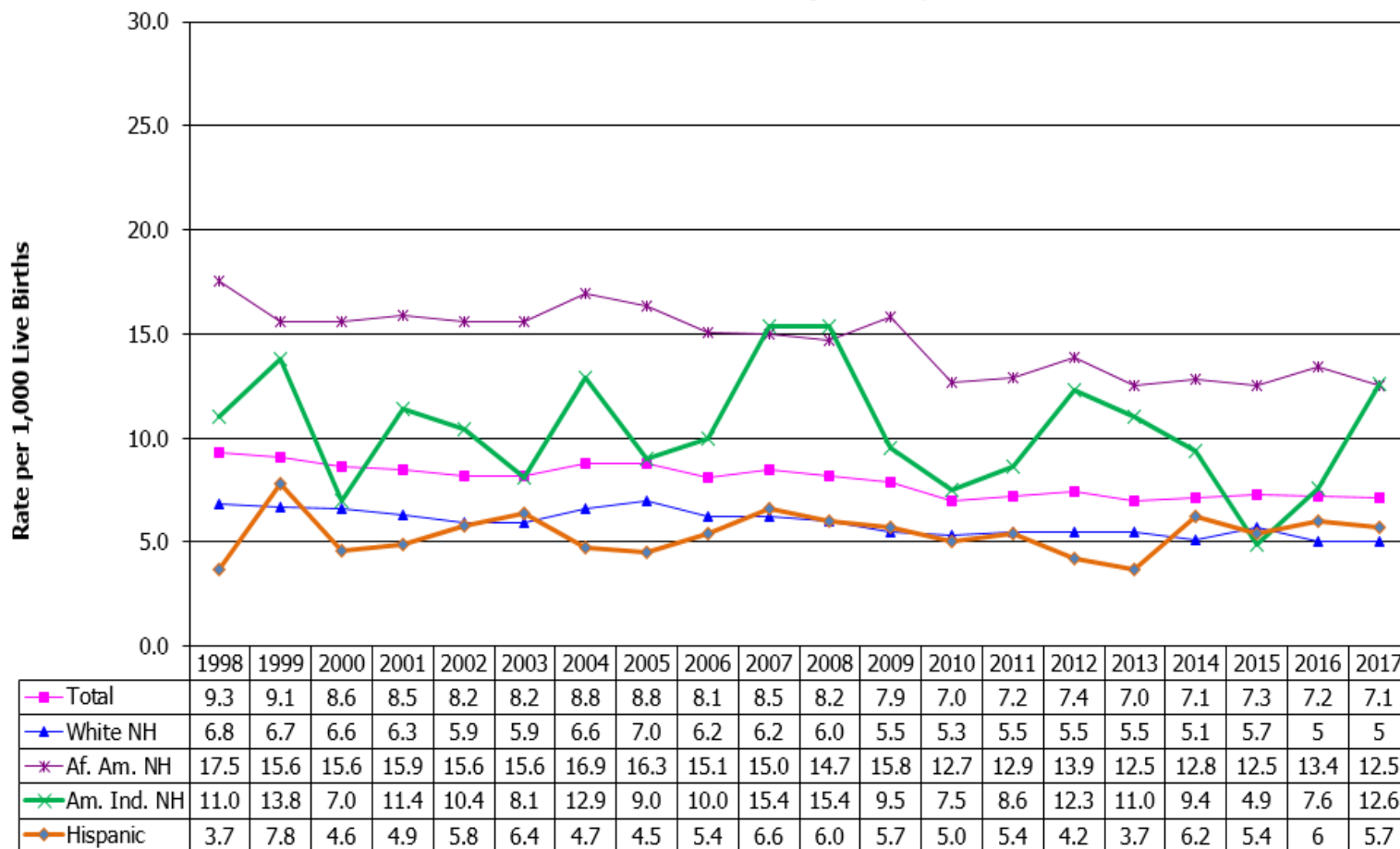


Source: CDC, National Center for Health Statistics

# NC Resident Infant Death Rates, 2007-2017

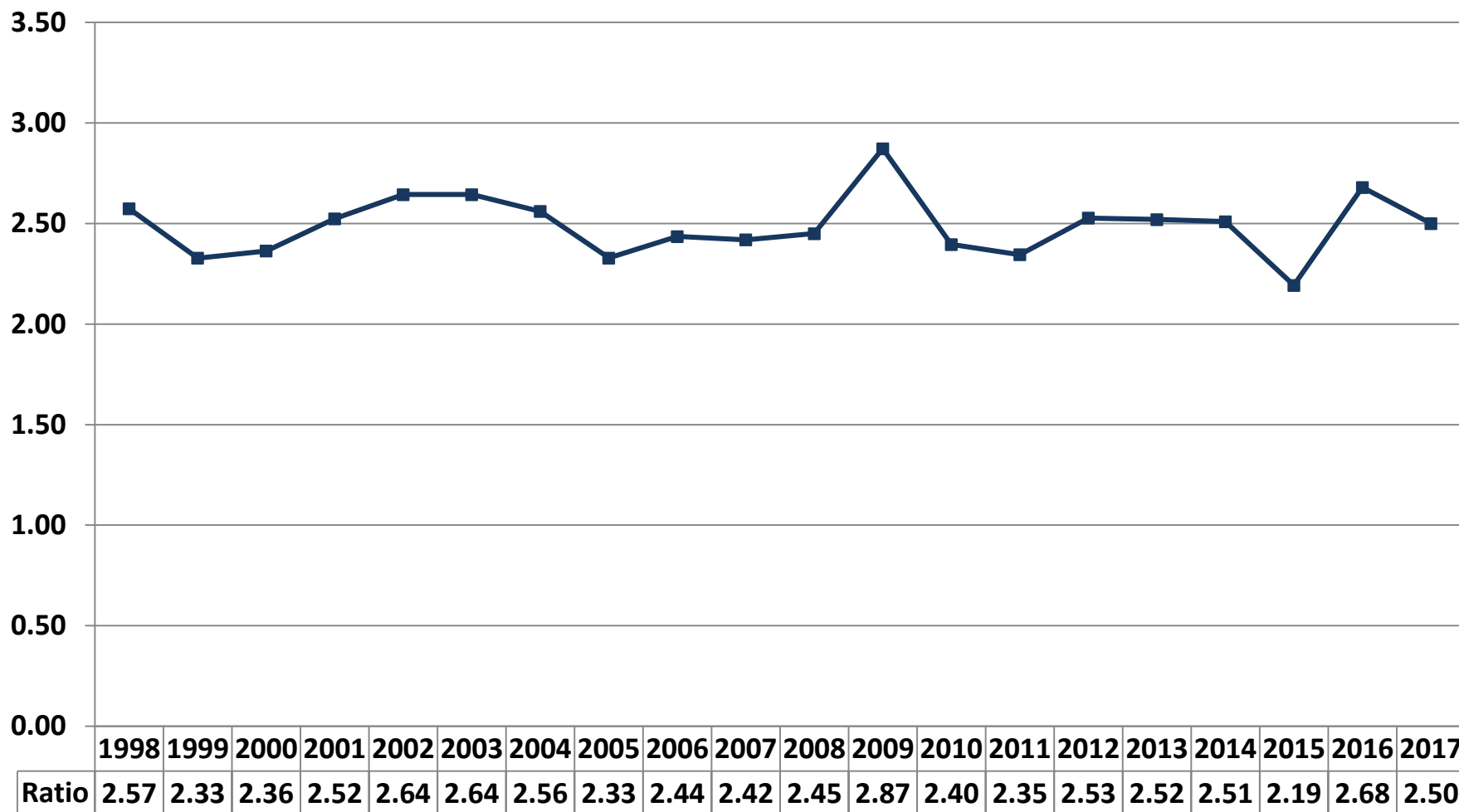
## Racial Distribution

**NC Resident Infant Mortality Rates, 1998-2017**



Source: NC DHHS North Carolina State Center for Health Statistics

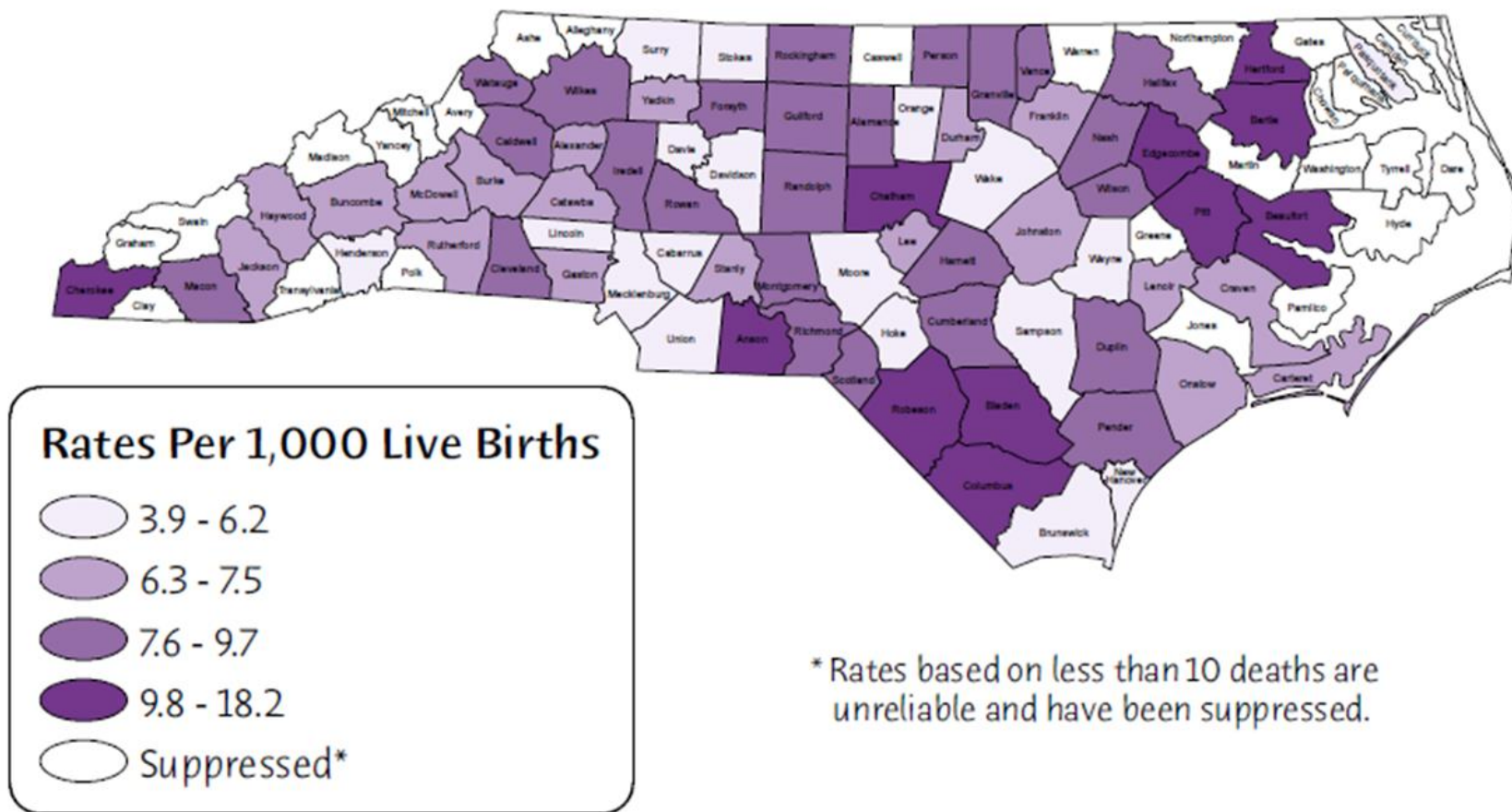
# NC Infant Mortality Disparity Ratio\* 1998-2017



\*Ratio of Non-Hispanic Black to Non-Hispanic White Infant Mortality Rates

Source: North Carolina State Center for Health Statistics, 2017 Infant Mortality Report

# North Carolina Infant Mortality Rates by County 2013 - 2017

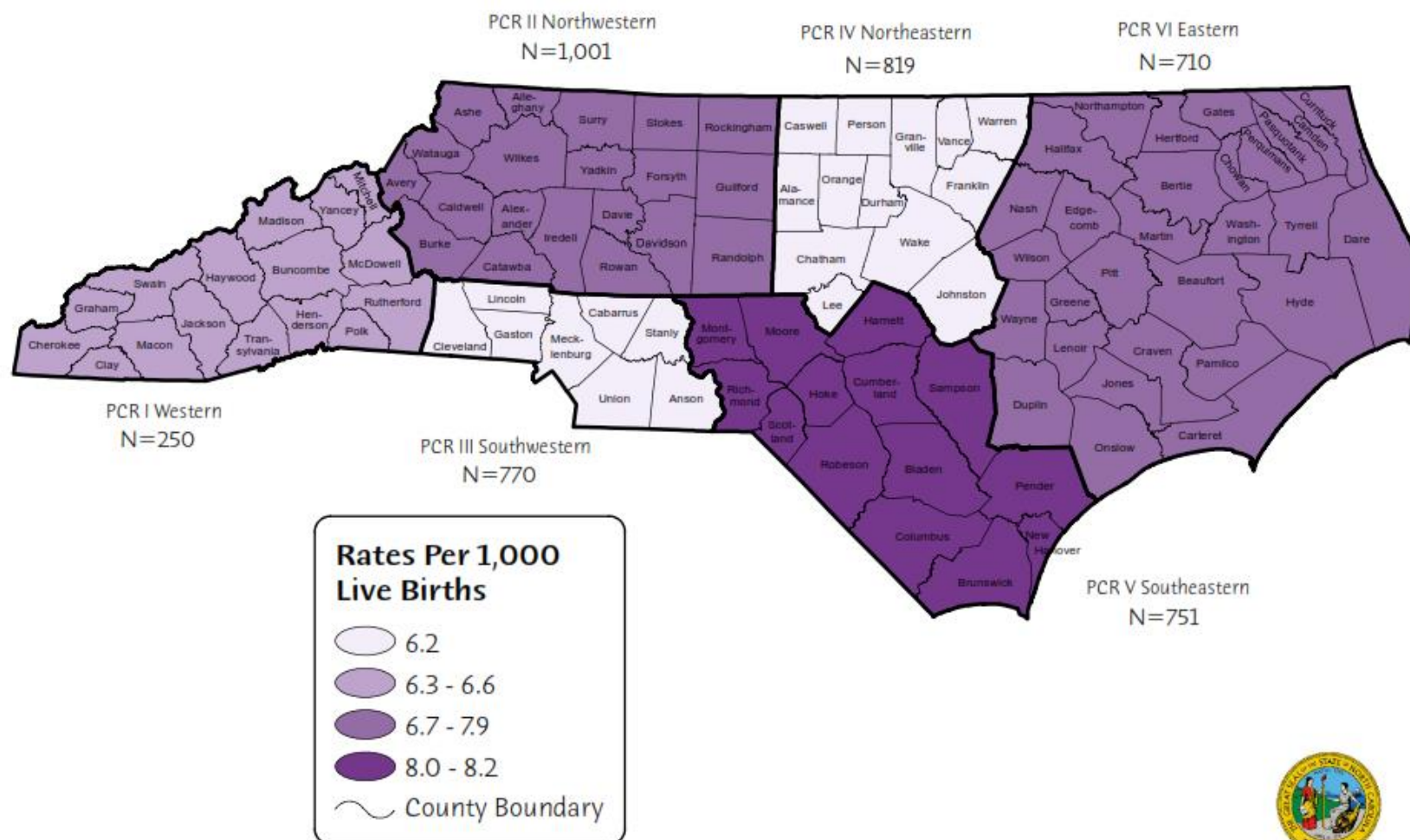


Source: NC DHHS North Carolina State Center for Health Statistics

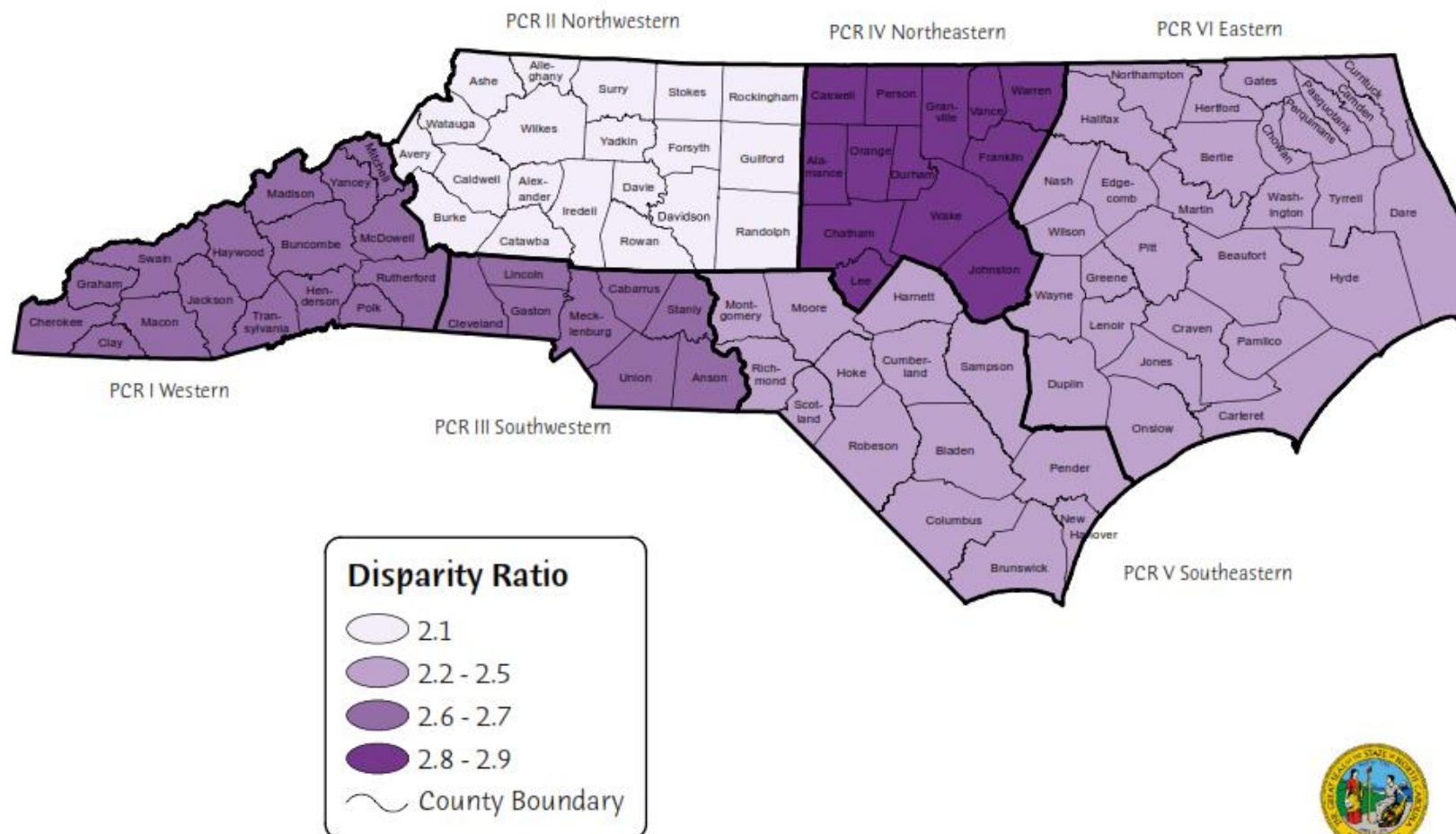
# North Carolina

## Infant Mortality Rates by Perinatal Care Regions (PCR)

### 2013 - 2017

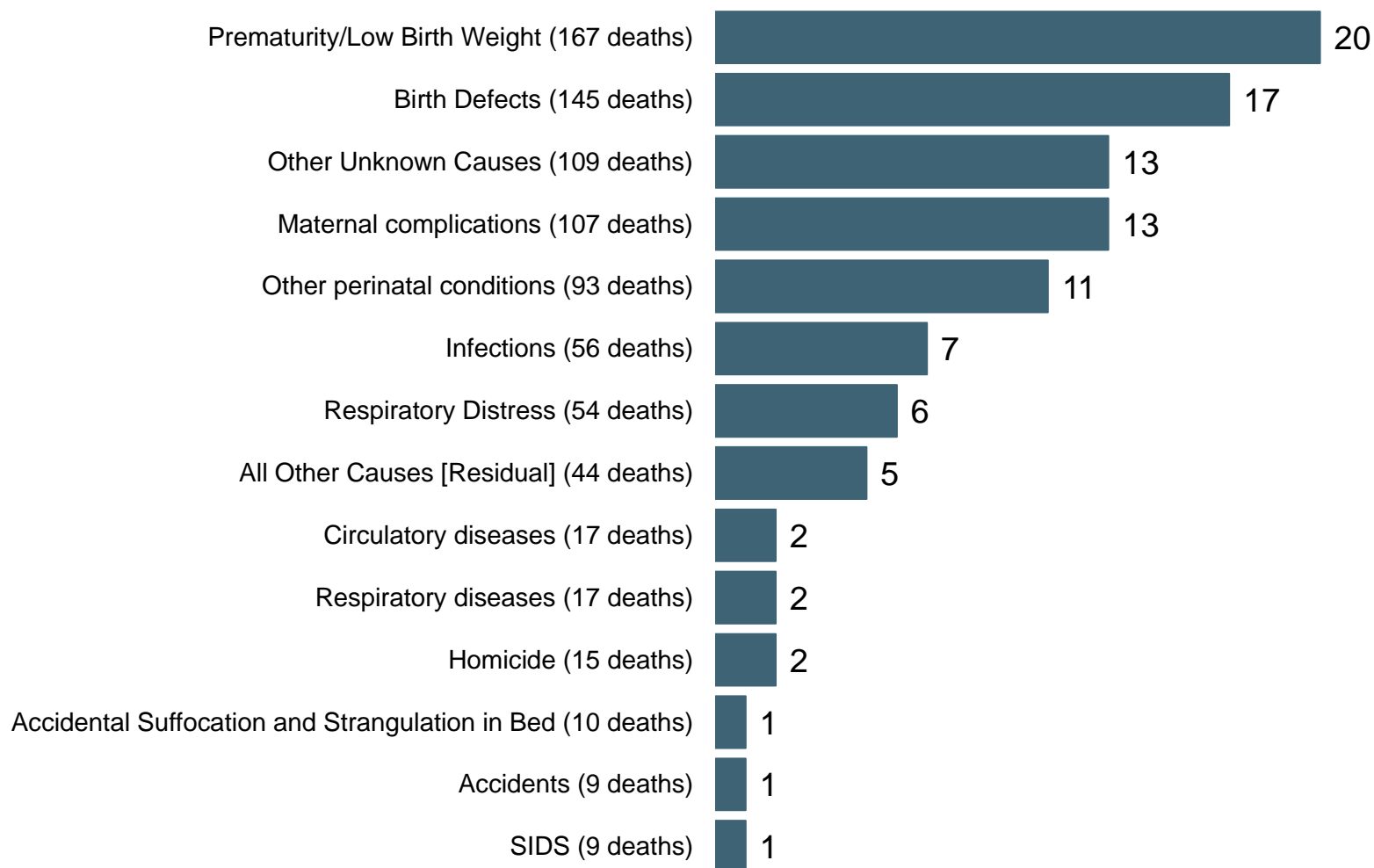


# North Carolina Infant Mortality Racial Disparities Between White (Non-Hispanics) and African-American (Non-Hispanics) by Perinatal Care Regions (PCR) 2013 - 2017



# Leading Causes of Infant Death, NC 2017

Percent of All Deaths by Cause

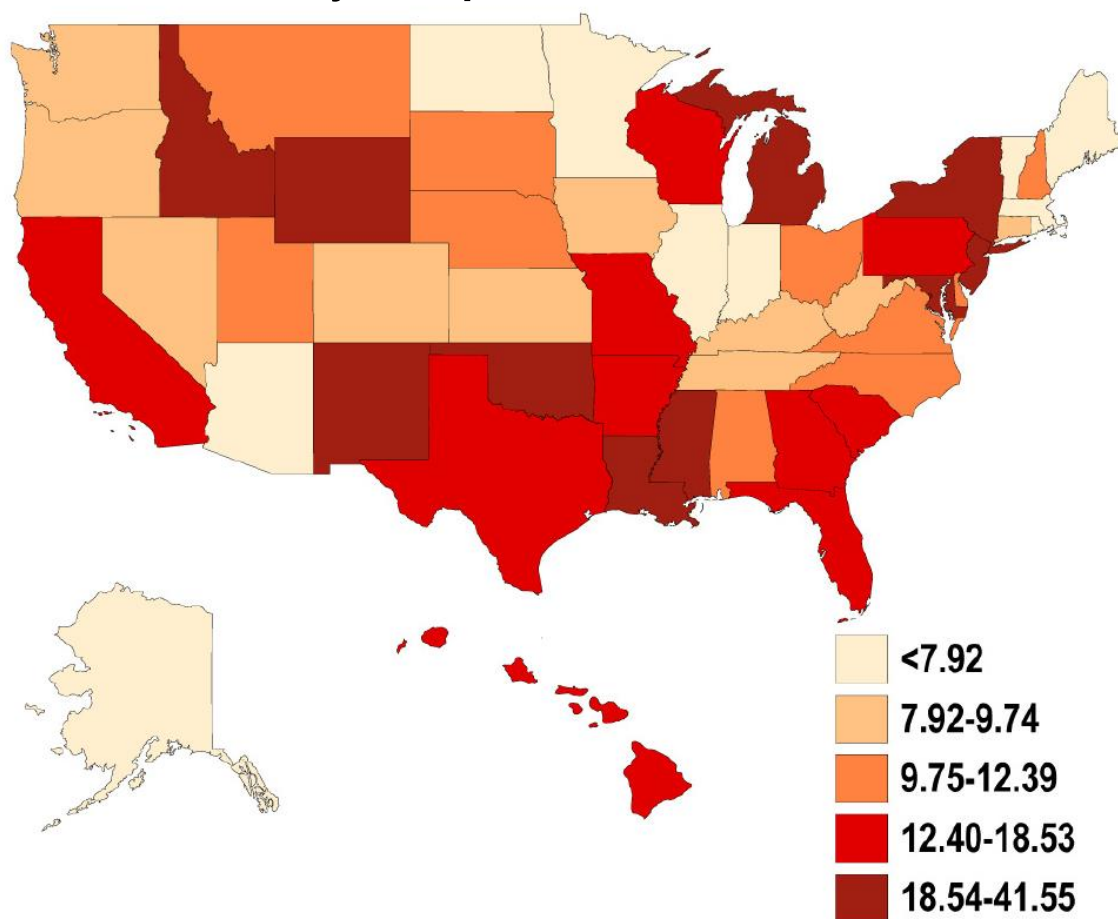


Source: North Carolina State Center for Health Statistics, 2017 Infant Mortality Report

# Maternal Mortality/ Morbidity Data

# NC ranked 16<sup>th</sup> for maternal mortality

Maternal mortality rate per 100,000 live births, 2003-2007



**SOURCE:** [HRSA](#) | **NOTE:** The U.S. has not officially reported maternal mortality since 2007.

# Understanding the Data

- **Variations in identifying pregnancy-associated and pregnancy-related deaths**
- **Criteria for “pregnancy-related case” is not consistent over time**
- **Small numbers → unstable rates**
- **Case ascertainment thought to partially contribute to increasing maternal mortality rates**
  - i.e. more cases are identified rather than occurring
- **NC is part of a current working group with CDC and 4 other states to develop a “best practice” protocol to standardize case ascertainment nationally**

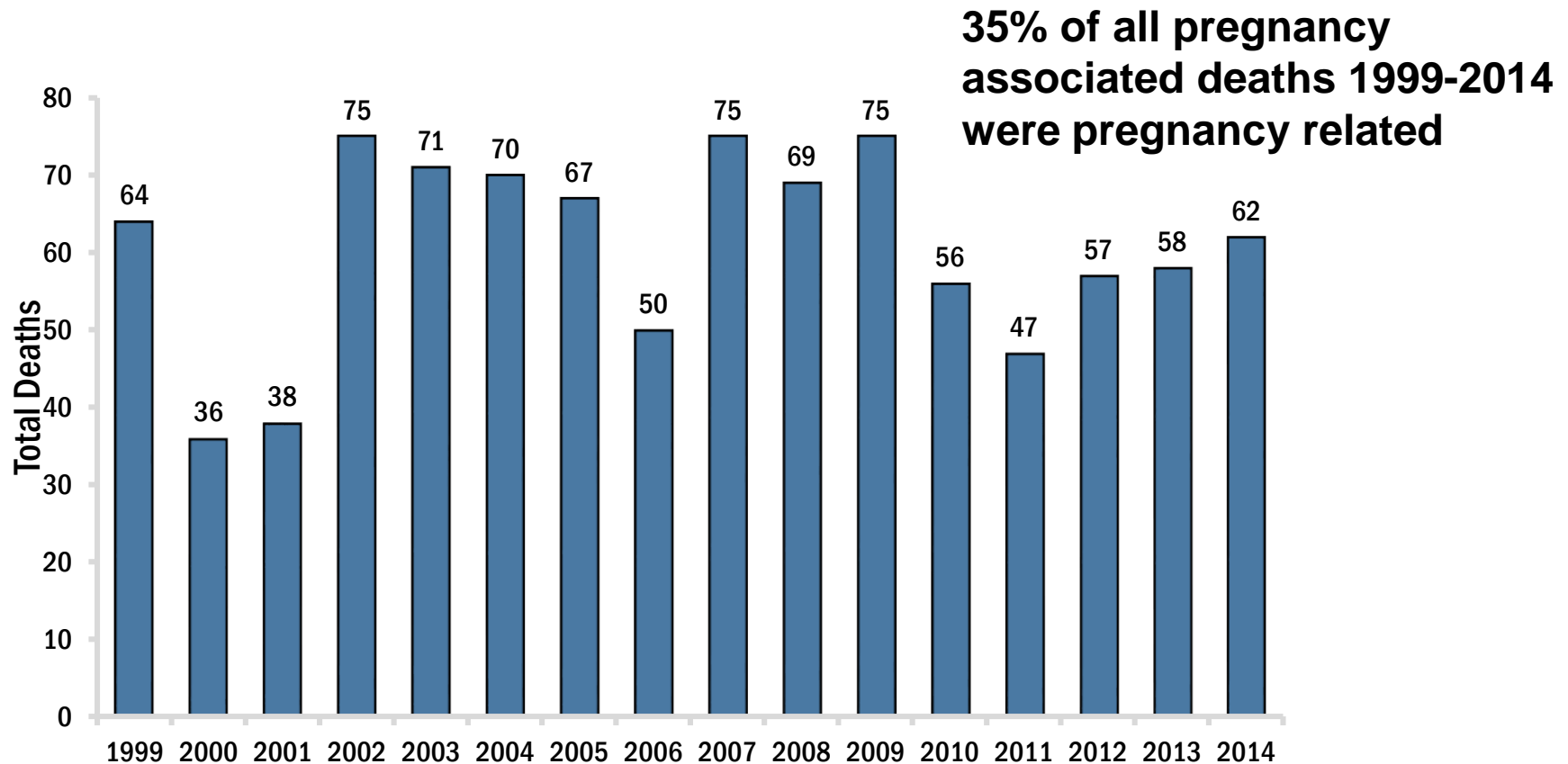
**SOURCE:** MacDorman, Declercq, Cabral, Morton. *Is the United States Maternal Mortality Rate Increasing? Disentangling trends from measurement issues.* Obstet Gynecol. 2016 September ; 128(3): 447–455.  
Enhanced Surveillance of Maternal Mortality in North Carolina, <https://schs.dph.ncdhhs.gov/schs/pdf/CHIS125.pdf>

# Maternal Mortality Defined

- **Pregnancy Associated**: umbrella term for all deaths during pregnancy or within 1 year of pregnancy, regardless of cause
- **Pregnancy Related**: the death of a woman while pregnant or within 1 year of pregnancy from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes

**SOURCE:** St Pierre, A., Zaharatos, J., Goodman, D., Callaghan, W. Challenges and Opportunities in Identifying, Reviewing, and Preventing Maternal Deaths. Obstetrics & Gynecology. March 2018.

# Number of Pregnancy-Associated Deaths North Carolina Residents 1999 – 2014

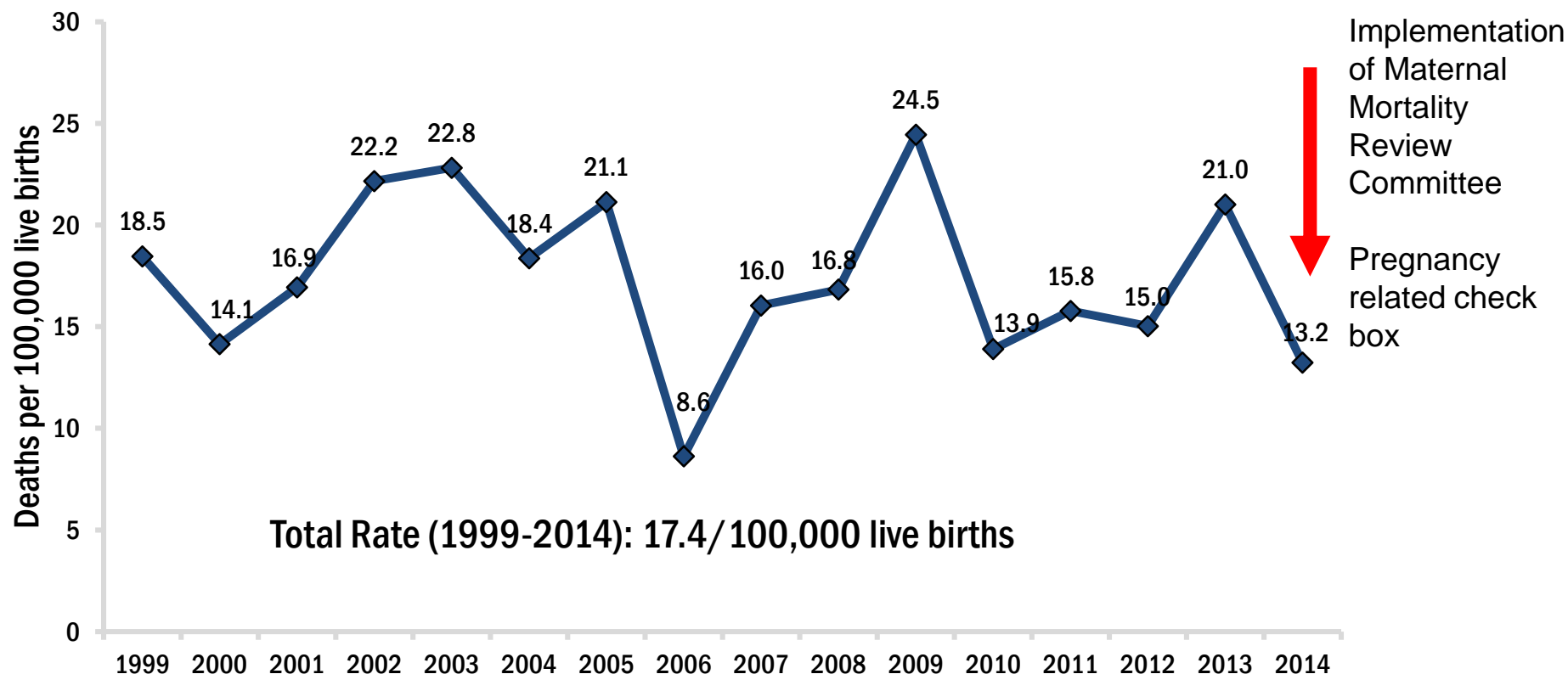


**SOURCE:** NC DHHS State Center for Health Statistics, June 2018

**NOTE:** Data source for ascertainment of pregnancy associated cases are variable over this time period. The criteria for a “pregnancy related case” is not consistent over time. NC is part of a working group with CDC to develop a “best practice” protocol to standardize case ascertainment nationally

# Trends in Pregnancy-Related Death Rates

## North Carolina Residents 1999-2014

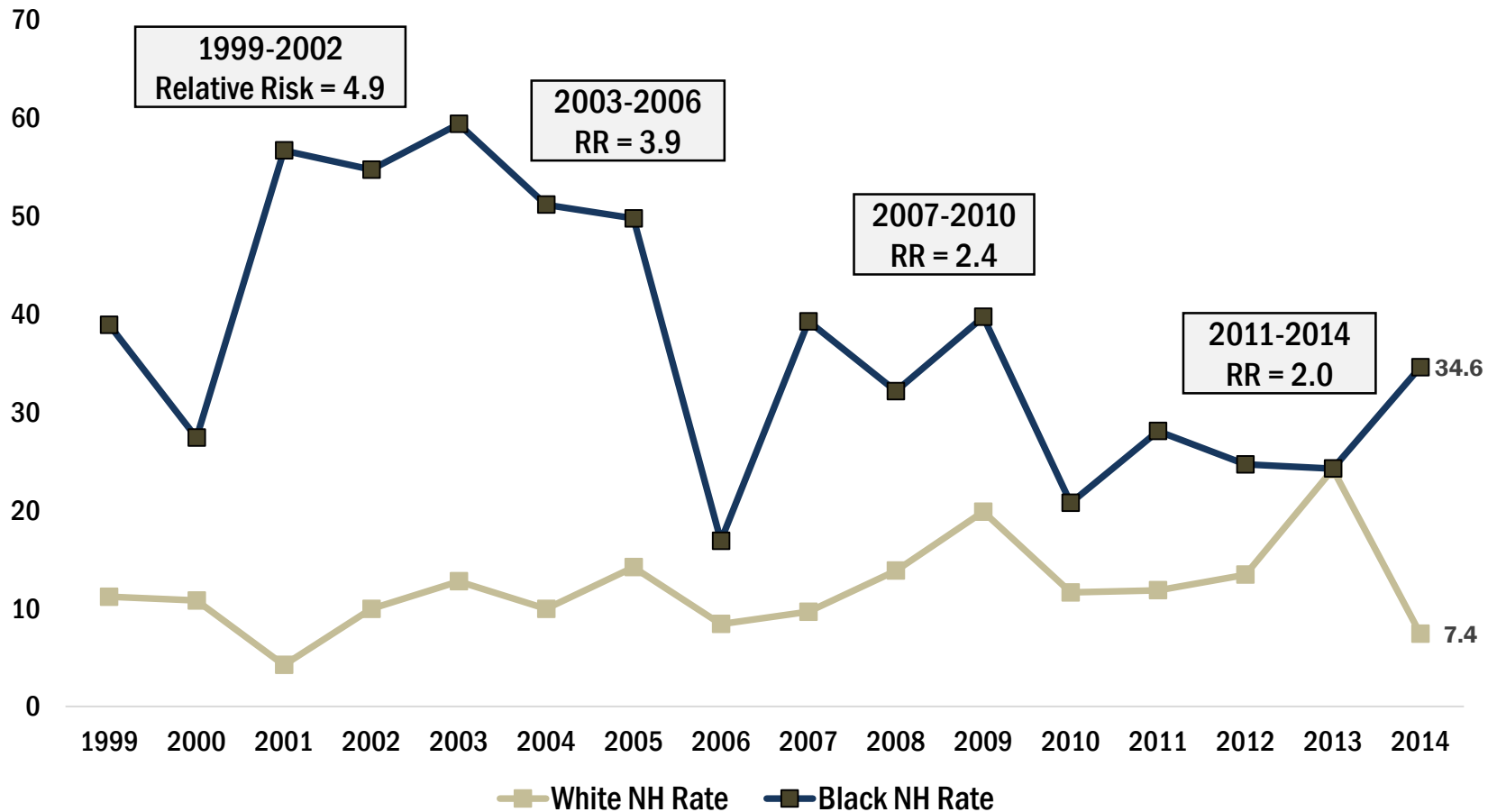


**SOURCE:** NC DHHS State Center for Health Statistics, June 2018

**NOTE:** Data source for ascertainment of pregnancy associated cases are variable over this time period. The criteria for a "pregnancy related case" is not consistent over time.

# Pregnancy-Related Deaths – Racial Disparities

Pregnancy-related deaths per 100,000 live births for non-Hispanic whites and blacks, NC residents, 1999-2014



**SOURCE:** NC DHHS State Center for Health Statistics, June 2018 | **NOTE:** NH=Non-Hispanic.

# Pregnancy Related Cause of Death

## North Carolina 2005 – 2014

Implementation of Maternal  
Mortality Review Committee

Pregnancy related check  
box



Cause of Death Category	Year										Total
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
Cardiomyopathy	6	4	7	5	2	1	2	1	6	3	37
Cardiovascular	3	1	3	4	4	1	3	5	2	1	27
Noncardiovascular Medical Conditions	4	1	5	2	3	1	0	1	1	0	18
Infection	2	1	0	1	9	7	3	0	3	1	27
Eclampsia/Hypertensive Disorders Of Pregnancy	0	2	0	5	5	2	3	2	2	1	22
Pulmonary Embolus	4	1	2	2	2	4	3	2	3	2	25
Cerebrovascular Diseases	3	0	2	1	4	1	0	3	2	3	19
Amniotic Fluid Embolus	2	0	2	2	0	0	0	1	2	0	9
Hemorrhage	2	1	0	0	2	0	5	3	2	2	17
Undetermined	0	0	0	0	0	0	0	0	1	0	1
Suicide	0	0	0	0	0	0	0	0	1	2	3
Homicide	0	0	0	0	0	0	0	0	0	1	1
Total	26	11	21	22	31	17	19	18	25	16	206

**SOURCE:** NC DHHS State Center for Health Statistics, June 2018.

**NOTE:** The criteria for a “pregnancy related case” is not consistent over time

# Cardiovascular leading cause of maternal mortality in NC

## **# of NC Maternal Deaths from 2005-2014**

1. **Cardiomyopathy (37) + Cardiovascular (27) = 64**
2. Infection (27)
3. Pulmonary Embolus (25)

## **# of Maternal Deaths in 2014**

1. **Cardiomyopathy (3) + Cardiovascular (1) = 4**
2. Cerebrovascular Disease (3)
3. Hemorrhage (2)
4. Suicide (2)

**SOURCE:** NC DHHS State Center for Health Statistics, June 2018

# Severe Maternal Morbidity (SMM) CY 2016 & 2017

**Definition:** “A woman who nearly died but survived a complication that occurred during pregnancy, childbirth or within 42 days of termination of pregnancy.”<sup>1</sup>

Total Deliveries in NC Hospitals = 222,113	Number	Rate per 10,000 deliveries
Overall SMM	3,834	172
SMM excluding transfusions	1,702	76

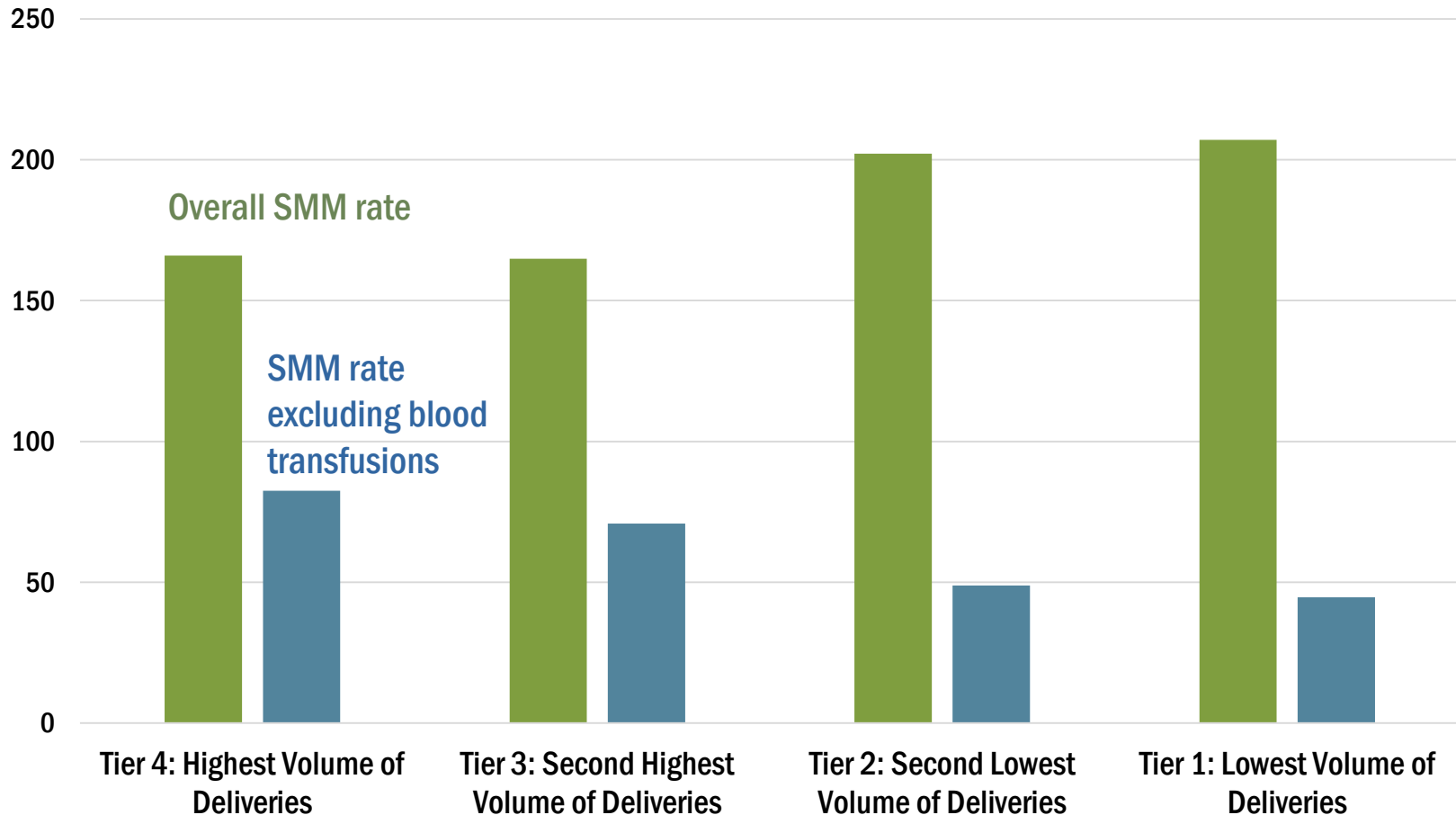
<sup>1</sup>Say et al., Best Pract Res CI OB 2009

**SOURCE:** NC DHHS State Center for Health Statistics August 2018. Report based on Alliance for Innovation on Maternal Health (AIM) Project; <http://safehealthcareforeverywoman.org/aim-data/>

# Severe Maternal Morbidity by Hospital Volume

## NC Resident Deliveries: 2016-2017

SMM Rate per 10,000 Deliveries



**SOURCE:** NC DHHS State Center for Health Statistics August 2018. Report based on Alliance for Innovation on Maternal Health (AIM) Project; <http://safehealthcareforeverywoman.org/aim-data/>

# Severe Maternal Morbidities NC Resident Deliveries, 2016-2017

Total Deliveries: N=222,113	SMM Including Transfusions		SMM Excluding Transfusions	
	N=3,834	%	N=1,701	%
Race				
Non-Hispanic White	1,714	44.7	754	44.32
Non-Hispanic Black	1,247	32.5	570	33.51
Non-Hispanic Am. Indian	98	2.56	60	3.53
Non-Hispanic Other	306	8.0	148	8.70
Hispanic/Latina	469	12.23	169	9.94

**SOURCE:** NC DHHS State Center for Health Statistics August 2018. Report based on Alliance for Innovation on Maternal Health (AIM) Project; <http://safehealthcareforeverywoman.org/aim-data/>

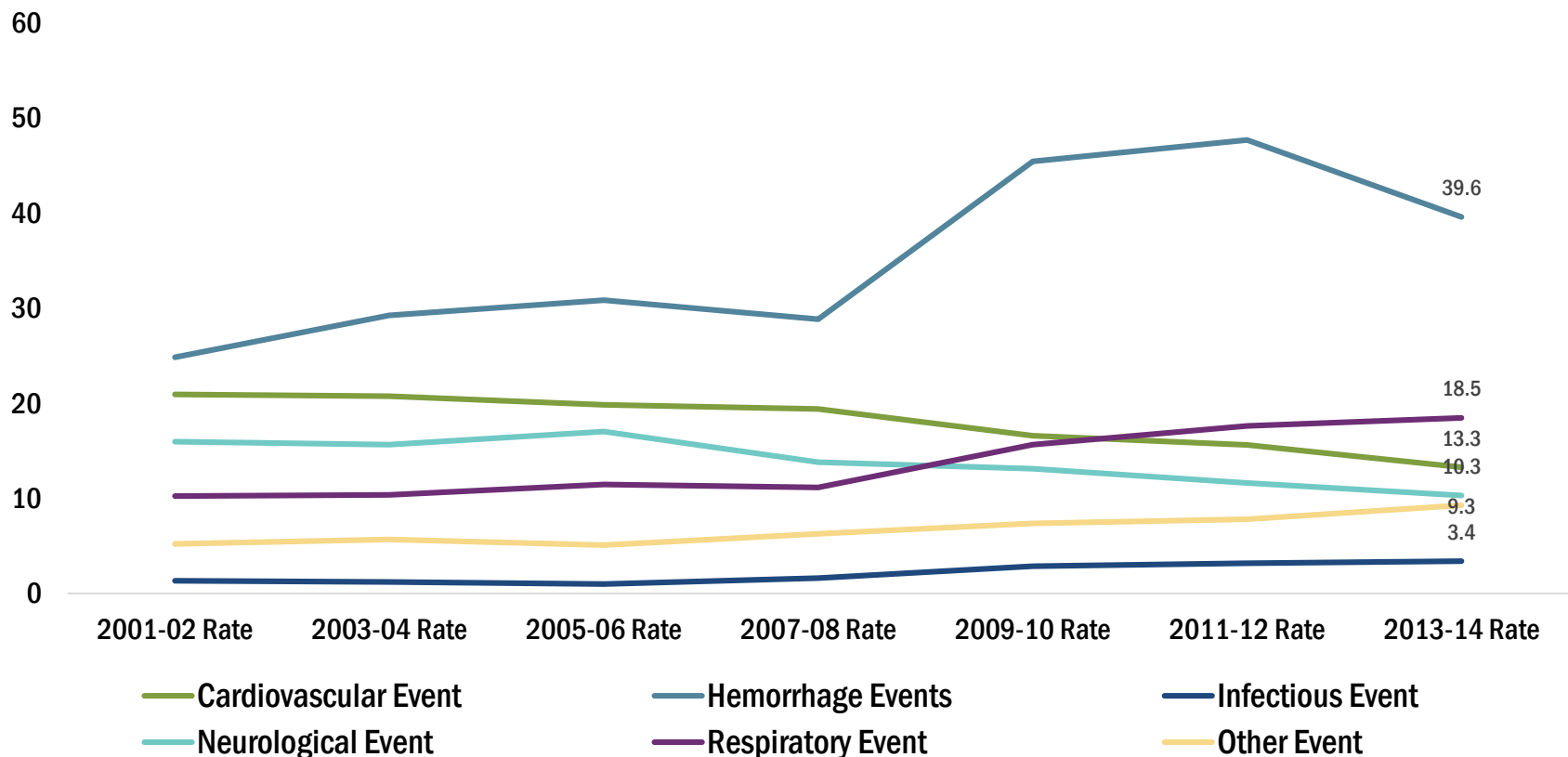
# Severe Maternal Morbidities NC Resident Deliveries, 2016-2017

Total Deliveries: N=222,113	SMM Including Transfusions		SMM Excluding Transfusions	
	N=3,834	%	N=1,701	%
NC AHEC Regions				
Area L	166	4.33	55	3.23
Charlotte	175	4.56	101	5.94
Eastern	1,067	27.83	456	26.81
Greensboro	151	3.94	49	2.88
Mountain	788	20.55	425	24.99
Northwest	707	18.44	304	17.87
Southeast	292	7.62	86	5.06
Southern Regional	217	5.66	103	6.06
Wake	271	7.07	122	7.17

**SOURCE:** NC DHHS State Center for Health Statistics August 2018. Report based on Alliance for Innovation on Maternal Health (AIM) Project; <http://safehealthcareforeverywoman.org/aim-data/>

# Hemorrhage rates increased faster than other SMM rates but decreased in 13-14

NC Rates of Severe Maternal Morbidity (Excluding Blood Transfusions) Per 10,000 Delivery Hospitalizations



**SOURCE:** NC DHHS State Center for Health Statistics, August 2018

# Data Summary

- NC pregnancy-related maternal mortality for 2014 was lowest since 2006, below that estimated for US
- Racial disparities exist with higher rates among non-Hispanic Black women
- Maternal mortality increasing nationally but may be partly due to improved identification
- NC working with CDC and other states to develop “best practice” protocol for national standard
- Look forward to more data from Maternal Mortality Review Committee
- Leading cause of maternal mortality related to cardiovascular causes or cardiomyopathy
  - Related to health of women prior to pregnancy
- Leading cause of SMM is hemorrhage