

# Asthma In North Carolina

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# **Interactive Poll**

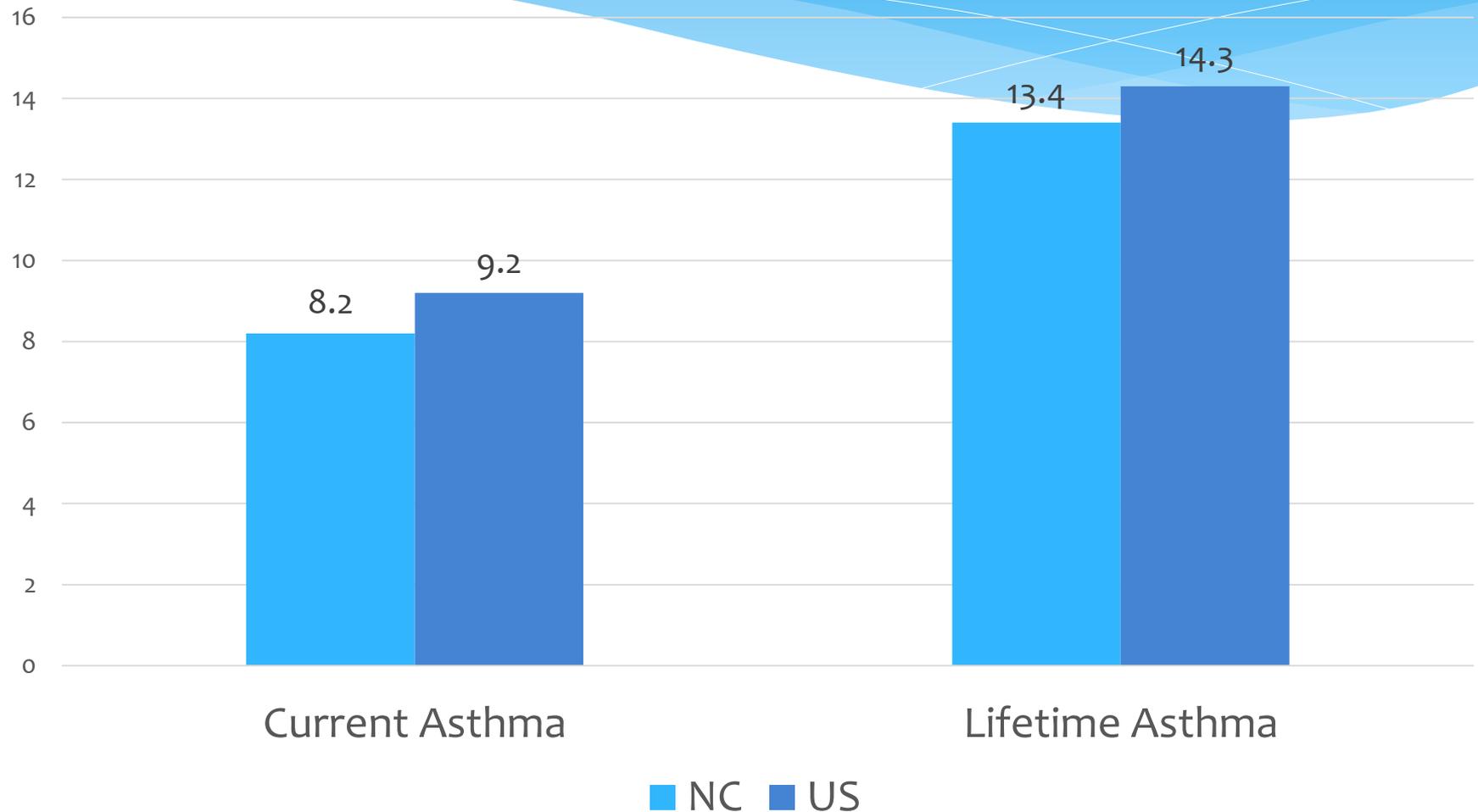
**1. How many Brothers do you have?**

**2. How many years have you been attending the asthma summit?**



# **Adult Asthma Prevalence**

# 2015 Adult Asthma Prevalence, Current & Lifetime: U.S. & N.C.

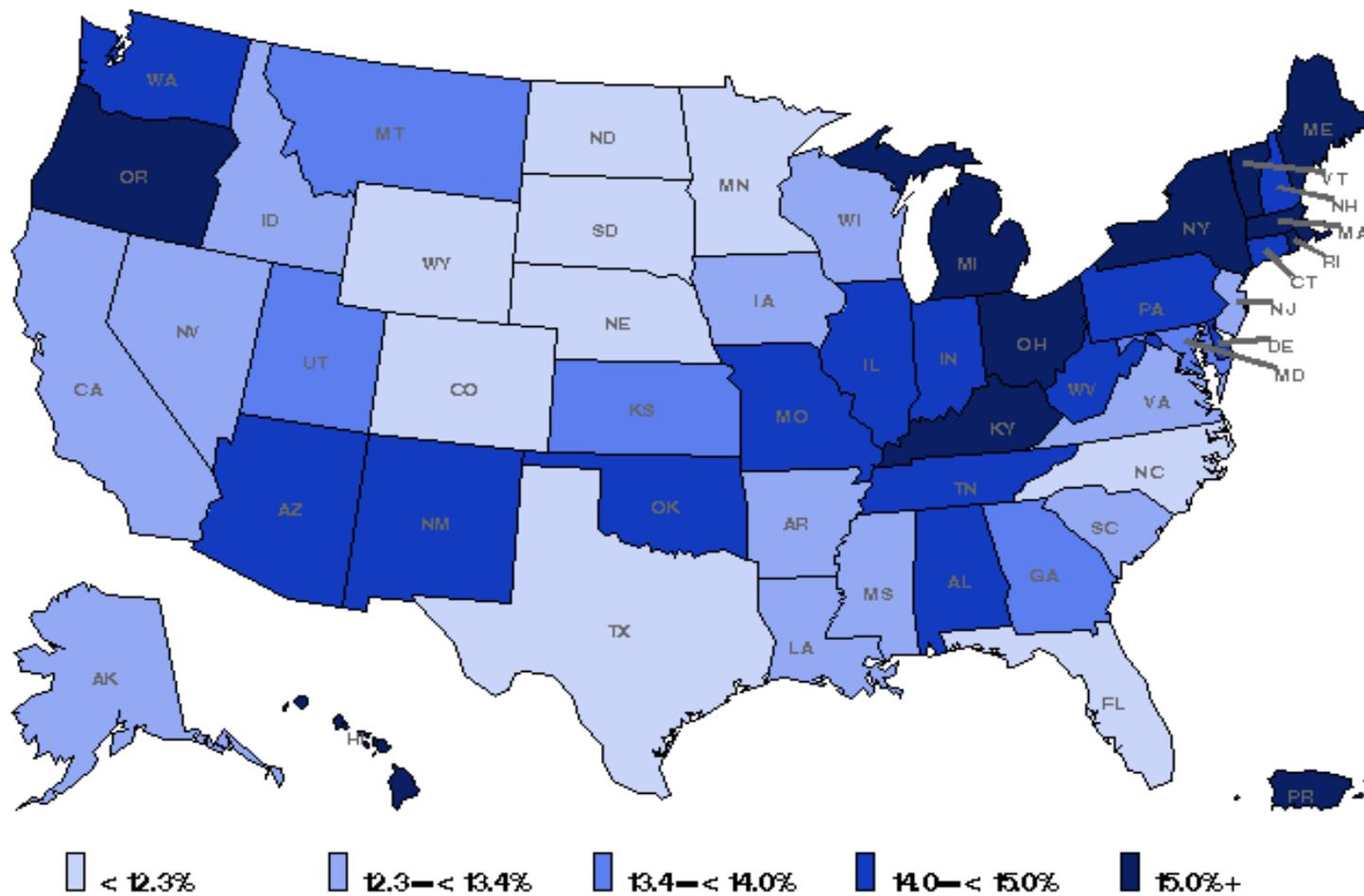


Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System (BRFSS)



# Map L1

## Adult Self-Reported Lifetime Asthma Prevalence Rate (Percent) by State: BRFSS 2014



Footnote: Ranges are based on quintiles of the overall prevalence estimates from year 2011 data

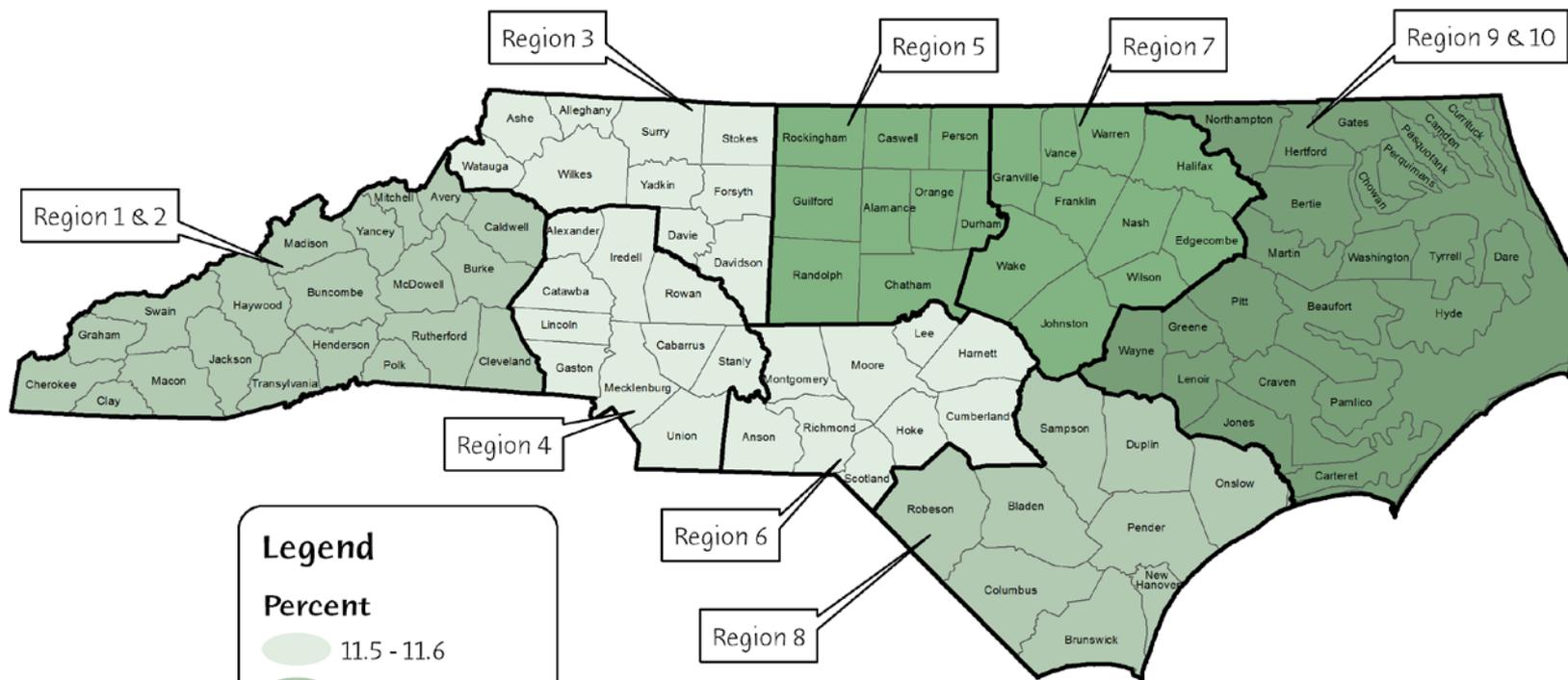
Air Pollution and Respiratory Health Branch, National Center for Environmental Health  
Centers for Disease Control and Prevention

Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System (BRFSS)



# Percentage of North Carolina Adults Who Answered Yes to "Has a doctor, nurse, or other health professional ever told you that you had asthma?"

by North Carolina Association of Local Health Directors (NCALHD) Regions, 2015



**Legend**

**Percent**

- 11.5 - 11.6
- 11.7 - 13.1
- 13.2 - 15.3
- 15.4 - 17.0

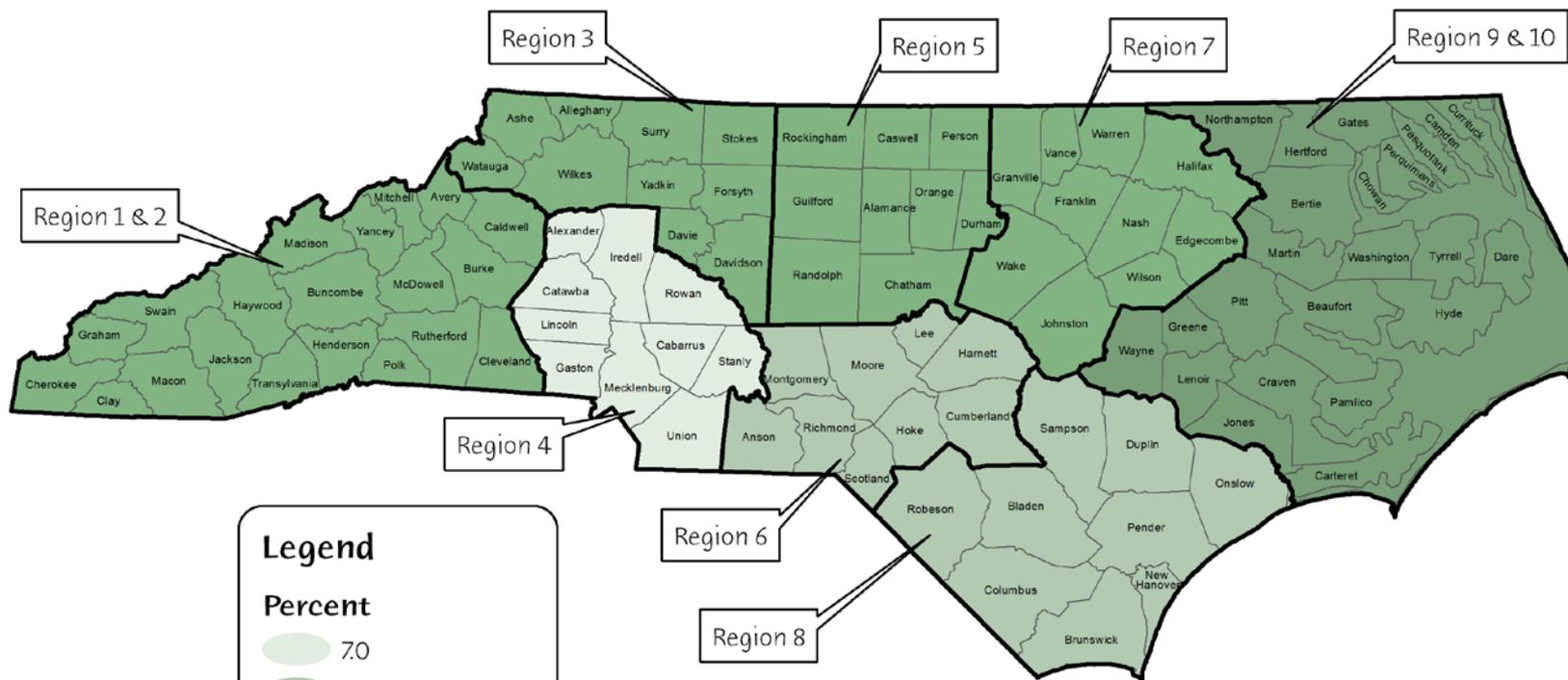
NCALHD Regions

County Boundary

Source: 2015 Behavioral Risk Factor Surveillance System (BRFSS)

# Percentage of North Carolina Adults Who Answered Yes to "Do you still have asthma?\*"

by North Carolina Association of Local Health Directors (NCALHD) Regions, 2015



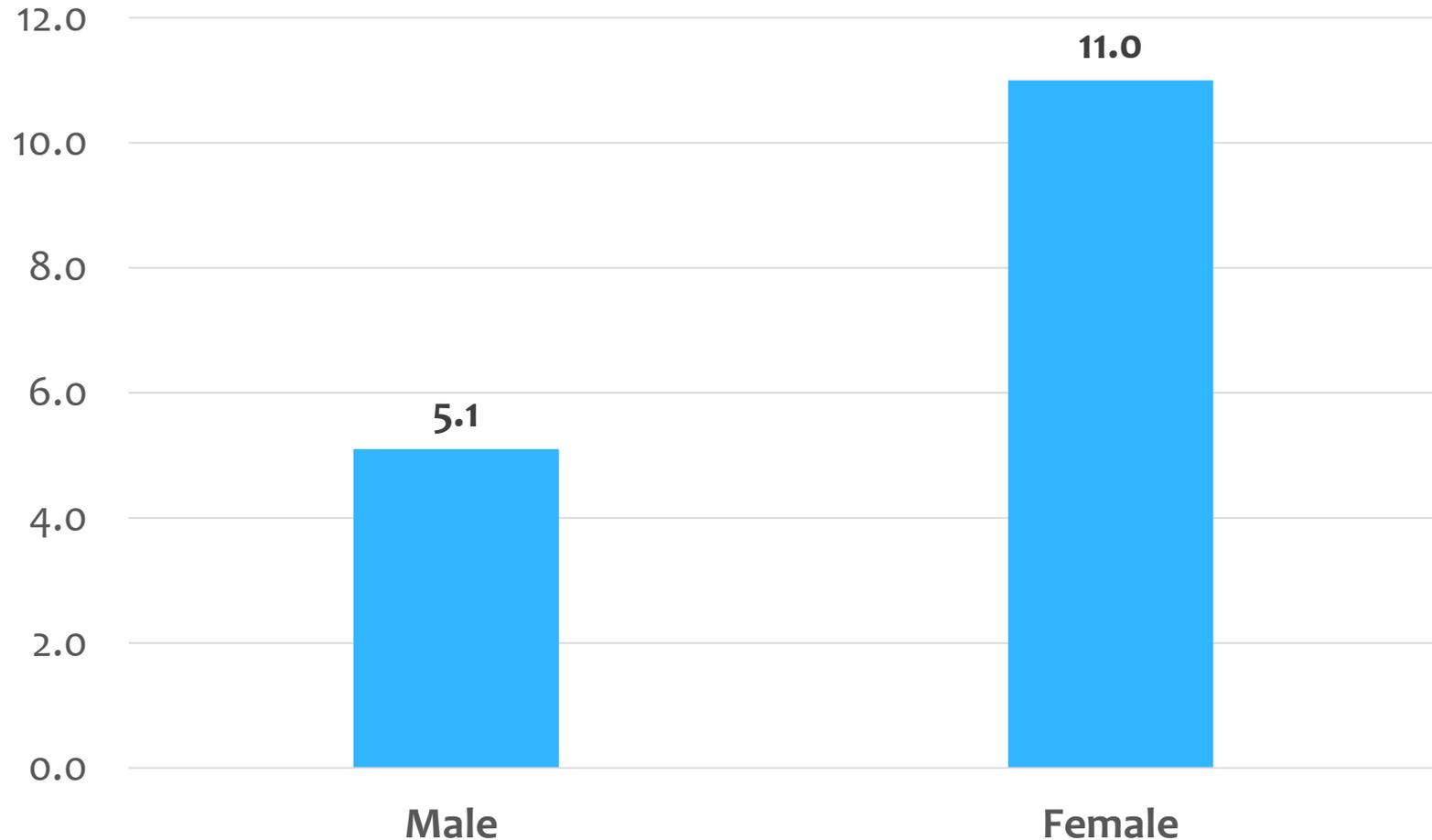
**Legend**

**Percent**

- 7.0
- 7.1 - 7.3
- 7.4 - 9.1
- 9.2 - 10.7
- NCALHD Regions
- County Boundary

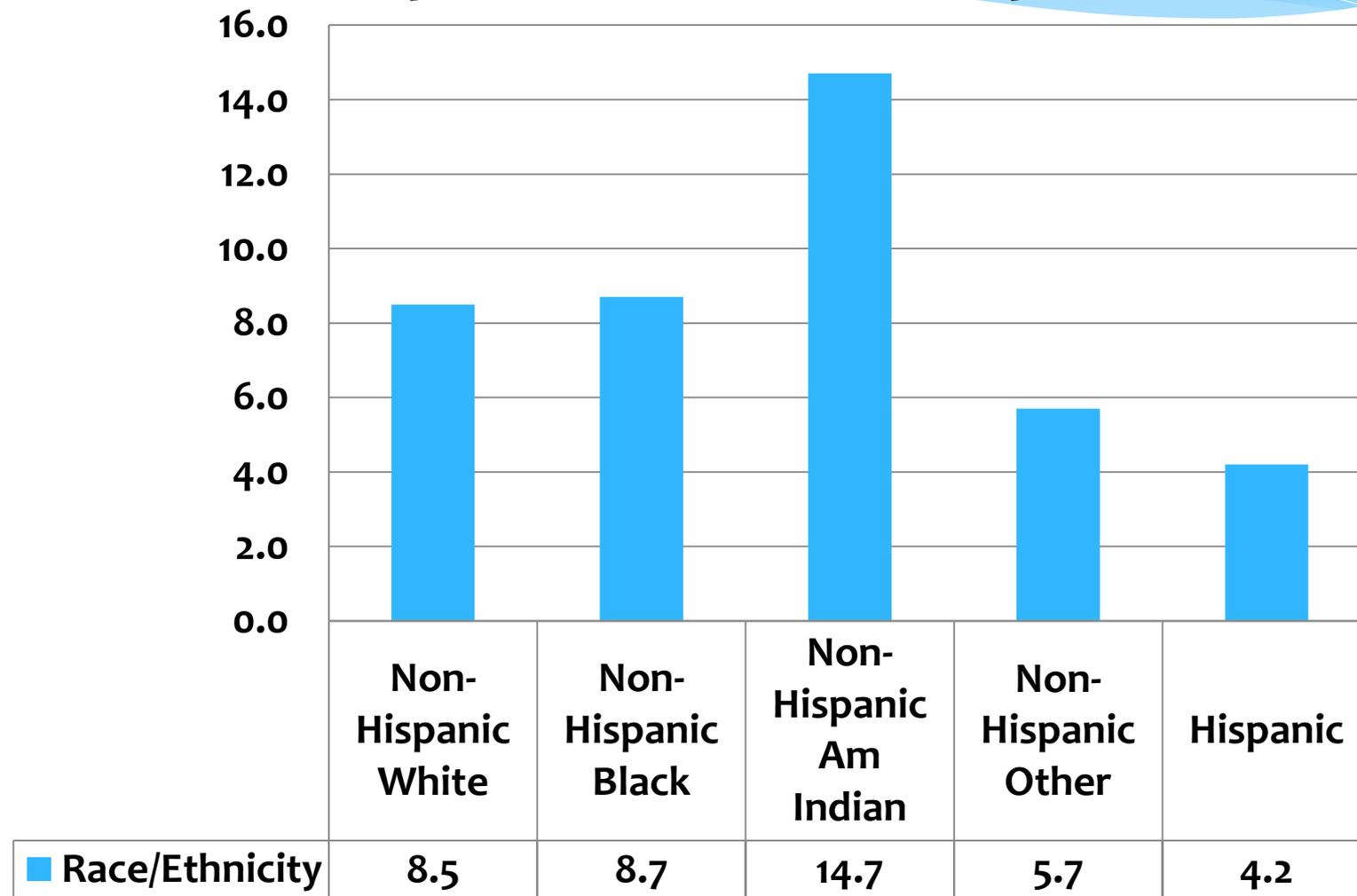
Source: 2015 Behavioral Risk Factor Surveillance System (BRFSS)  
 \*Adults without asthma are included in the denominator to estimate current asthma prevalence.

# NC Adult Current Asthma Prevalence Rates by Gender, 2015



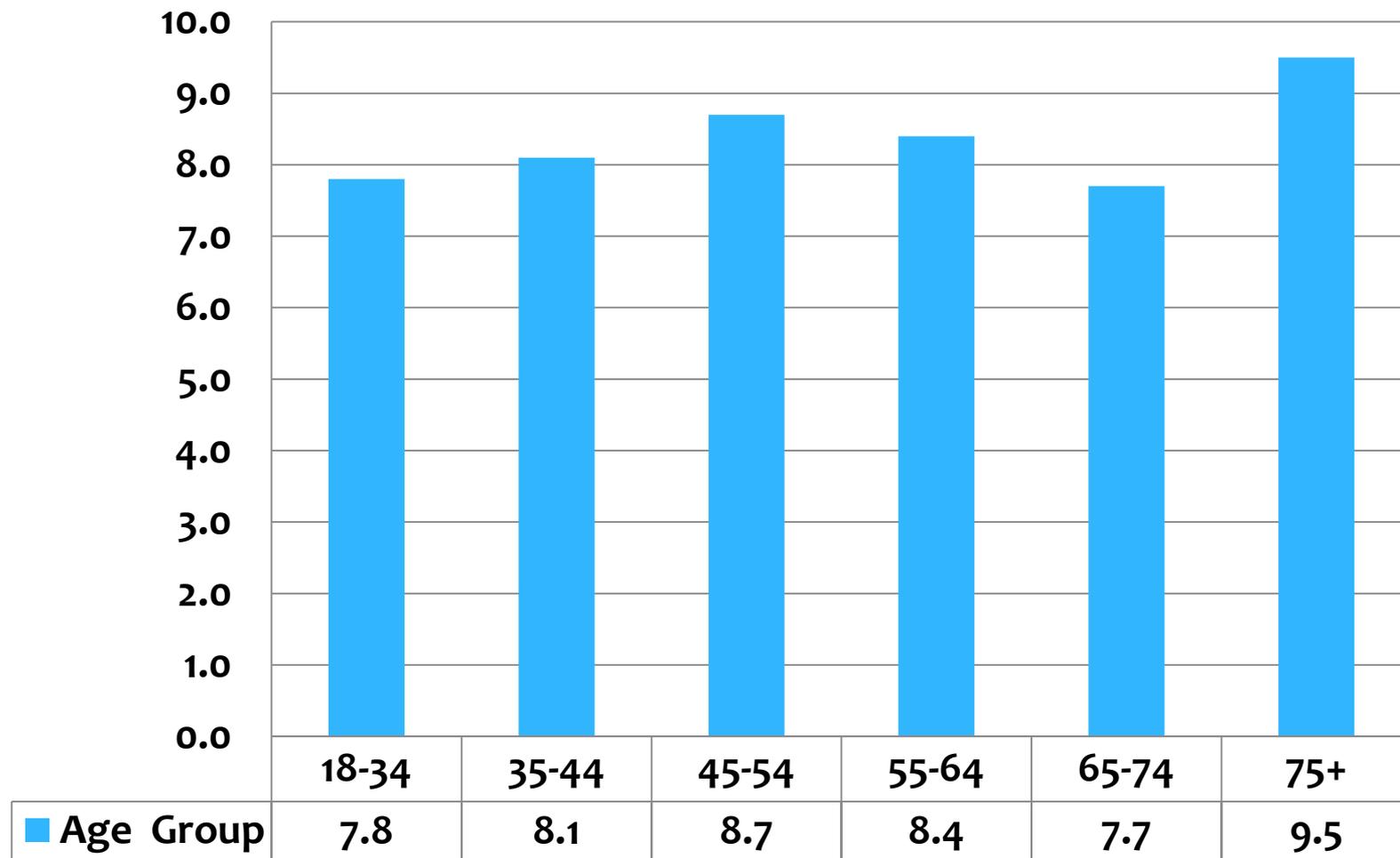
Source: North Carolina State Center for Health Statistics, NC Behavioral Risk Factor Surveillance System (NC BRFSS)

# NC Adult Current Asthma Prevalence Rates by Race/Ethnicity, 2015



Source: North Carolina State Center for Health Statistics, NC Behavioral Risk Factor Surveillance System (NC BRFSS)

# NC Adult Current Asthma Prevalence Rates by Age Group, 2015

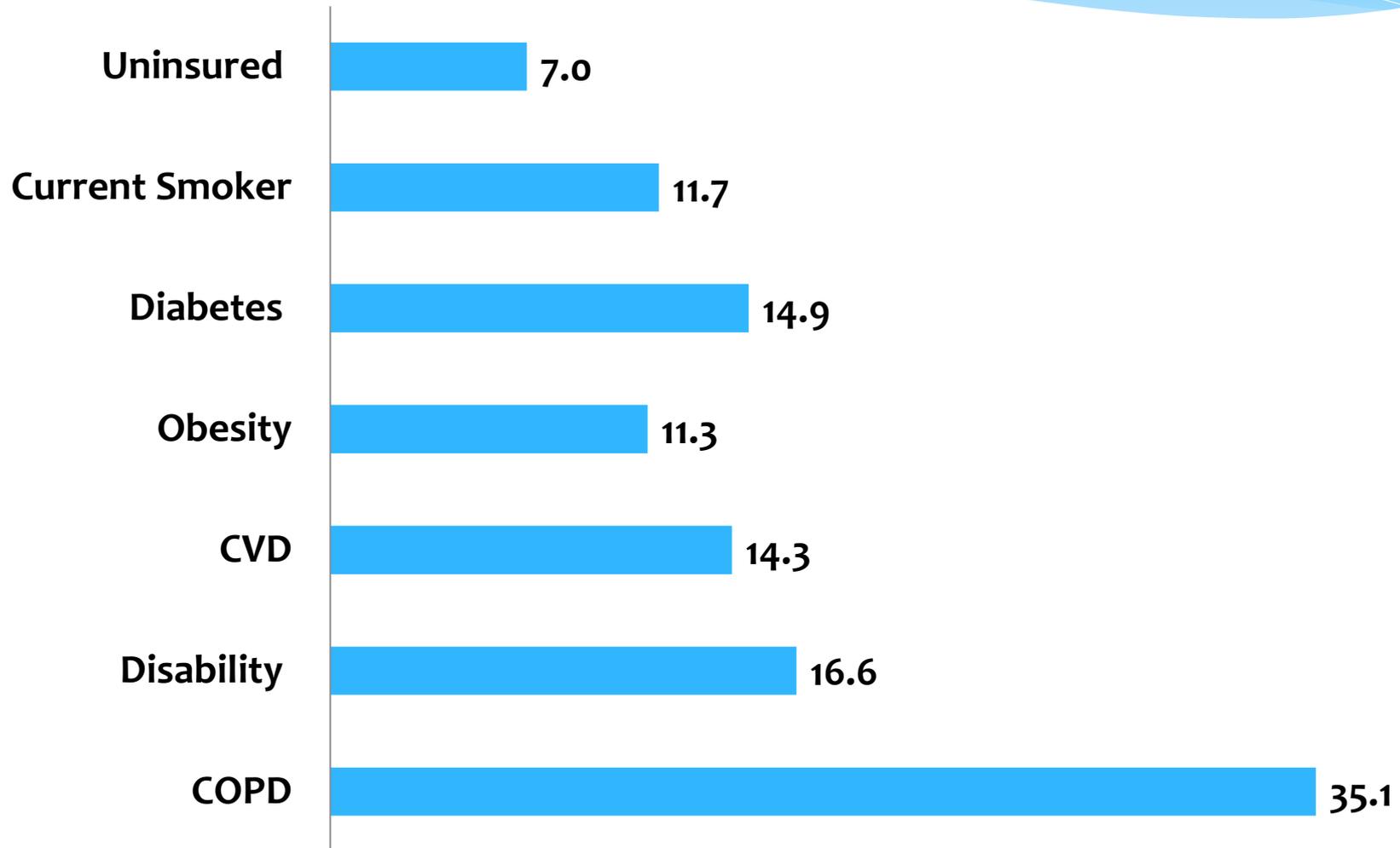


Source: North Carolina State Center for Health Statistics, NC Behavioral Risk Factor Surveillance System (NC BRFSS)

# NC Adult Current Asthma Prevalence Rates by Household Income, 2015



# NC Adult Current Asthma Prevalence Comorbid Conditions/Risk Factors, 2015



Source: North Carolina State Center for Health Statistics, NC Behavioral Risk Factor Surveillance System (NC BRFSS)



# **Asthma Mortality**

# NC Resident Deaths with Asthma Listed as a Primary Cause, CY2015

<b>Total Asthma Deaths</b>	<b>96</b>
<b>Crude (unadjusted) Mortality Rate</b>	<b>9.6</b>
<b>Age-adjusted Mortality Rate</b>	<b>9.0</b>

Source: North Carolina State Center for Health Statistics, Death Certificate Data



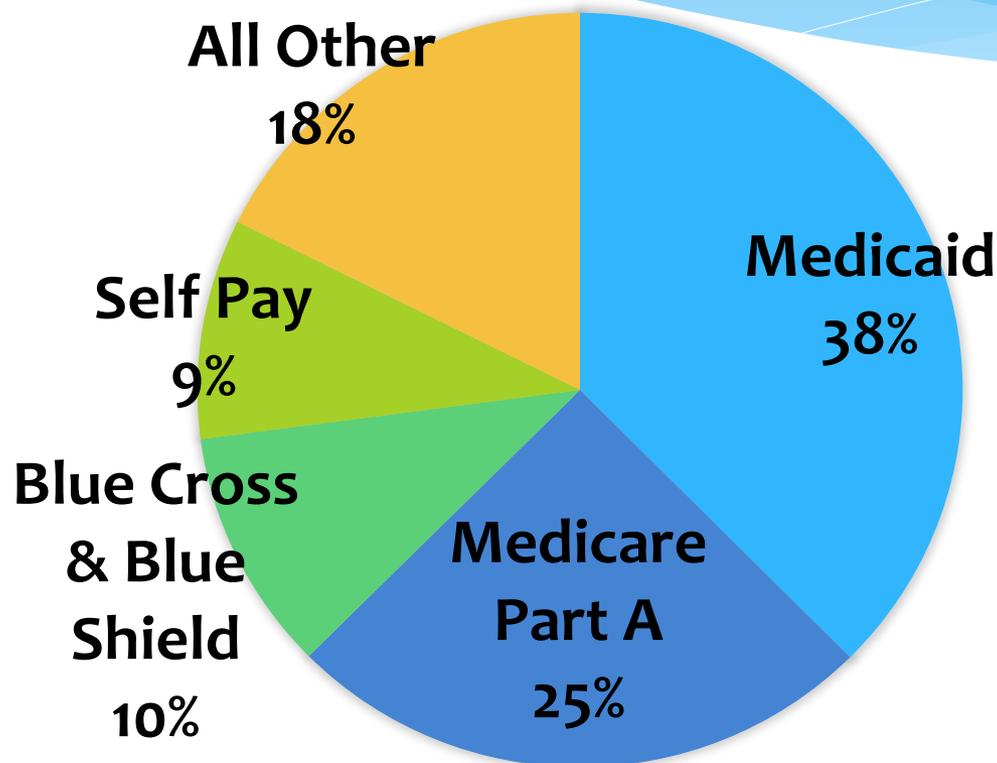
# **Asthma Hospitalizations**

# 2014 NC Resident Inpatient Hospitalizations with A Primary Diagnosis of Asthma

<b>Total Hospital Discharges</b>	<b>9,035</b>
<b>Discharge Rate per 100,000 Population</b>	<b>90.9</b>
<b>Average Length of Stay (in days)</b>	<b>3.2</b>
<b>Total Charges</b>	<b>\$139,306,354</b>
<b>Average Charge per Day</b>	<b>\$4,872</b>
<b>Average Charge per Hospitalization</b>	<b>\$15,420</b>

Source: North Carolina State Center for Health Statistics, Inpatient Hospital Discharge Data

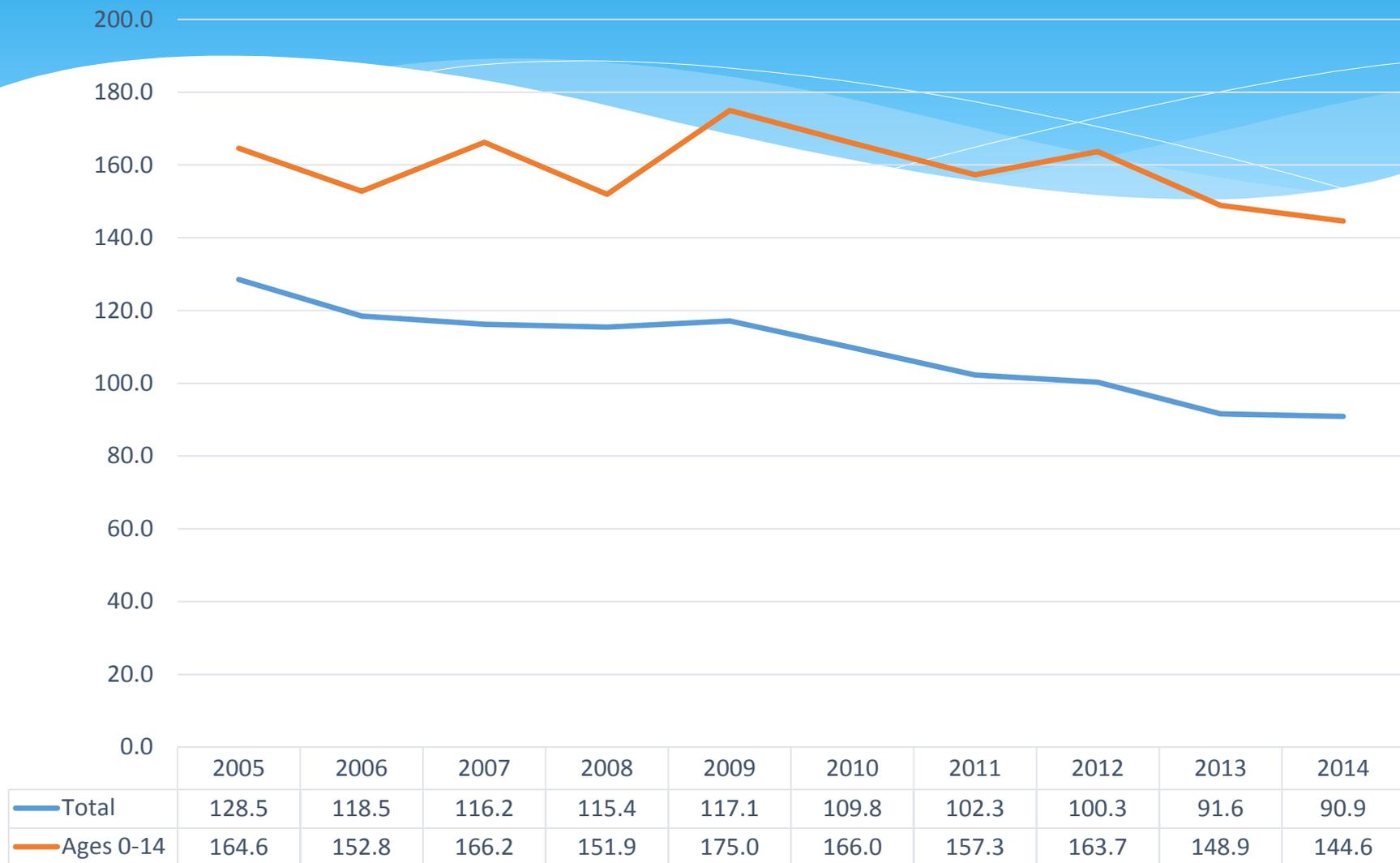
# 2014 NC Resident Inpatient Hospitalizations with A Primary Diagnosis of Asthma by Payer



Source: North Carolina State Center for Health Statistics, Inpatient Hospital Discharge Data



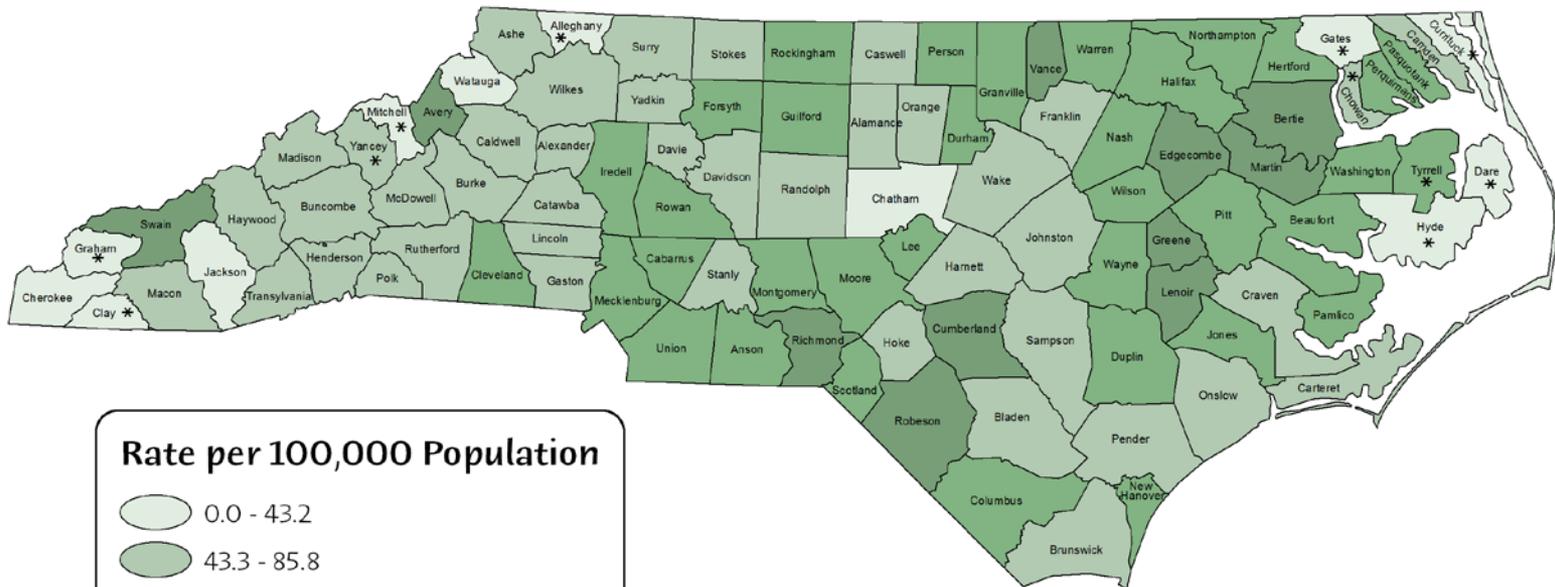
# 2005-2014 Asthma Hospital Discharge Rates per 100,000 Resident Population



\* Primary Diagnosis of Asthma

Source: North Carolina State Center for Health Statistics, Inpatient Hospital Discharge Data

# North Carolina 2014 Hospital Discharge Rates with the Primary Diagnosis of Asthma, by County



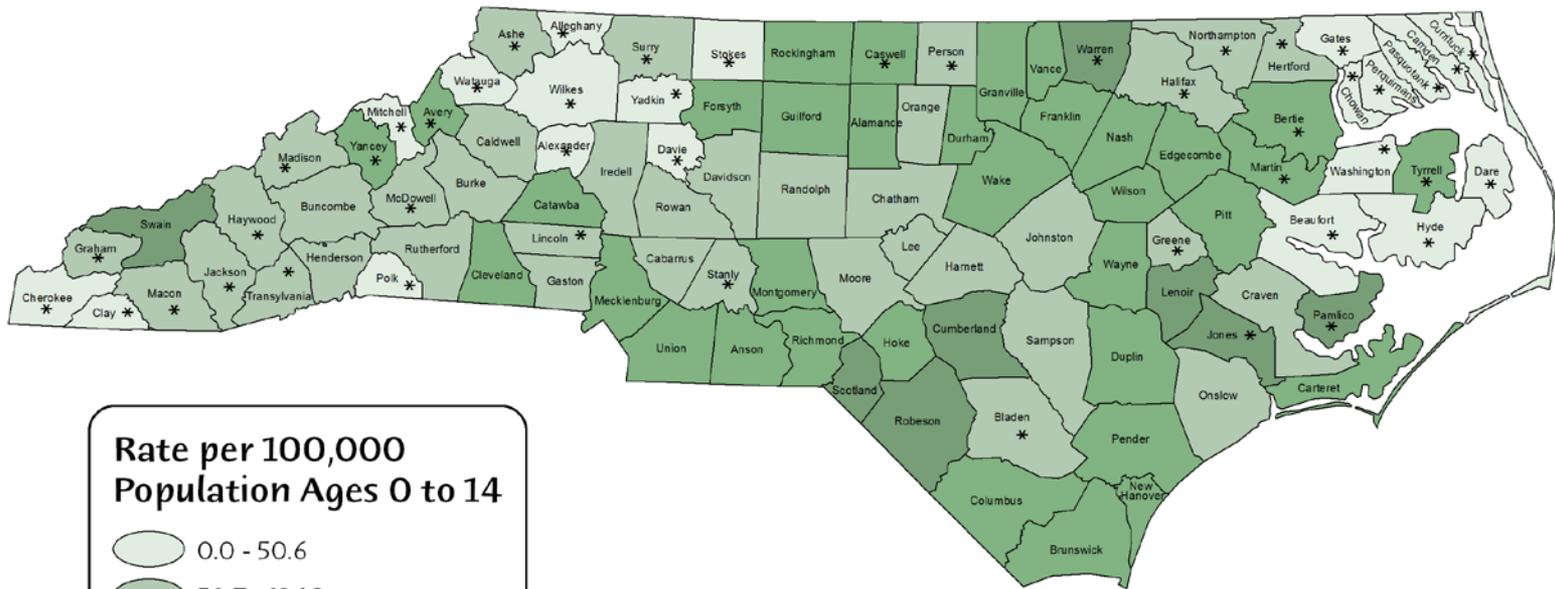
**Rate per 100,000 Population**

- 0.0 - 43.2
- 43.3 - 85.8
- 85.9 - 151.2
- 151.3 - 318.3

Source: North Carolina Hospital Discharge Data  
Data includes only North Carolina resident data, served in North Carolina hospitals. It is provisional data and is subject to change.

\*Rates based on small numbers (fewer than 10 cases) are unstable and should be interpreted with caution.

# North Carolina 2014 Hospital Discharge Rates with the Primary Diagnosis of Asthma for Ages 0 to 14, by County



**Rate per 100,000  
Population Ages 0 to 14**

- 0.0 - 50.6
- 50.7 - 126.3
- 126.4 - 222.1
- 222.2 - 486.2

Source: North Carolina Hospital Discharge Data  
Data includes only North Carolina resident data, served in North Carolina hospitals. It is provisional data and is subject to change.

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# Emergency Department Visits for Asthma

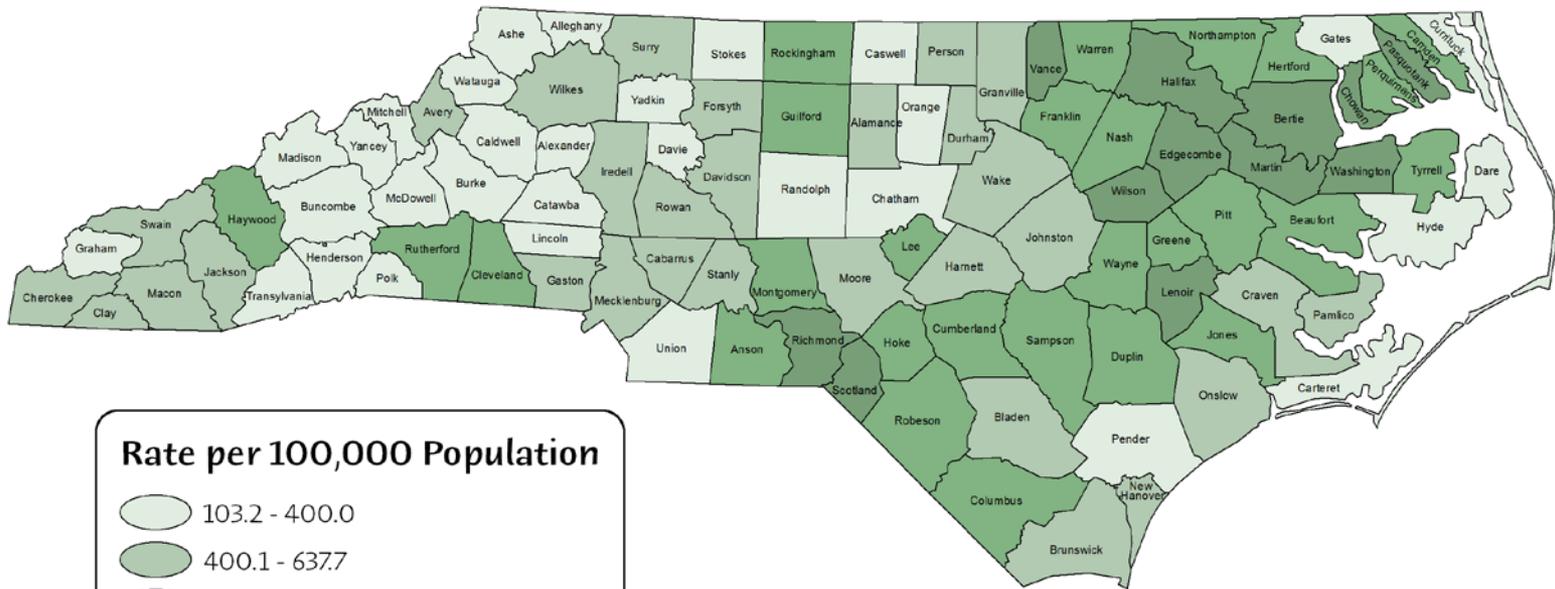
# 2014 NC Emergency Visits for Asthma (as a Primary Diagnosis) by Age Group

Age Group	# ER Visits	Rate per 10,000
0-14	19,762	103.8
15-44	22,854	119.8
45-64	11,642	44.6
65+	3,958	28.2
Total	58,216	58.5

Source: North Carolina State Center for Health Statistics, Emergency Department Data

# North Carolina

## 2014 Emergency Department Visits with the Primary Diagnosis of Asthma, by County



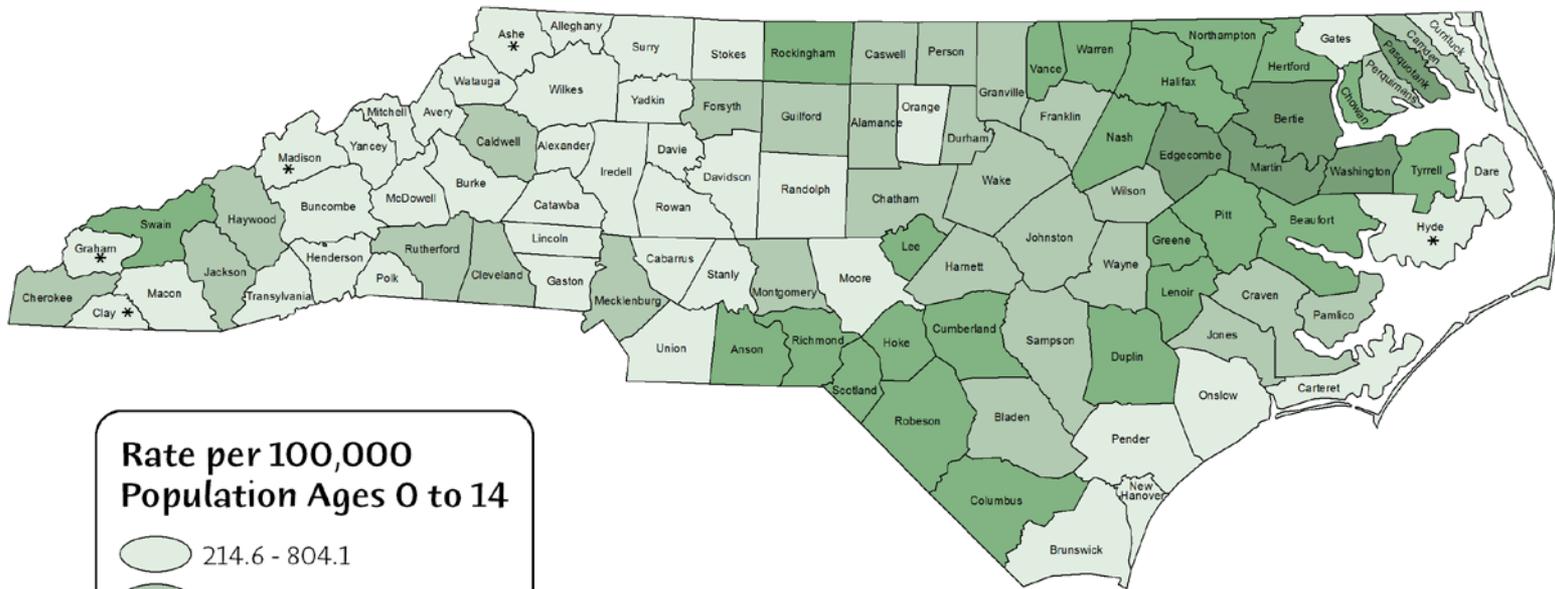
**Rate per 100,000 Population**

-  103.2 - 400.0
-  400.1 - 637.7
-  637.8 - 1015.3
-  1015.4 - 1696.0

Source: North Carolina Hospital Discharge Data  
 Data includes only North Carolina resident data, served in North Carolina hospitals. It is provisional data and is subject to change.

# North Carolina

## 2014 Emergency Department Visits with the Primary Diagnosis of Asthma for Ages 0 to 14, by County



**Rate per 100,000  
Population Ages 0 to 14**

- 214.6 - 804.1
- 804.2 - 1387.0
- 1387.1 - 2218.5
- 2218.6 - 3358.2

Source: North Carolina Hospital Discharge Data  
Data includes only North Carolina resident data, served in North Carolina hospitals. It is provisional data and is subject to change.

\*Rates based on small numbers (fewer than 10 cases) are unstable and should be interpreted with caution.



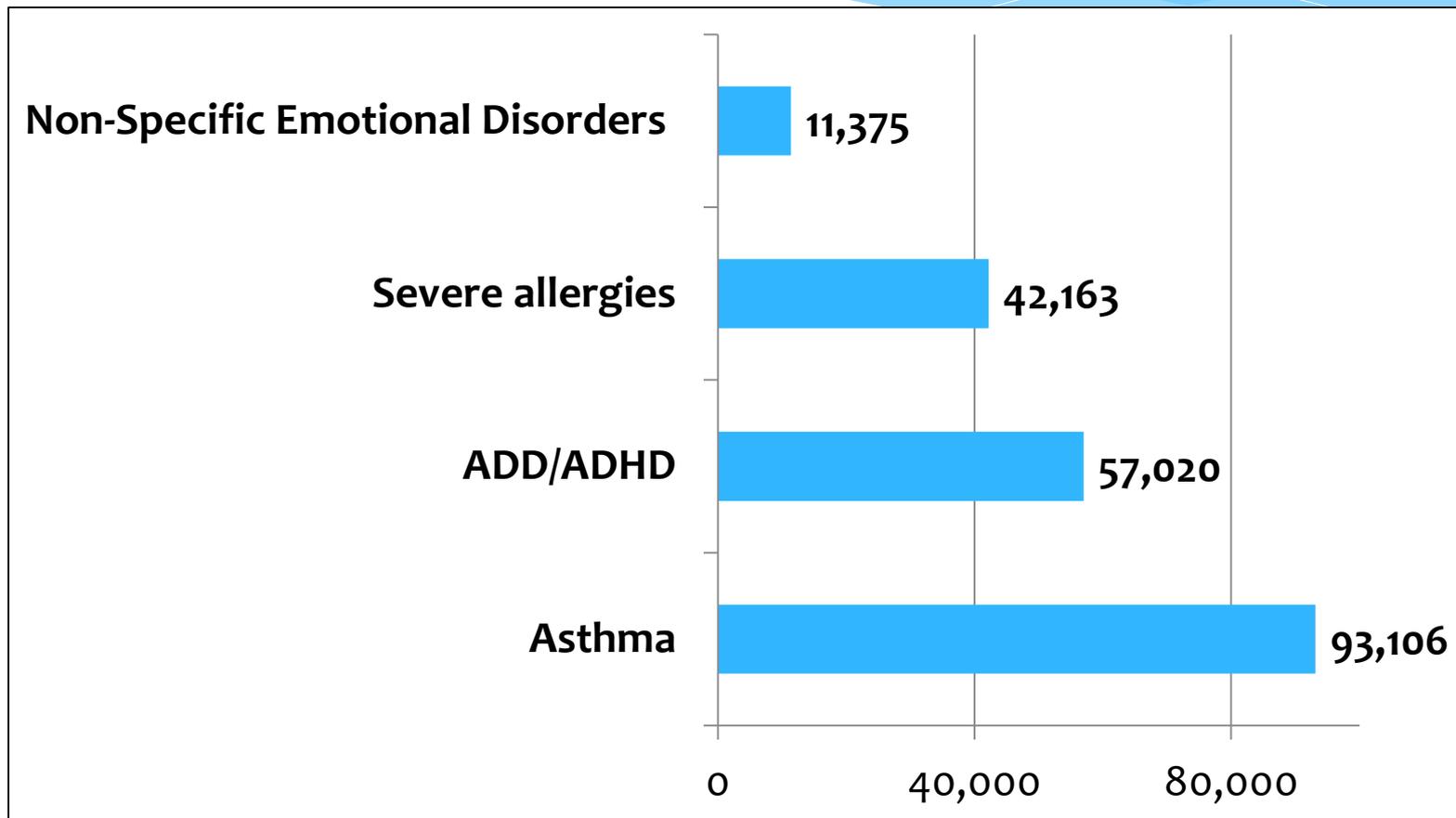
# **Asthma & NC Children**

# Prevalence of Asthma Among NC Resident Children

	Ever Asthma	Current Asthma
<b>Total</b>	<b>17.9%</b>	<b>10.5%</b>
<b>Male</b>	<b>22.4%</b>	<b>11.4%</b>
<b>Female</b>	<b>13.1%</b>	<b>9.5%</b>
<b>White</b>	<b>15.1%</b>	<b>6.9%</b>
<b>African American/Black</b>	<b>28.8%</b>	<b>21.5%</b>
<b>Other Minorities</b>	<b>12.1%</b>	<b>7.0%</b>
<b>Hispanic</b>	<b>9.8%</b>	<b>7.2%</b>

\* Statistically unreliable estimate.

# Most Common Chronic Health Conditions Reported to School Nurses, 2014-15



Source: North Carolina Annual School Health Services Report: 2014-2015

# School Nurse Asthma Case Management Outcomes

Outcomes	% of Asthmatic Students Demonstrating Improvement
1. Consistently verbalized accurate knowledge of the pathophysiology of their condition	78%
2. Consistently demonstrated correct use of asthma inhaler and/or spacer	83%
3. Accurately listed his/her asthma triggers	62%
4. Remained within peak flow/pulse oximeter plan goals	66%
5. Improved amount and/or quality of regular physical activity	77%
6. Improved grades	64%
7. Decreased number of school absences	70%



# **Asthma & Environmental Health**

# Environmental Public Health Tracking Program: NC Trends Data

**Disclaimer:**  
By using these data, you signify your agreement to comply with the following requirements:

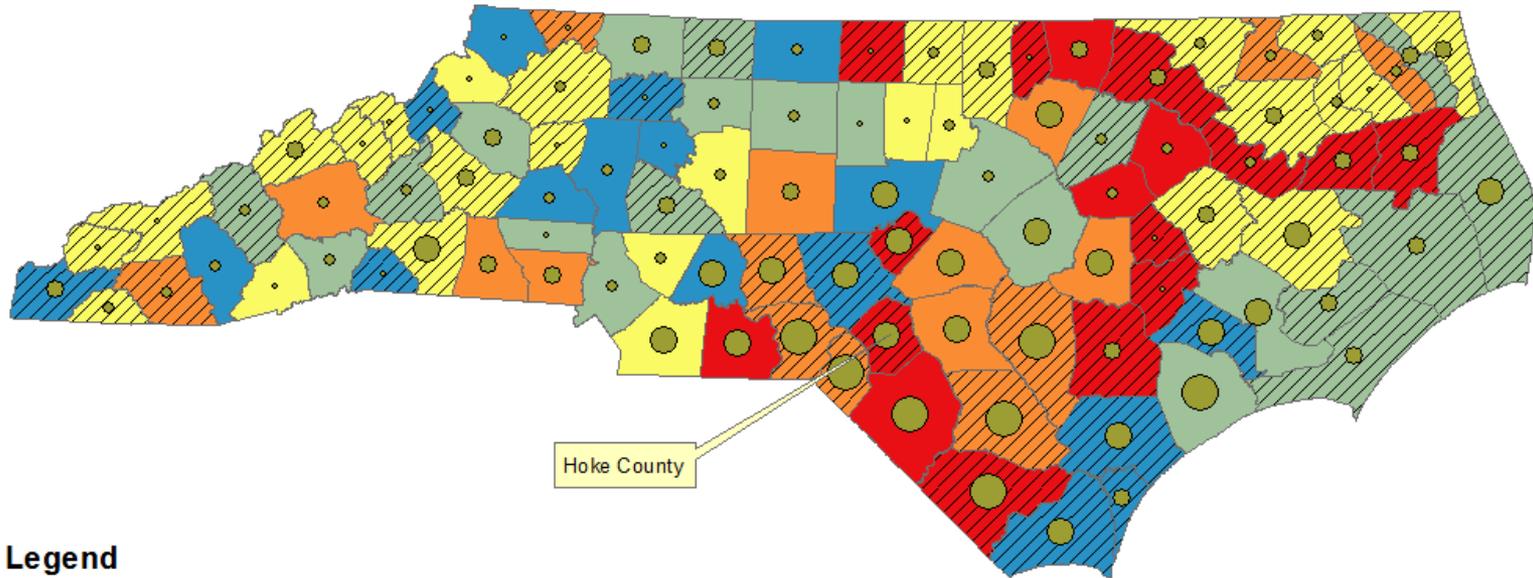
1. Use the data for statistical reporting and analysis only.
2. Do not attempt to learn the identity of any person included in the data and do not combine these data with other data for the purpose of matching records to identify individuals.
3. Do not disclose or make use of the identity of any person or establishment discovered inadvertently and report the discovery to: [tracking@support@cdc.gov](mailto:tracking@support@cdc.gov).
4. Do not imply or state, either in written or oral form, that interpretations based on the data are those of the original data sources and CDC unless the data user and data source are formally collaborating.
5. Acknowledge, in all reports or presentations based on these data, the original source of the data and CDC.
6. Suggested citation: Centers for Disease Control and Prevention. National Environmental Public Health Tracking Network. (n.d.) Web. Accessed: 3/21/2015. [www.cdc.gov/ephttracking](http://www.cdc.gov/ephttracking).

<http://ephttracking.cdc.gov/showHome.action>

# Agriculture and Air Quality

- \* Exposure: Hazardous or toxic air pollutants, odorants (Aneja 2008, 09; Erisman 2008)
- \* Health Impacts
  - \* Increased likelihood of death from asthma (Kravchenko & Lyerly, unpublished)
  - \* Decreased immune function from stress (Avery 2004)
  - \* Higher rates of wheezing among children & adults (Mirabelli 2006)
  - \* Impaired pulmonary functions (Keil 2011)
  - \* Acute blood pressure increase (Kilburn 2012)

# Smoke Vulnerability in North Carolina



## Legend

### Exposure Index

- Low
- Med Low
- Medium
- Med High
- High

 Low AirQuality Info Access

### Sensitivity Index

-  Low
-  Med Low
-  Medium
-  Med High
-  High



Data from: NCFS- wildfire statistics CMAQv5.0.1/5.0.2, EPA's Air Now, and from Ana Rappold of the EPA. Created for: the NC DHHS OEE Branch. Map created by Kat Selm on 07/29/2016

# Questions?

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