

Dive into Data: Trends, Access, and Review Integration

Breakout session #4

Child Fatality Prevention System Summit

March 30, 2022



NC Department of Health and Human Services

A Deep Dive into Child Death Data

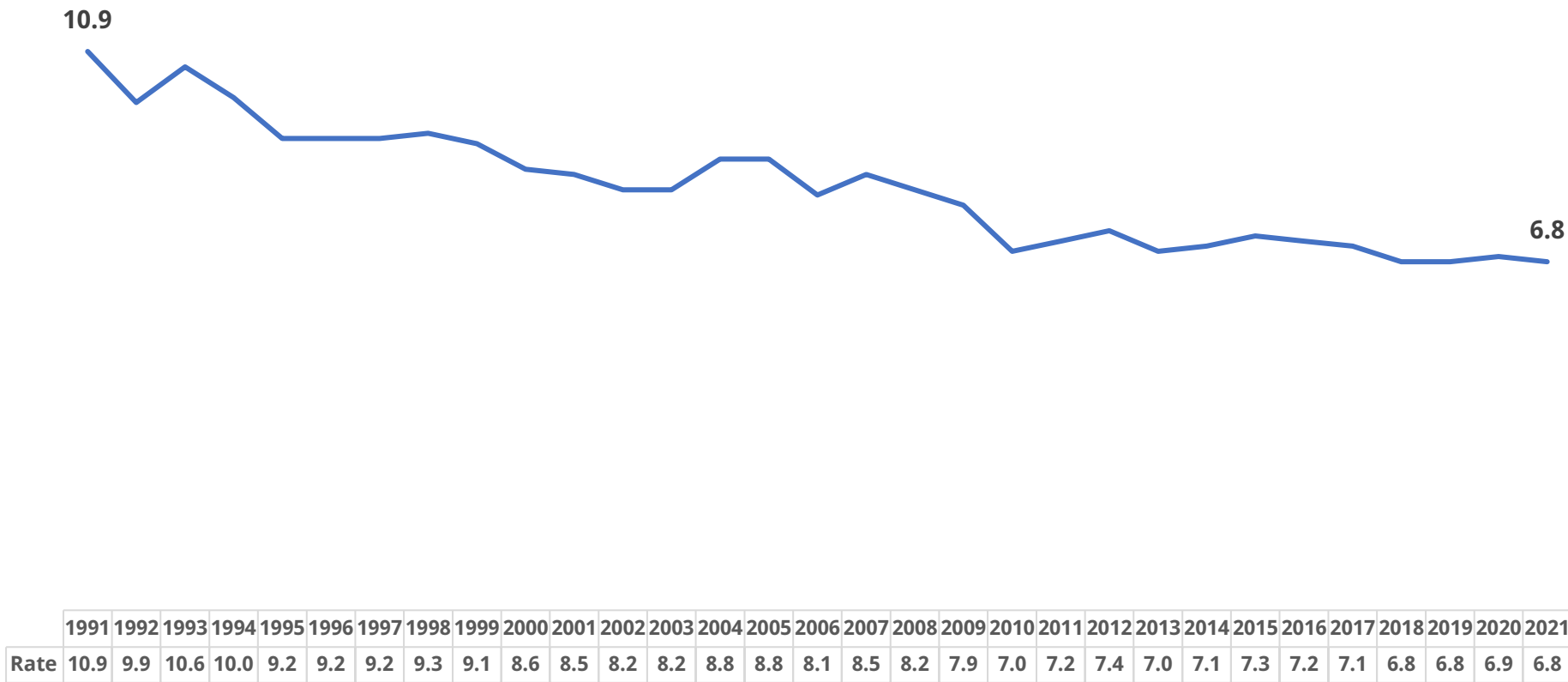
Kathleen Jones-Vessey, MS
Perinatal Epidemiologist
Division of Public Health, Title V Office

March 30, 2023

Trends in Infant & Child Death Rates

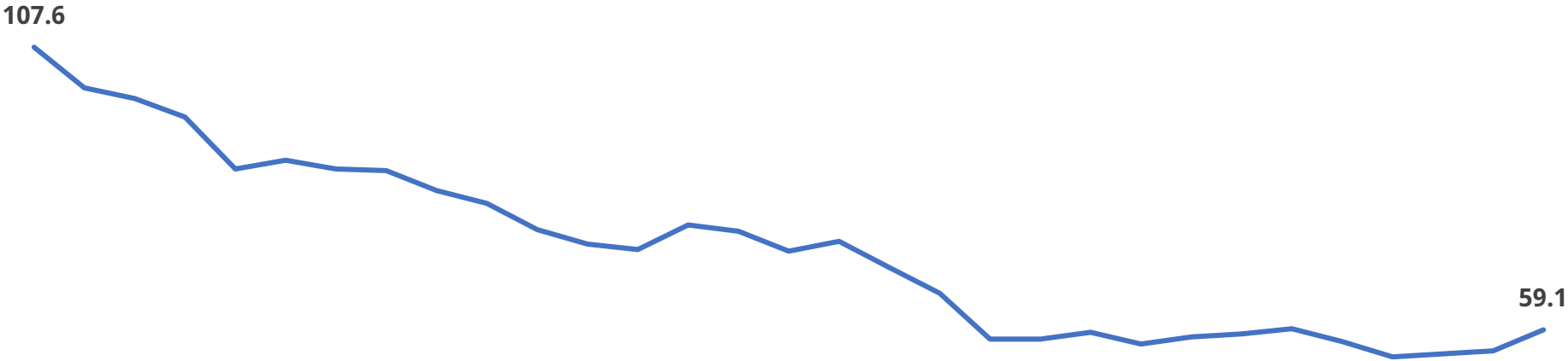
Infant Mortality Rates declined 38% since the Child Fatality Task Force & Prevention System were established in 1991

Infant Deaths per 1,000 Live Births, North Carolina Residents 1991-2021



Child Death Rates declined 45% since the Child Fatality Task Force & Prevention System were established in 1991

Child Deaths per 100,000 Children Ages 0 to 17, North Carolina Residents 1991-2021



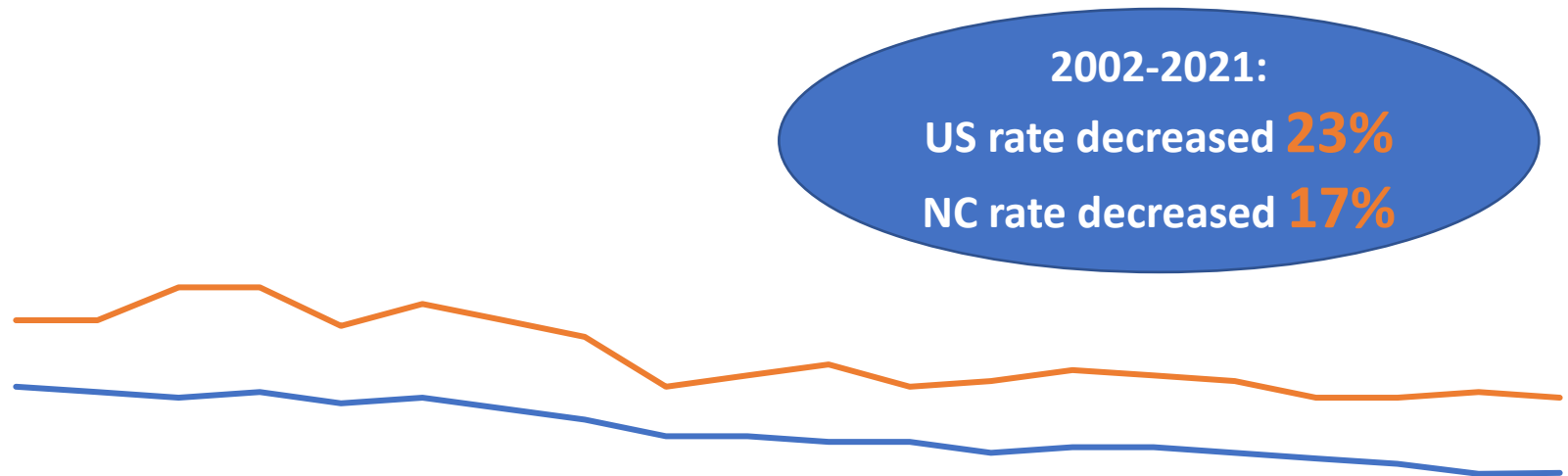
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Rate	107.6	100.6	98.8	95.6	86.7	88.2	86.7	86.4	83.0	80.8	76.3	73.8	72.9	77.1	76.0	72.6	74.3	69.8	65.4	57.5	57.5	58.7	56.7	57.9	58.4	59.3	57.1	54.5	55.0	55.5	59.1

1,360 Child Deaths = 76 classrooms of children lost in North Carolina in 2021



North Carolina infant mortality rates are consistently higher than US rates and have declined at a slower pace

Infant deaths per 1,000 live births: US & NC 2002-2021

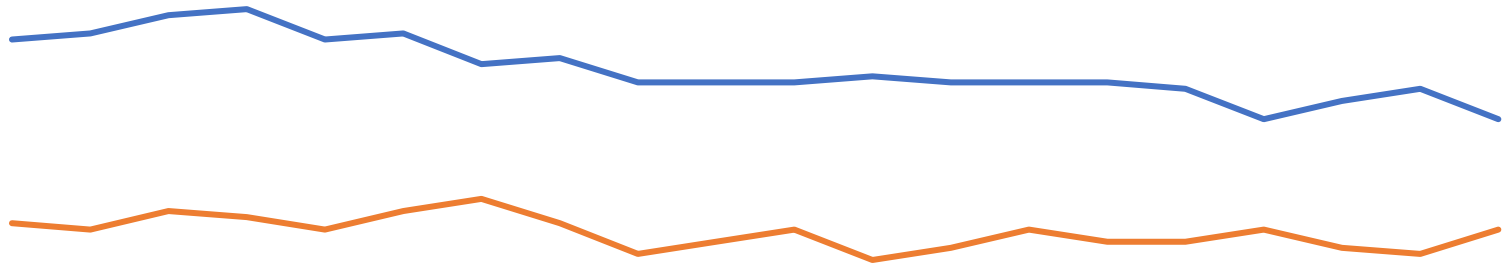


	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
— U.S.	7.0	6.9	6.8	6.9	6.7	6.8	6.6	6.4	6.1	6.1	6.0	6.0	5.8	5.9	5.9	5.8	5.7	5.6	5.4	5.4
— N.C.	8.2	8.2	8.8	8.8	8.1	8.5	8.2	7.9	7.0	7.2	7.4	7.0	7.1	7.3	7.2	7.1	6.8	6.8	6.9	6.8

North Carolina's neonatal death rates are decreasing at a faster pace than postneonatal death rates

Neonatal & Postneonatal Mortality Rates, NC Residents 2002-2021*

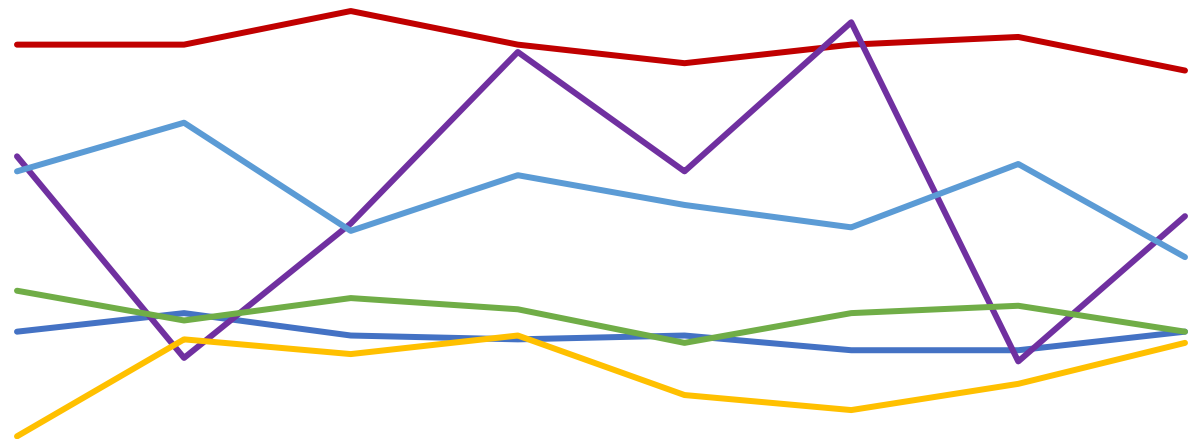
2002 to 2021:
Neonatal decreased **23%**
Postneonatal decreased **4%**



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
— Neonatal	5.6	5.7	6.0	6.1	5.6	5.7	5.2	5.3	4.9	4.9	4.9	5.0	4.9	4.9	4.9	4.8	4.3	4.6	4.8	4.3
— Postneonatal	2.6	2.5	2.8	2.7	2.5	2.8	3.0	2.6	2.1	2.3	2.5	2.0	2.2	2.5	2.3	2.3	2.5	2.2	2.1	2.5

Infant mortality rates are higher among North Carolina's NH Black, NH American Indian, & Multi-racial populations

Infant Death Rates by Race/Ethnicity, NC Residents 2014-2021



	2014	2015	2016	2017	2018	2019	2020	2021
NH White, single race	5.1	5.6	5.0	4.9	5.0	4.6	4.6	5.1
NH Black, single race	12.8	12.8	13.7	12.8	12.3	12.8	13.0	12.1
NH Am. Ind., single race	9.8	4.4*	8.0	12.6	9.4	13.4	4.3*	8.2
NH Asian/PI, single race	2.3	4.9	4.5	5.0	3.4	3.0	3.7	4.8
NH Multiracial	9.4	10.7	7.8	9.3	8.5	7.9	9.6	7.1
Hispanic	6.2	5.4	6.0	5.7	4.8	5.6	5.8	5.1

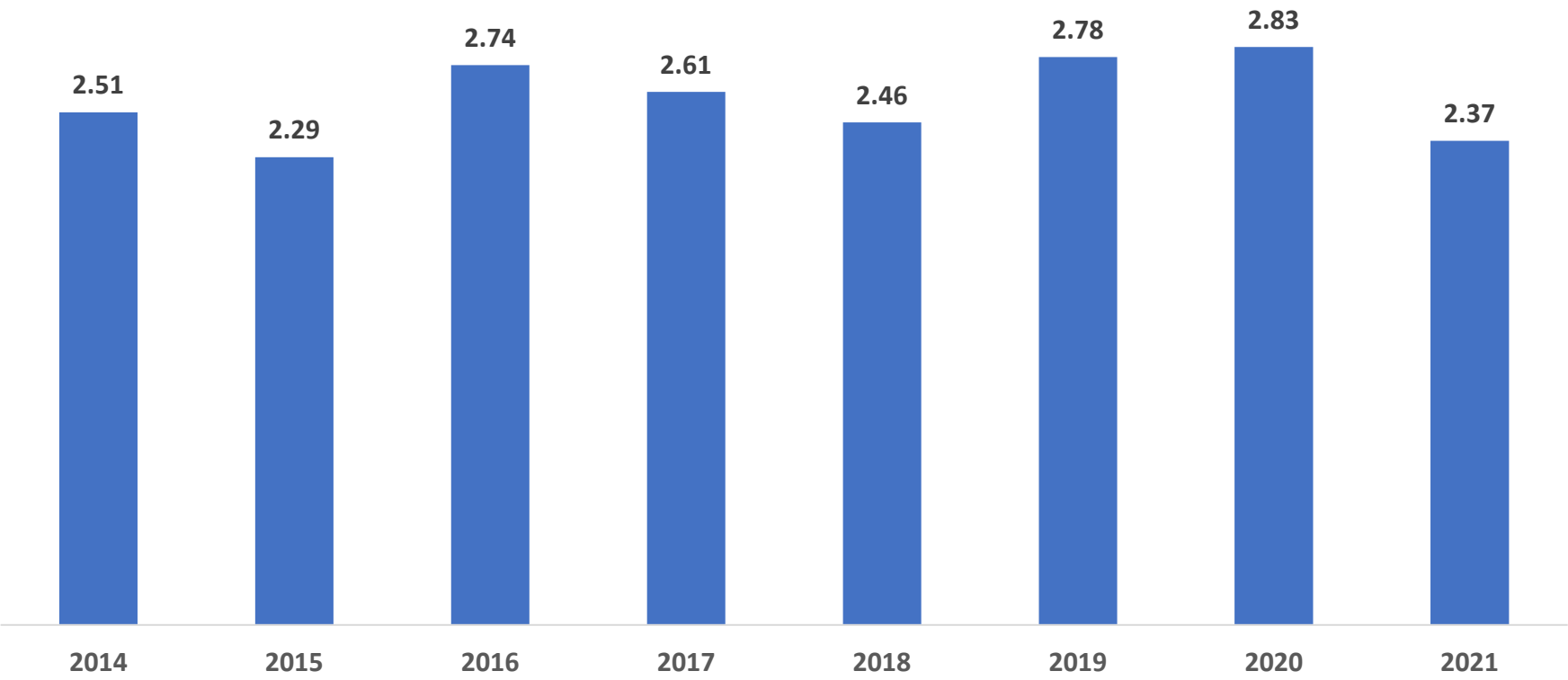
* Rates with an asterisk are based on a small number of deaths (< 10 deaths) and may be statistically unreliable – interpret with caution.

Caution: Racial categories have changed from prior years and now reflect single race categories & multi-race. Comparisons with prior reports are not advised.

Non-Hispanic Black Infants continue to die at rates more than two times higher than Non-Hispanic White Infants

Infant Mortality Disparity Ratios*, NC Residents 2014-2021

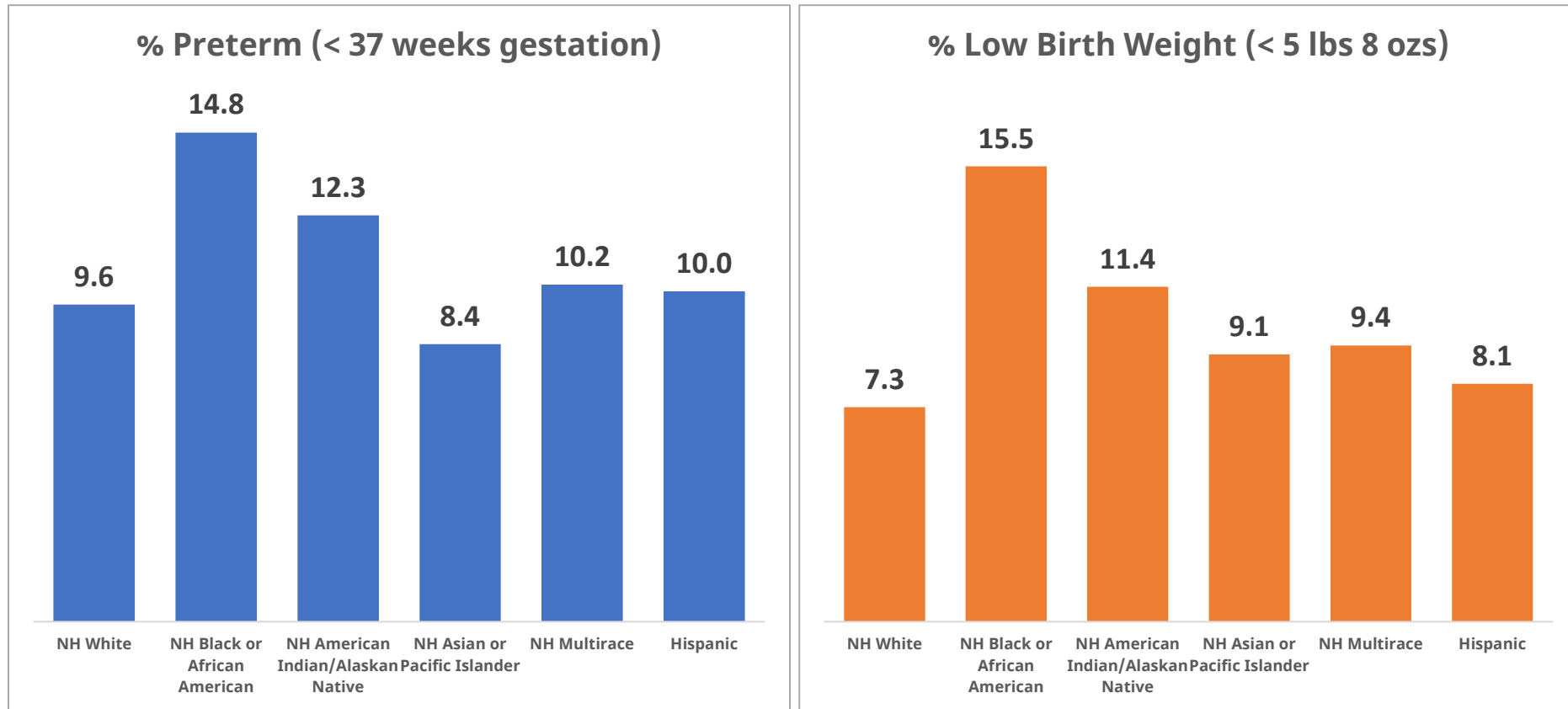
NC Perinatal Health Equity Collective Goal: 1.90
Healthy NC 2030 Target: 1.50



Caution: Racial categories have changed from prior years and now reflect single race categories & multi-race. Comparisons with prior reports are not advised.

Disparities in preterm and low birth weight persist among North Carolina births

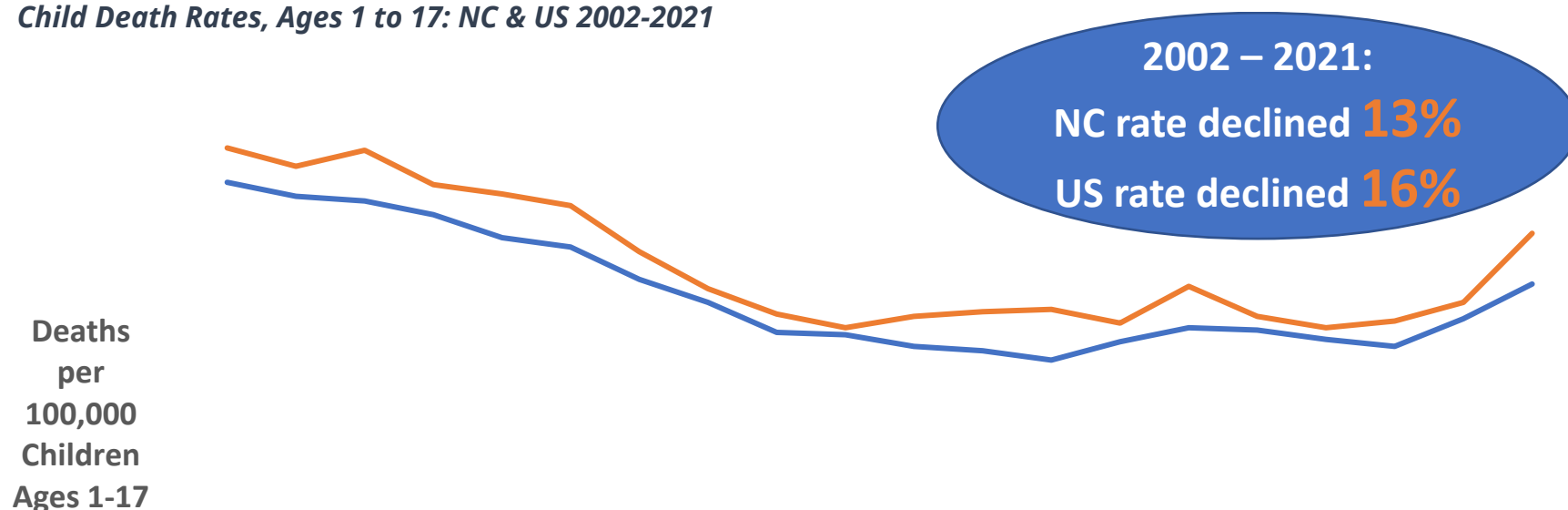
Percent of Births that are Low Birthweight and Preterm by Race/Ethnicity, NC Residents 2021



Note: SCHS has implemented a new race reporting methodology. Race figures presented here are not comparable with earlier reports.

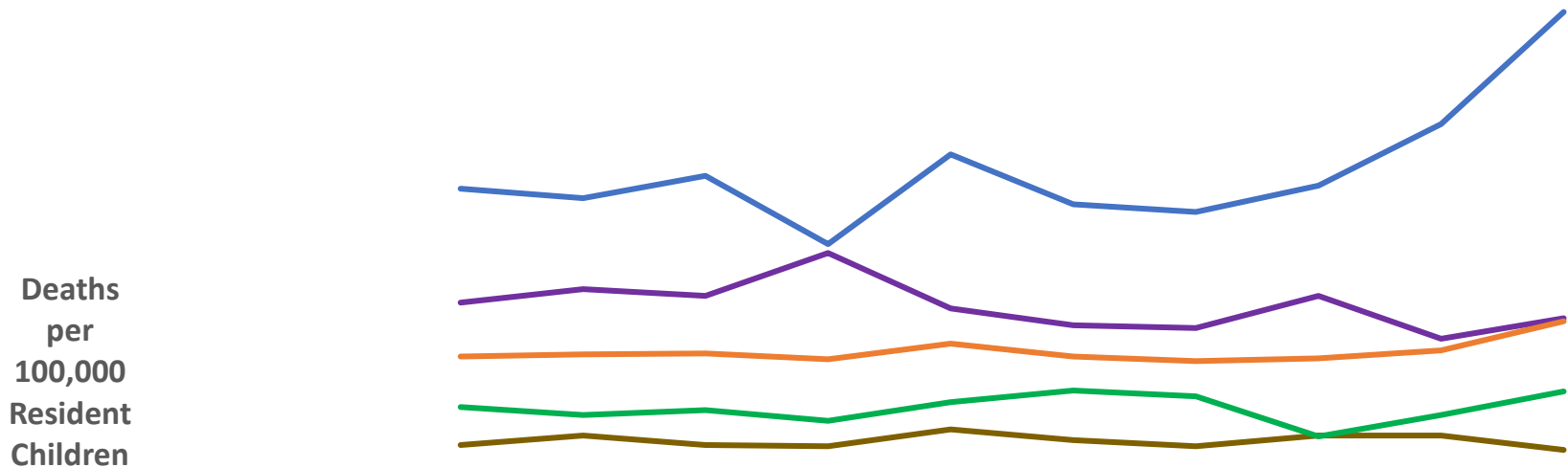
North Carolina's death rates for children ages 1 to 17 remain slightly higher than US rates over the last two decades

Child Death Rates, Ages 1 to 17: NC & US 2002-2021



Among non-infant children, adolescents ages 15 to 17 have the highest mortality rates over the last decade

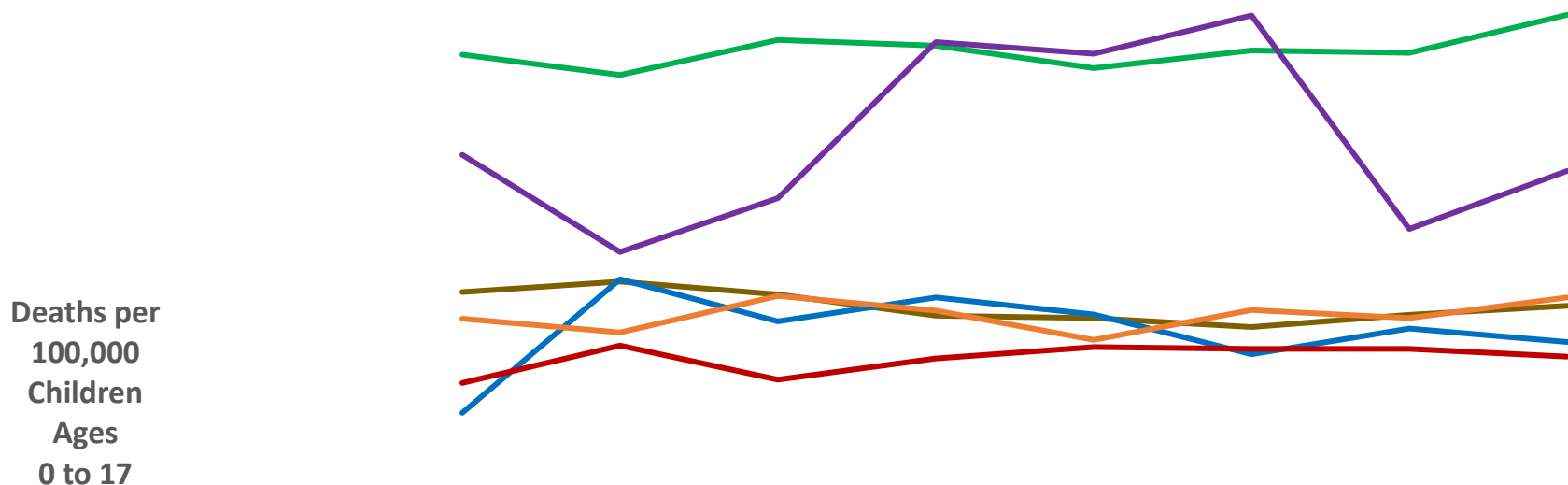
Non-Infant Child Death rates among children ages 1 to 17 by age group, NC 2012--2021



	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
... Ages 1-4	26.6	28.0	27.3	31.7	26.0	24.3	24.0	27.3	22.9	25.0
... Ages 5-9	12.0	13.0	12.0	11.9	13.6	12.5	11.9	13.0	13.0	11.5
... Ages 10-14	15.9	15.1	15.6	14.5	16.4	17.6	17.0	12.9	15.1	17.5
... Ages 15-17	38.3	37.3	39.6	32.6	41.8	36.7	35.9	38.6	44.9	56.4
... (Exc. Infants) Ages 1-17	21.1	21.3	21.4	20.8	22.4	21.1	20.6	20.9	21.7	24.7

Non-Hispanic Black & American Indian children consistently have higher mortality rates compared to other groups

Child Death Rates by Race/Ethnicity: NC 2014-2021



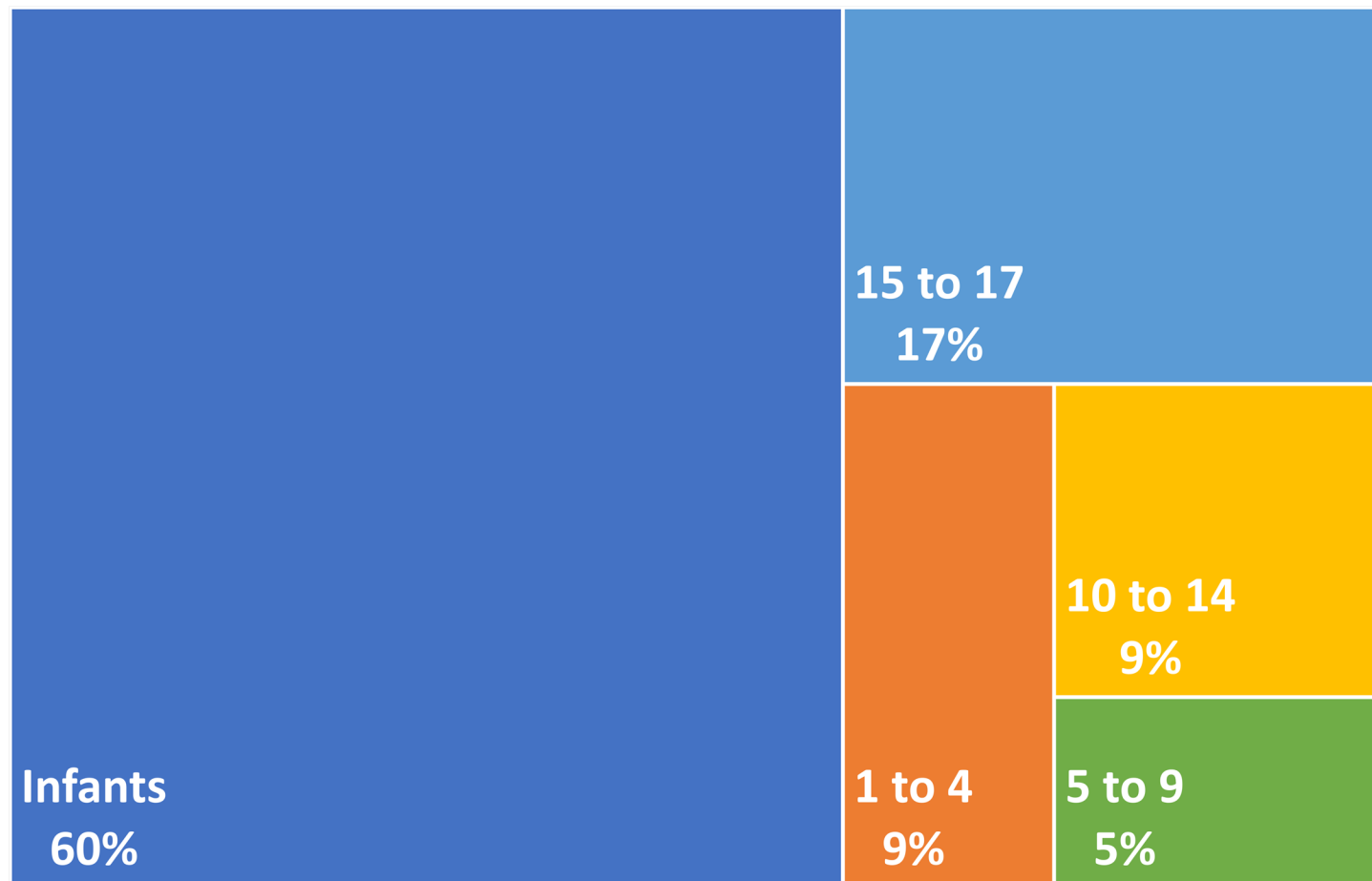
Note: NH=Non-Hispanic. P.I.=Pacific Islander. Am.Ind. includes American Indian & Alaskan Native.

Caution: Racial categories have changed from prior years and now reflect single race categories & multi-race. Comparisons with prior reports are not advised.

Characteristics of Infant and Child Mortality in North Carolina

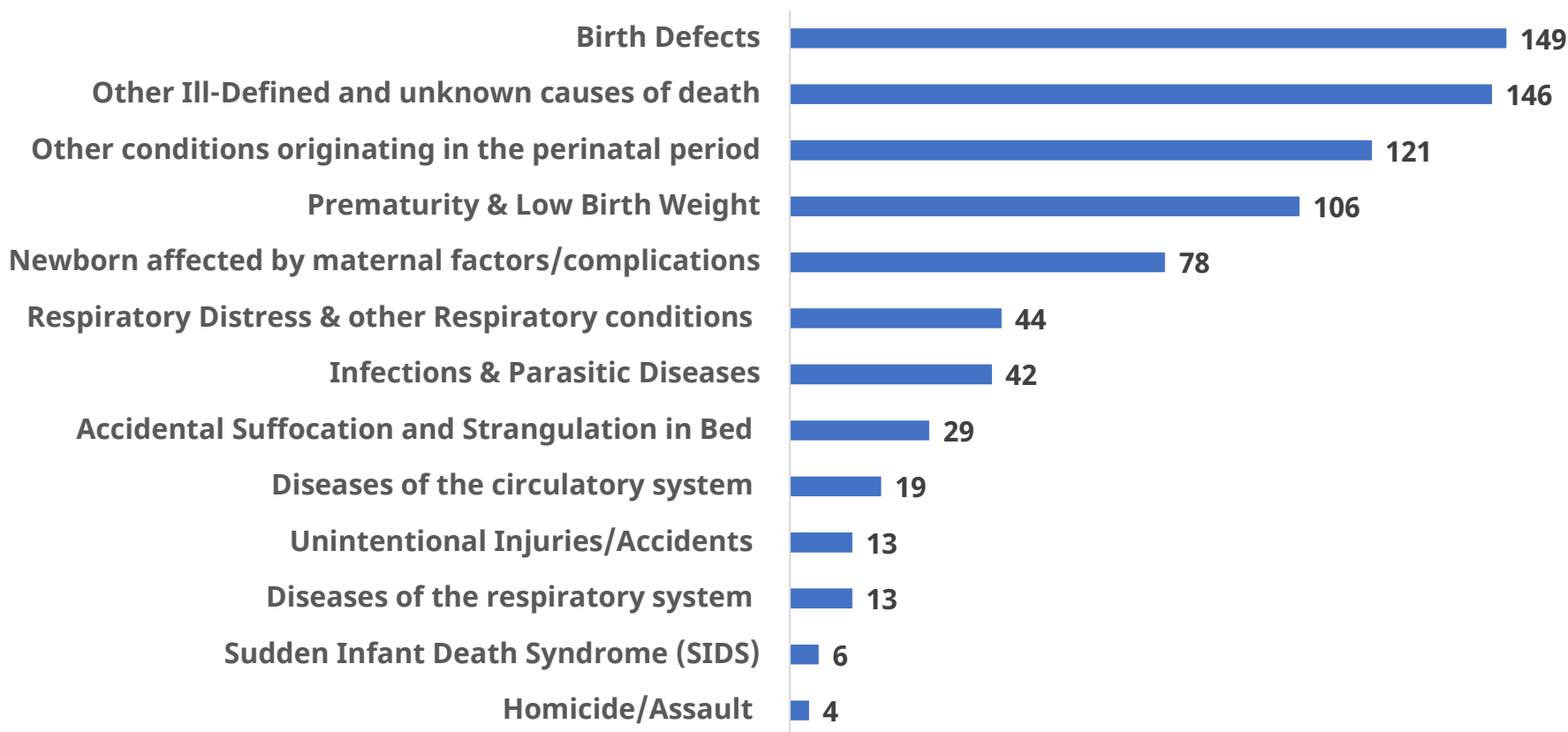
Infants comprise the largest proportion of child deaths in North Carolina

Child Deaths by Age Group, NC Residents 2021 (N=1,360 deaths)



Birth Defects are the leading cause of infant death in North Carolina in 2021, followed by deaths of undetermined cause

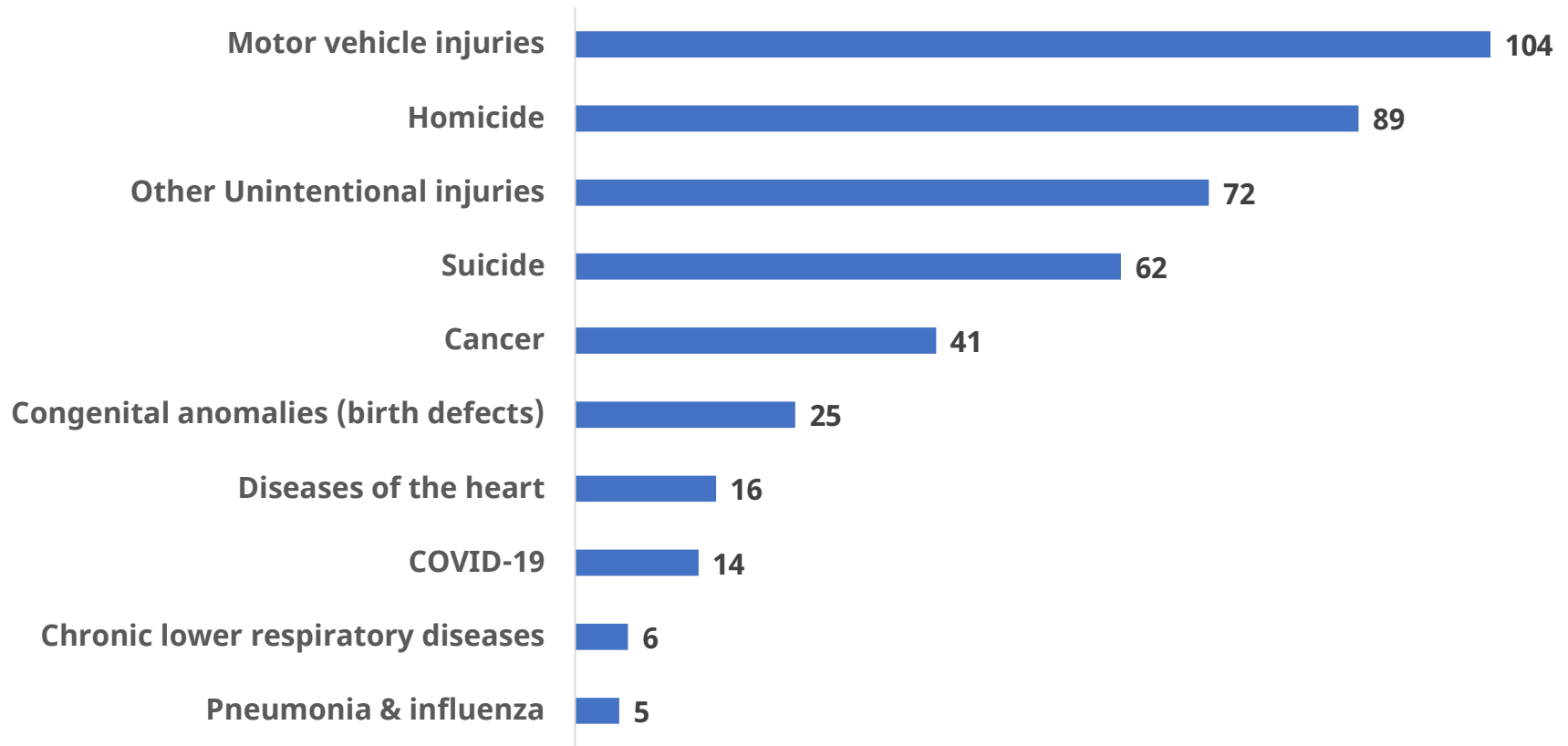
*Leading Causes of Death Among Infants: Number of Deaths by Cause, NC 2021
(N=820 Total Deaths)*



* Residual (all other causes) = 50 deaths

In 2021, injuries are the leading cause of death among North Carolina children ages 1 to 17 - comprising 61% of all (non-infant) child deaths

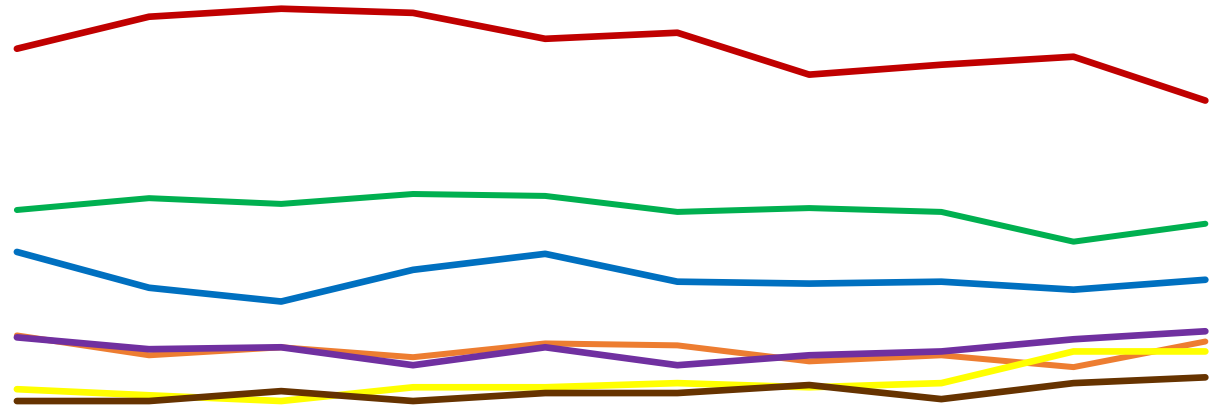
*Leading Causes of Death Among Children Ages 1 to 17: Number of Deaths by Cause, NC 2021
(N=540 Total Deaths)*



** Residual (all other causes) = 106 deaths*

Over the last decade, child death rates associated with homicides, suicides & unintentional (non-MVA) injuries have increased

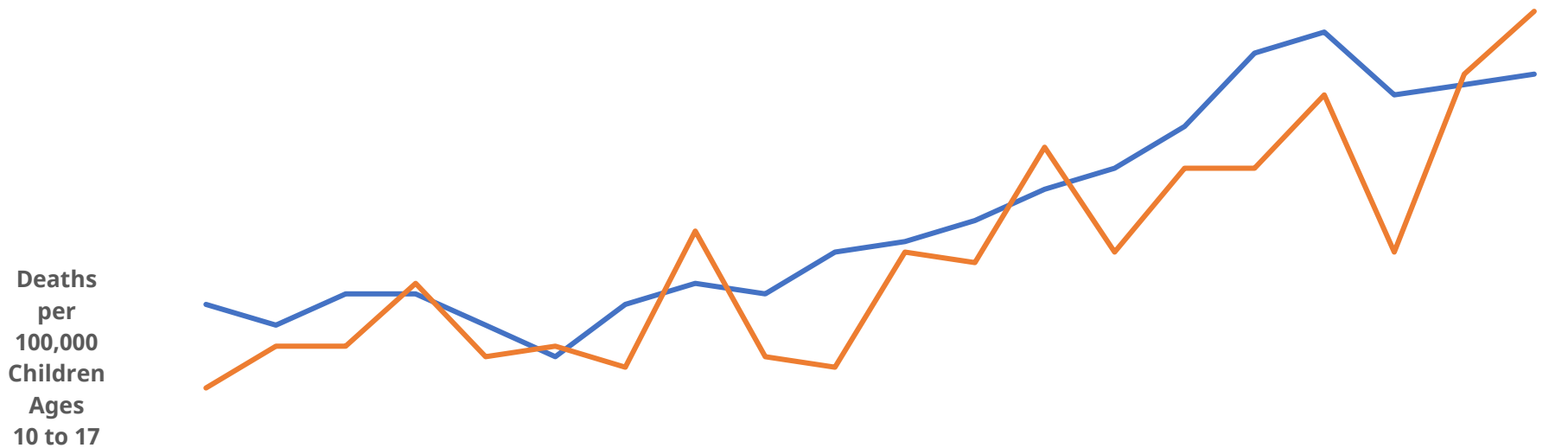
Trends in Child Death Rates for Selected Causes of Death, NC 2012-2021*



	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Birth Defects	9.0	7.2	6.5	8.1	8.9	7.5	7.4	7.5	7.1	7.6
Perinatal Conditions	19.2	20.8	21.2	21.0	19.7	20.0	17.9	18.4	18.8	16.6
Medical Conditions/Illnesses	11.1	11.7	11.4	11.9	11.8	11.0	11.2	11.0	9.5	10.4
Motor Vehicle Injuries	4.8	3.8	4.2	3.7	4.4	4.3	3.5	3.8	3.2	4.5
Other Unintentional Injuries	4.7	4.1	4.2	3.3	4.2	3.3	3.8	4.0	4.6	5.0
Homicide	2.1	1.8	1.5	2.2	2.2	2.4	2.2	2.4	4.0	4.0
Suicide	1.5	1.5	2.0	1.5	1.9	1.9	2.3	1.6	2.4	2.7

Among children ages 10 to 17, suicide rates increased in both the US and NC over the last two decades

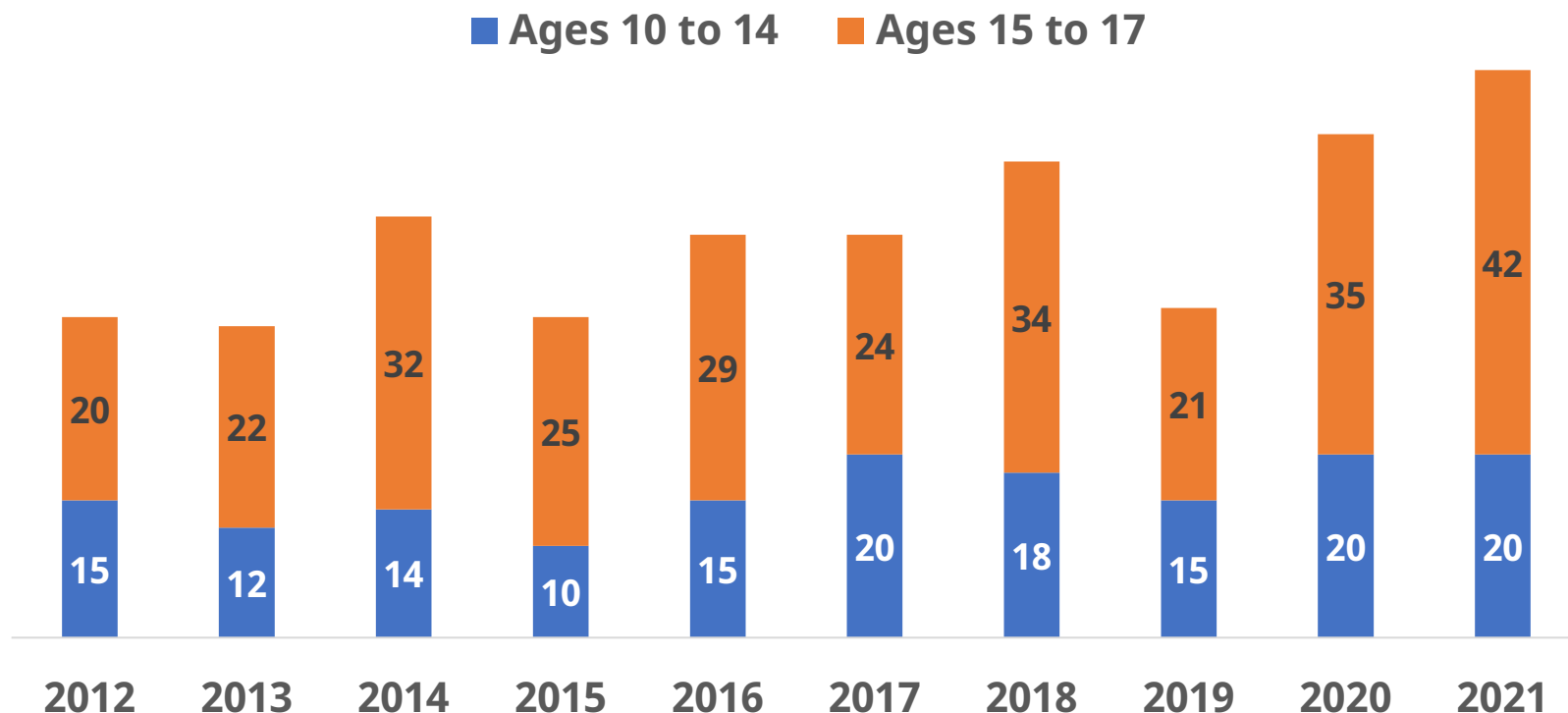
Suicide Rates, Ages 10 to 17: US & NC 2002-2021*



* Suicides include the following ICD mortality codes : X60-X84 (Intentional self-harm; Y87.0 (Sequelae of intentional self-harm), U03 (Suicide Terrorism)

Suicides have been rising among NC children ages 10 to 17 over the last decade, with older teens experiencing the largest increase

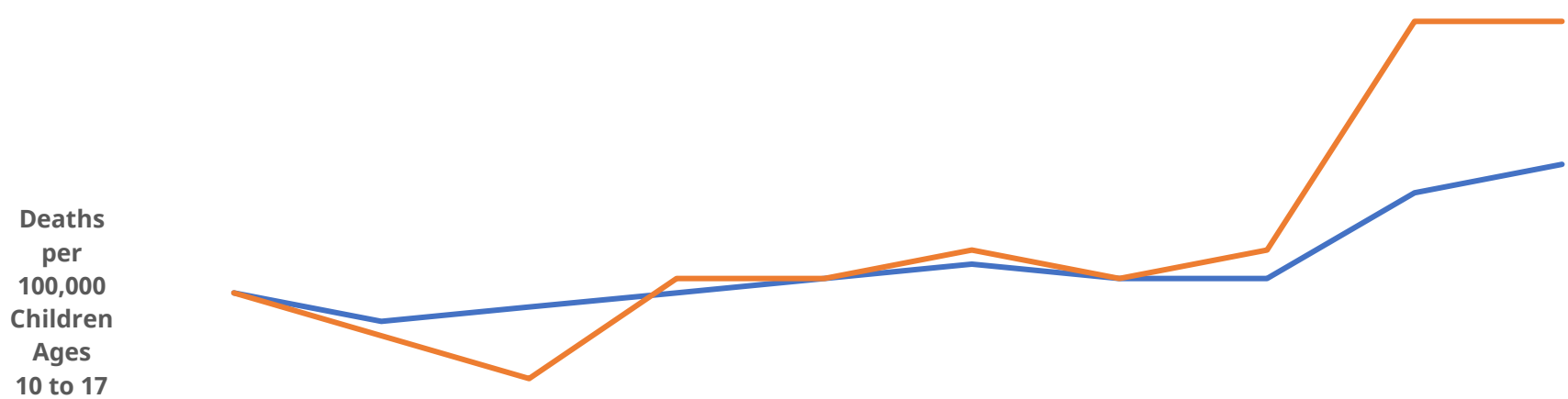
Number of Suicides by Age Group: Ages 10 to 17, NC 2012-2021



** Suicides include the following ICD mortality codes : X60-X84 (Intentional self-harm; Y87.0 (Sequelae of intentional self-harm), U03 (Suicide Terrorism)*

North Carolina Child Homicide rates remain high in 2020 and 2021

Child Homicide Rates, Ages 0 to 17: US & NC, 2012-2021

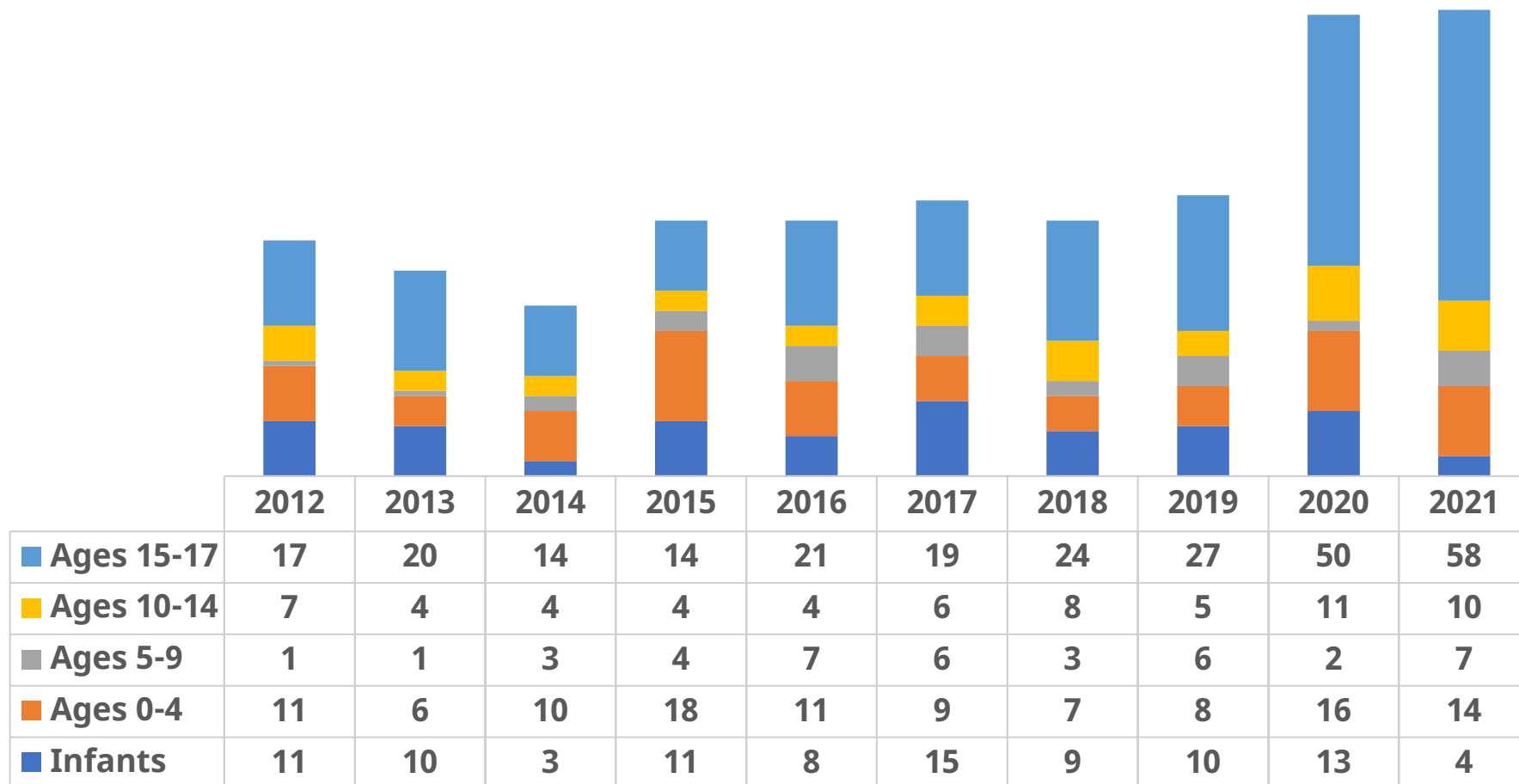


	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
— US	2.1	1.9	2.0	2.1	2.2	2.3	2.2	2.2	2.8	3.0
— NC	2.1	1.8	1.5	2.2	2.2	2.4	2.2	2.4	4.0	4.0

** Homicide includes the following ICD mortality codes : X85-Y09 (Assault), Y87.1 (Sequelae of assault), U01 (Terrorism Assault)*

Among children, older teens (ages 15 to 17) account for the largest increase in homicides over the last decade

Number of Child Homicides by Age Group: NC 2012-2021

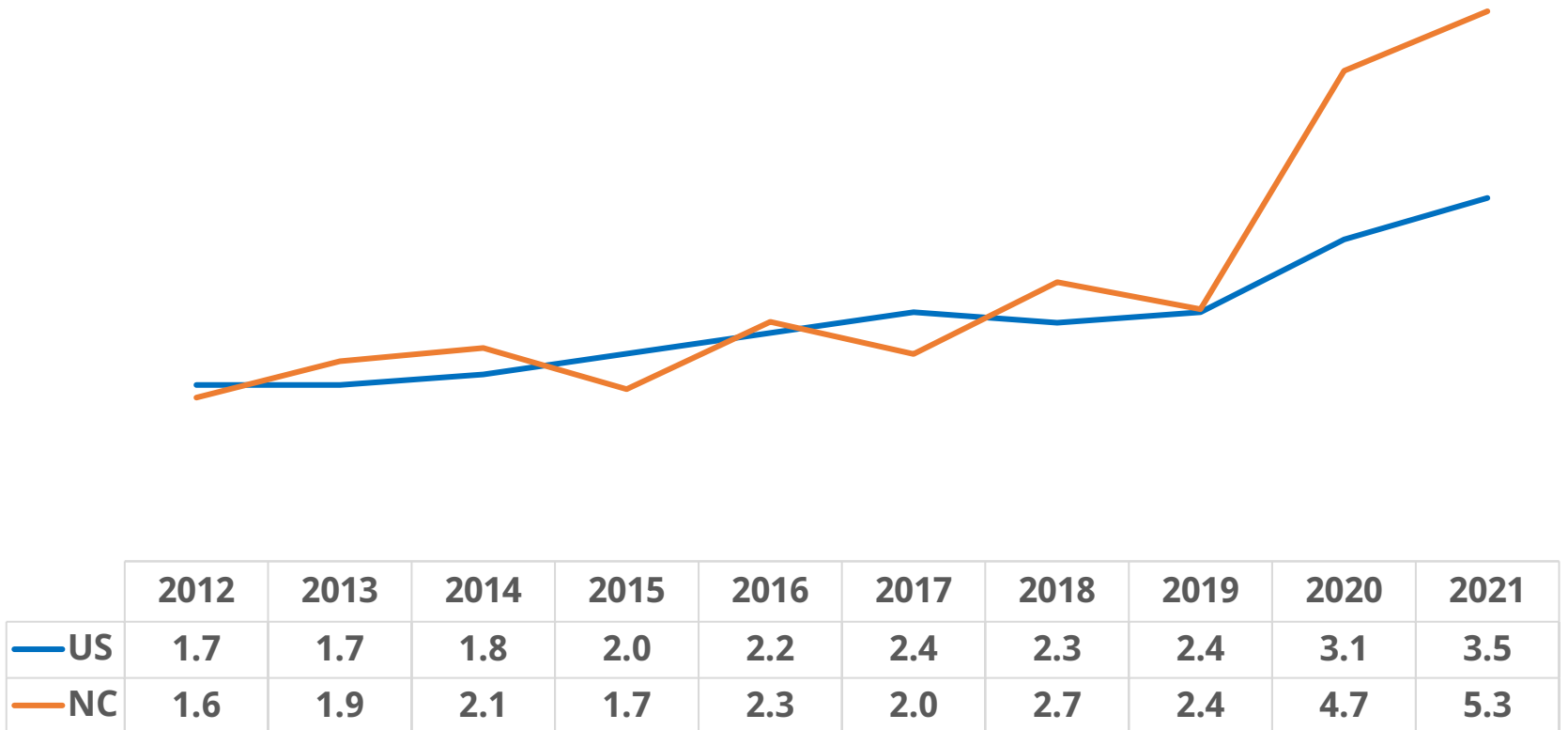


* Homicide includes the following ICD mortality codes : X85-Y09 (Assault), Y87.1 (Sequelae of assault), U01 (Terrorism Assault)

Firearm-related death rates have increased substantially in North Carolina in the last two years

Firearm-related Mortality Rates, Children Ages 0 to 17: NC & US, 2012-2021*

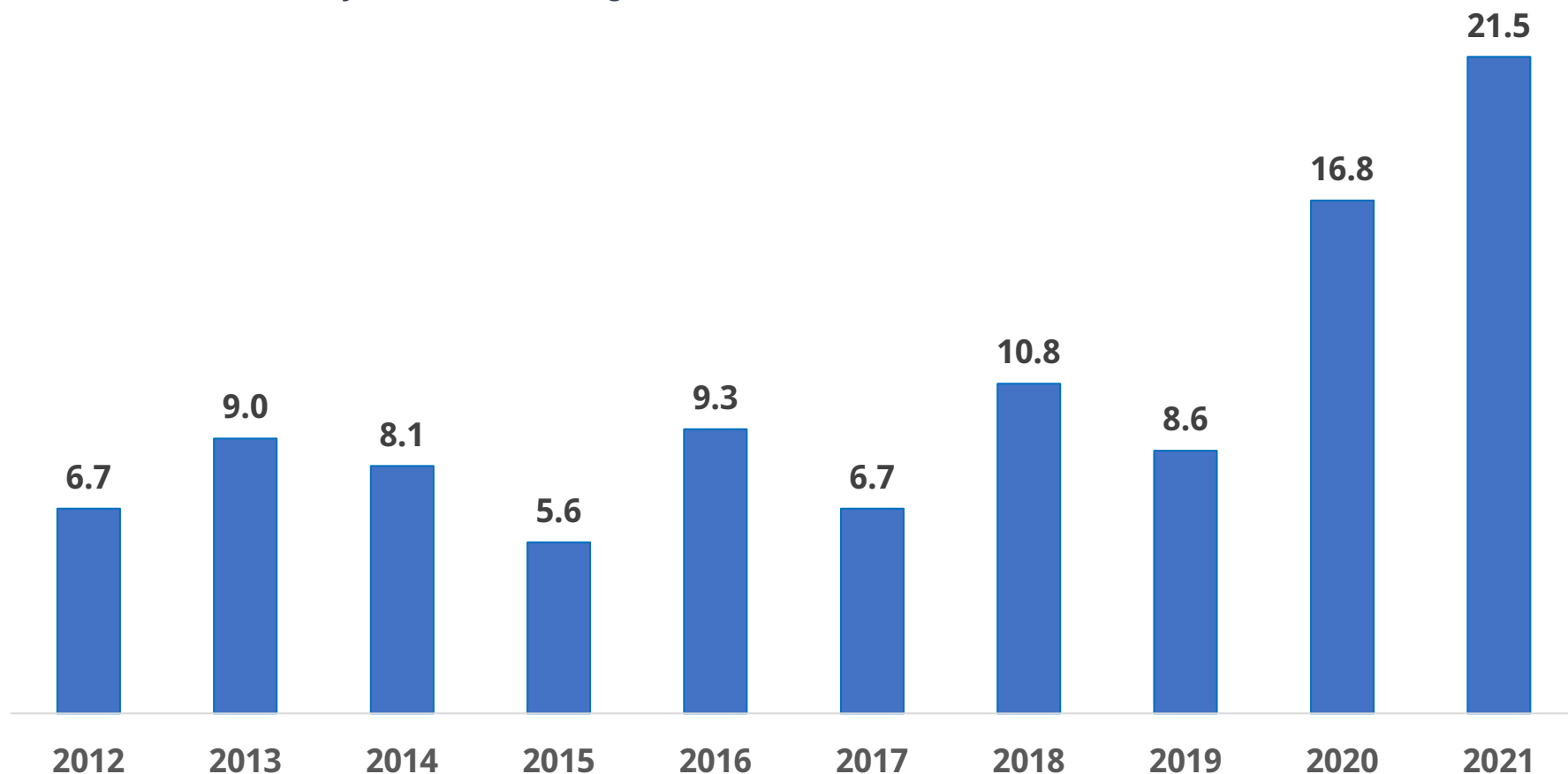
Deaths
per
100,000
Children
Ages
0 to 17



* Firearm deaths include the following ICD mortality codes : W32-W34 (Unintentional), X72-X74 (Suicide), X93-X95 (Homicide), U014 (Terrorism), & Y22-Y24 (Undetermined Intent)

Adolescents ages 15 to 17 have experienced large increases in firearm-related mortality rates in both 2020 & 2021

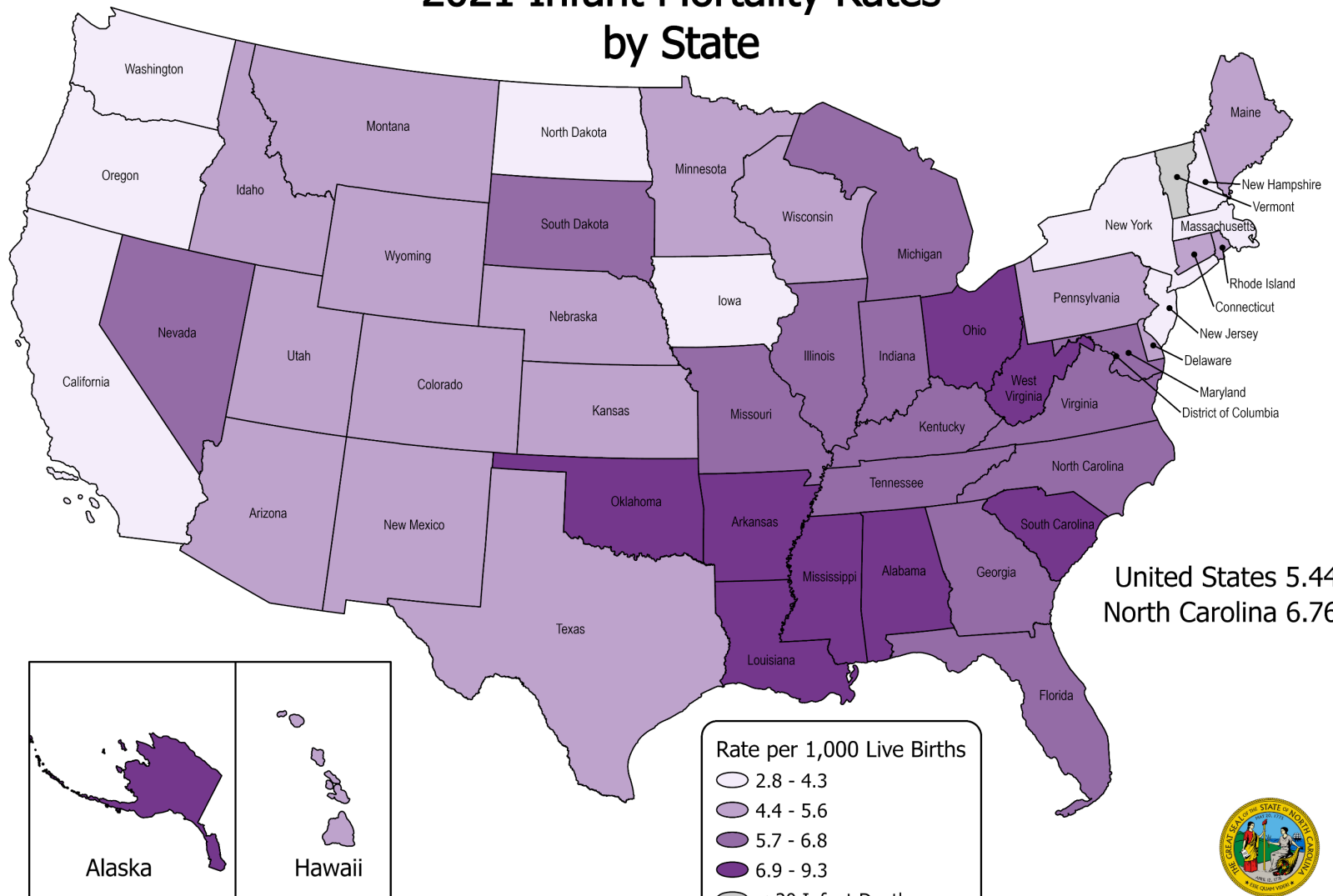
Firearm-related Mortality Rates, Children Ages 15 to 17: NC, 2012-2021*



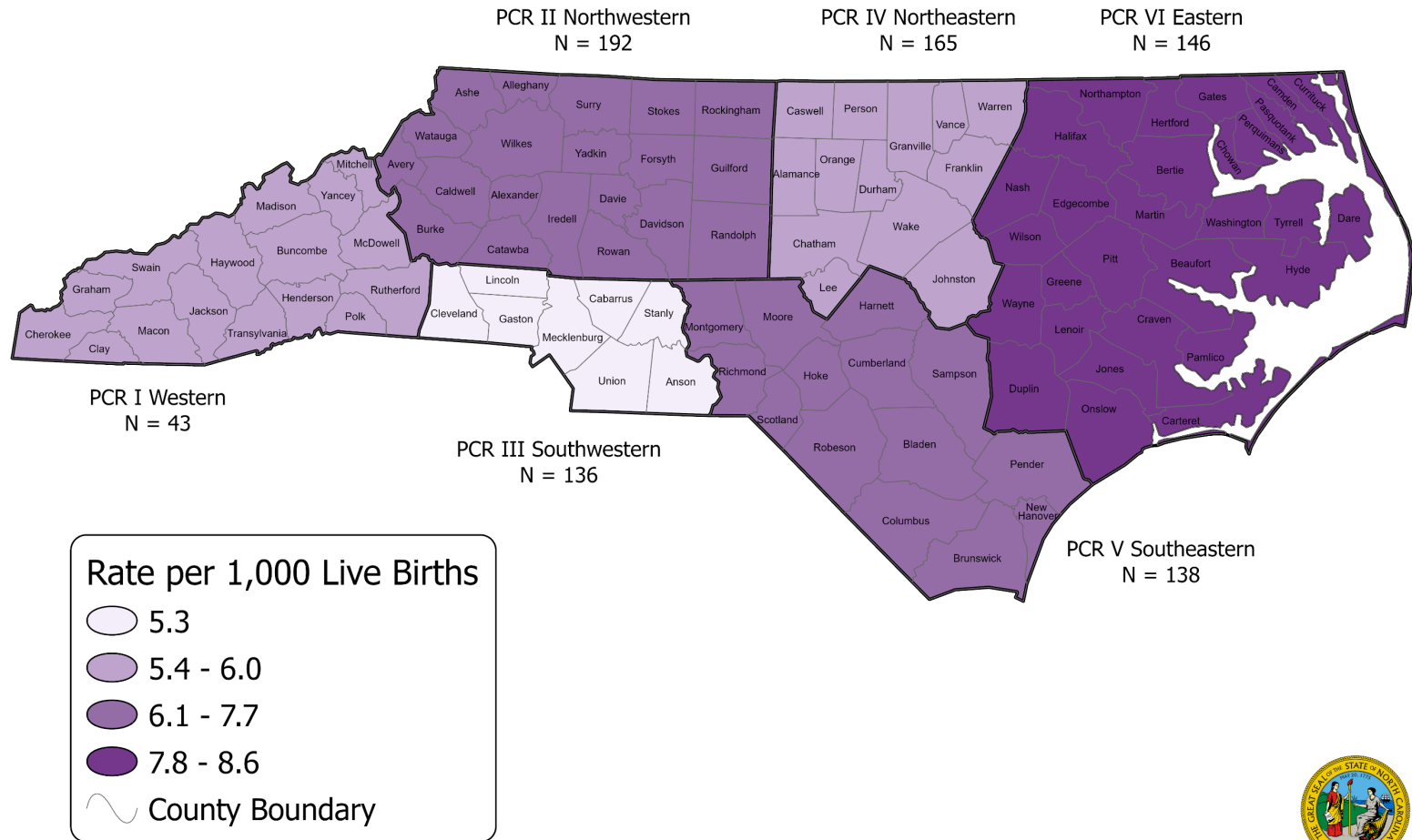
* Firearm deaths include the following ICD mortality codes : W32-W34 (Unintentional), X72-X74 (Suicide), X93-X95 (Homicide), U014 (Terrorism), & Y22-Y24 (Undetermined Intent)

Geographic Patterns in Infant & Child Mortality

United States 2021 Infant Mortality Rates by State

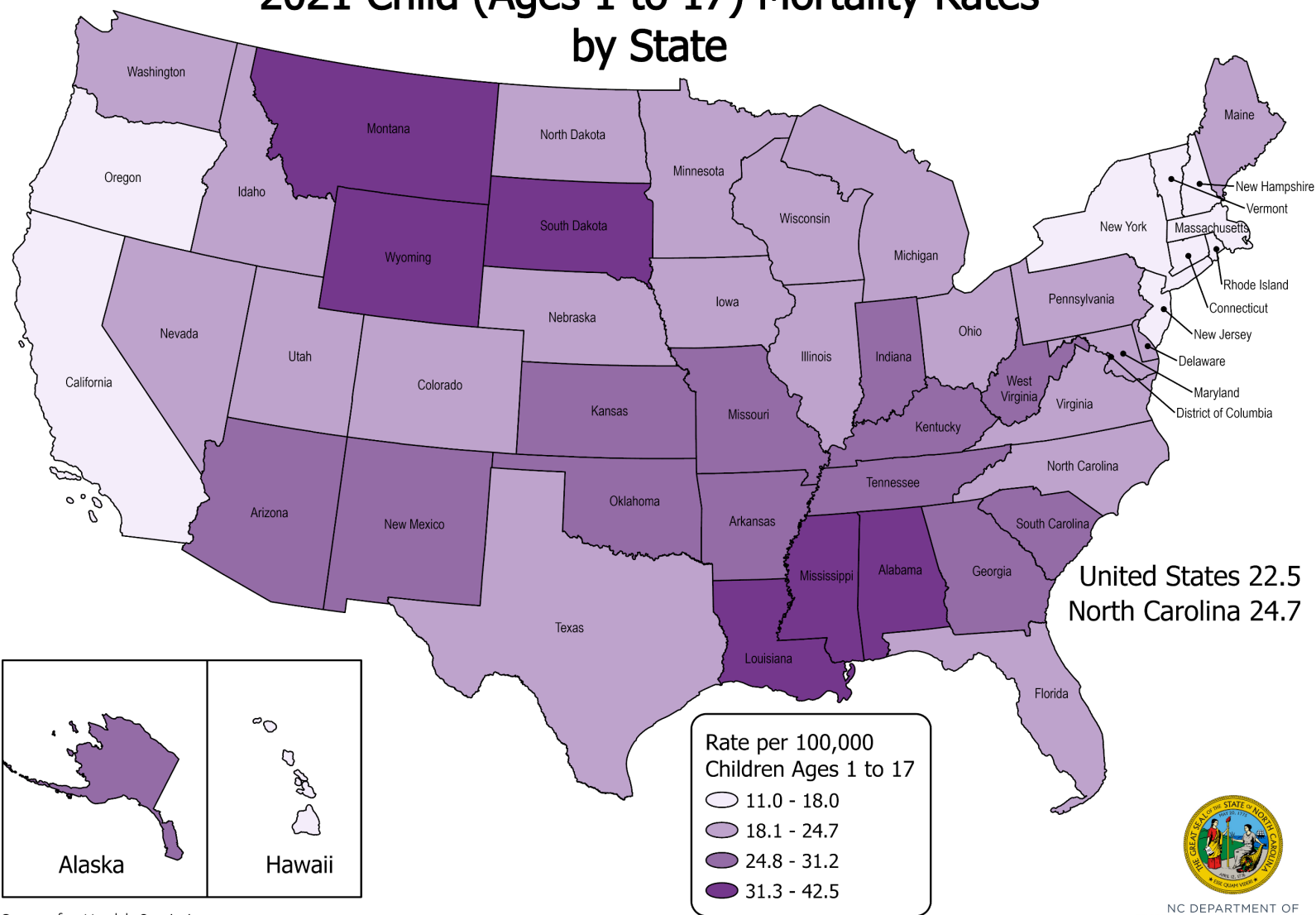


North Carolina Infant Mortality Rates by Perinatal Care Regions (PCR) 2021



United States

2021 Child (Ages 1 to 17) Mortality Rates by State

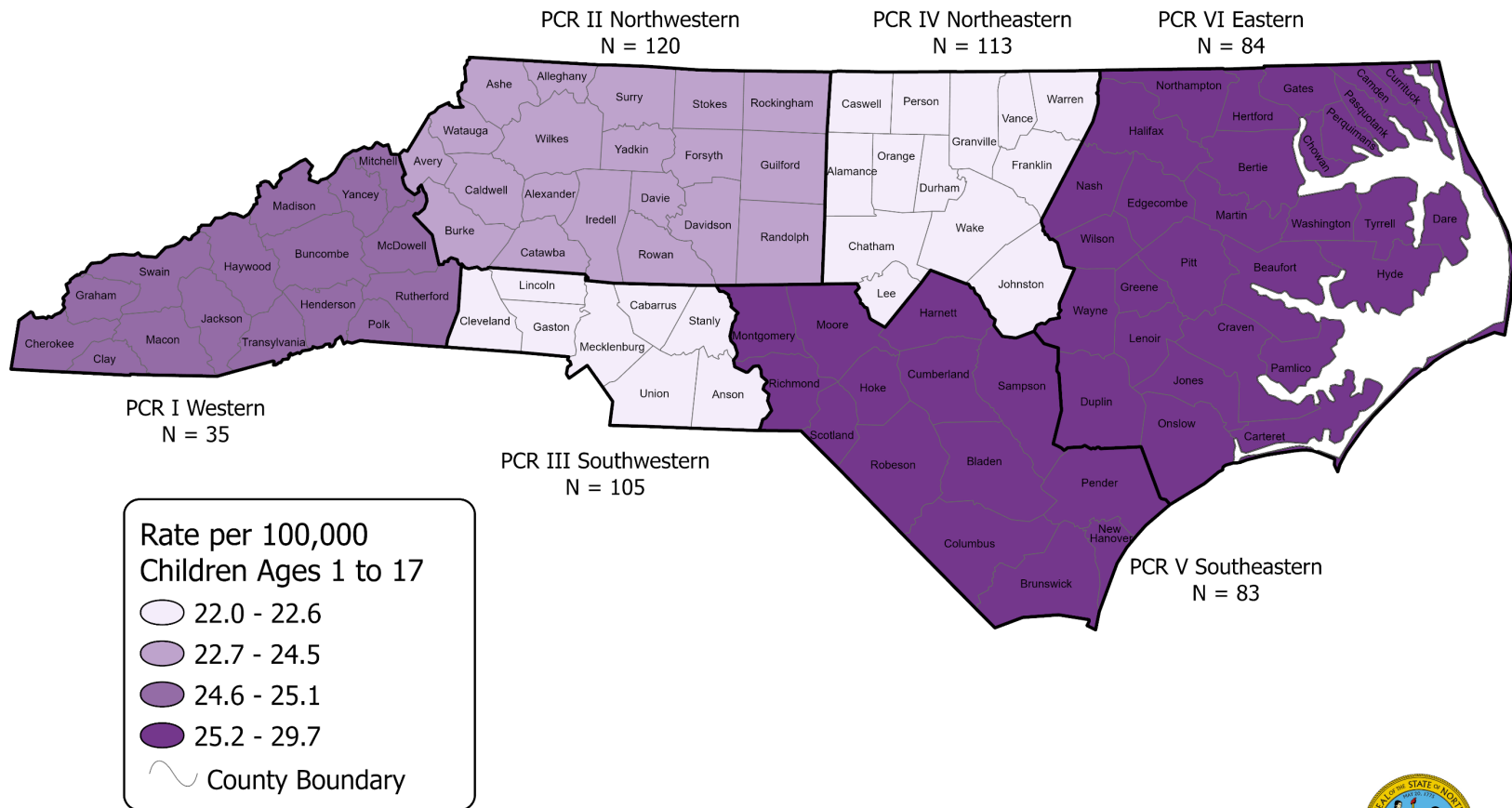


North Carolina

Child (Ages 1 to 17) Mortality Rates

by Perinatal Care Regions (PCR)

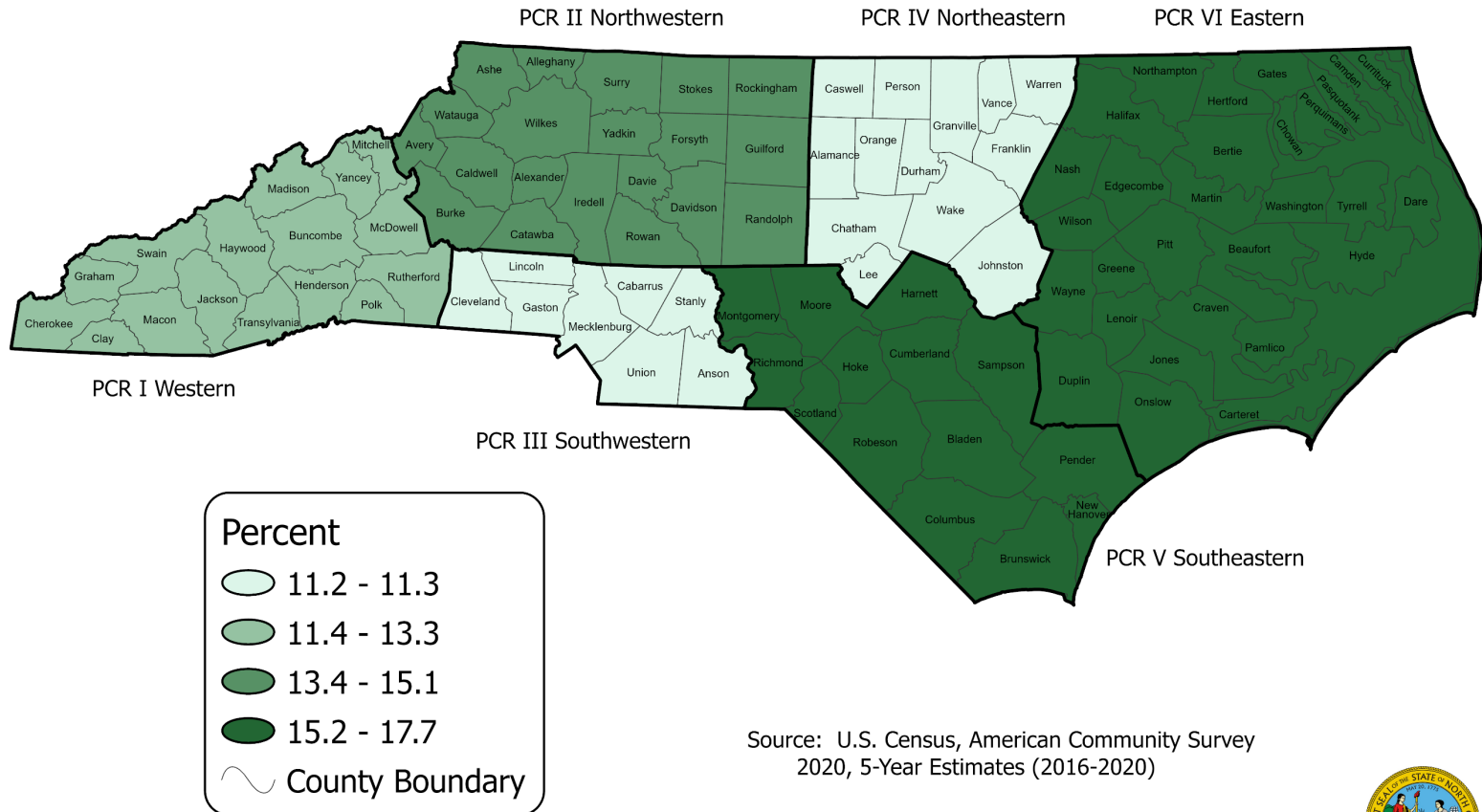
2021



Geographic Patterns in Social Determinants of Health in North Carolina

North Carolina

2020 Estimated Percent Population Below Poverty by Perinatal Care Regions (PCR)

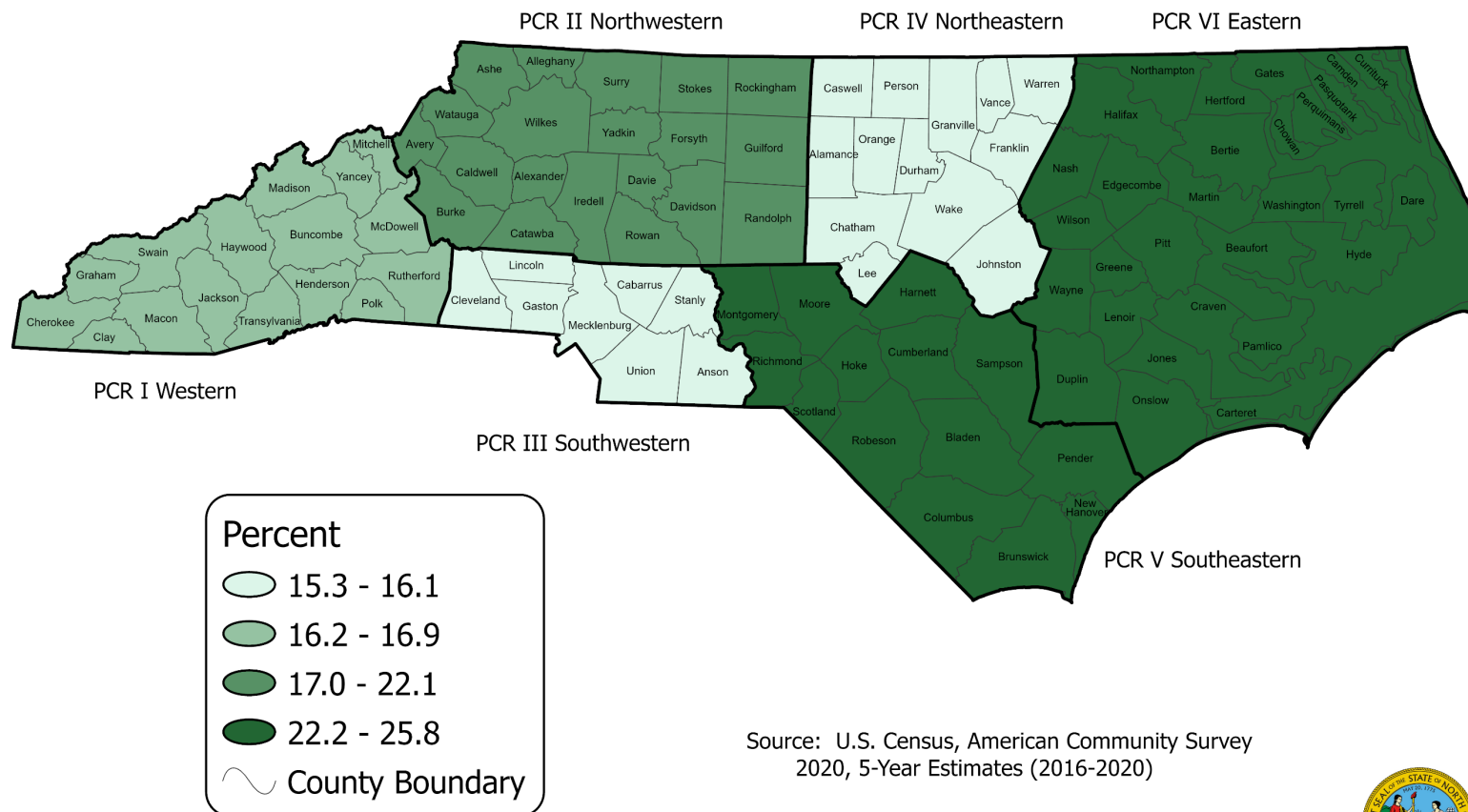


Source: U.S. Census, American Community Survey
2020, 5-Year Estimates (2016-2020)



North Carolina

2020 Estimated Percent Children Ages 0 to 17 Below Poverty by Perinatal Care Regions (PCR)

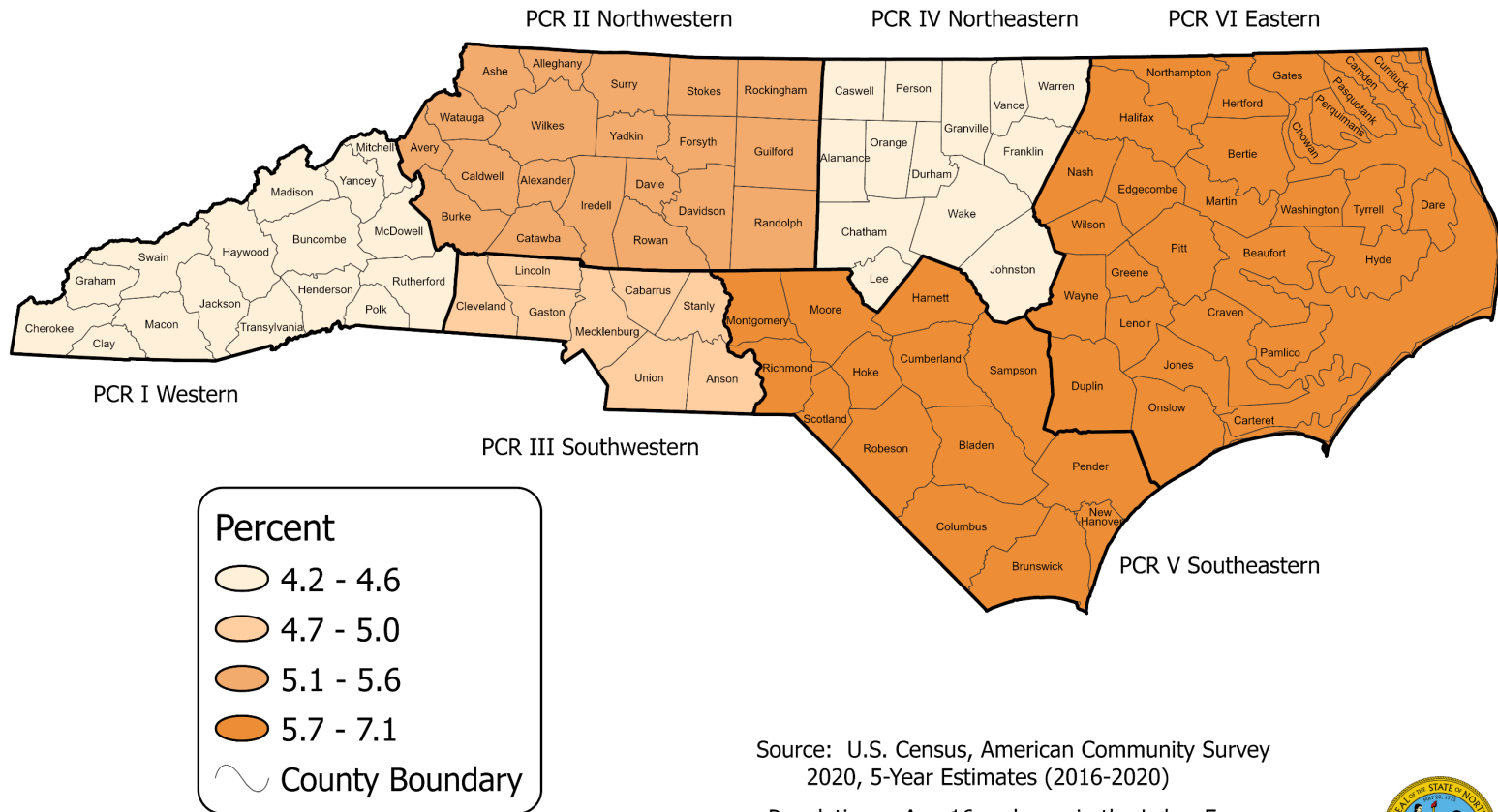


Source: U.S. Census, American Community Survey
2020, 5-Year Estimates (2016-2020)



North Carolina

2020 Estimated Percent Population Unemployed by Perinatal Care Regions (PCR)



Source: U.S. Census, American Community Survey
2020, 5-Year Estimates (2016-2020)

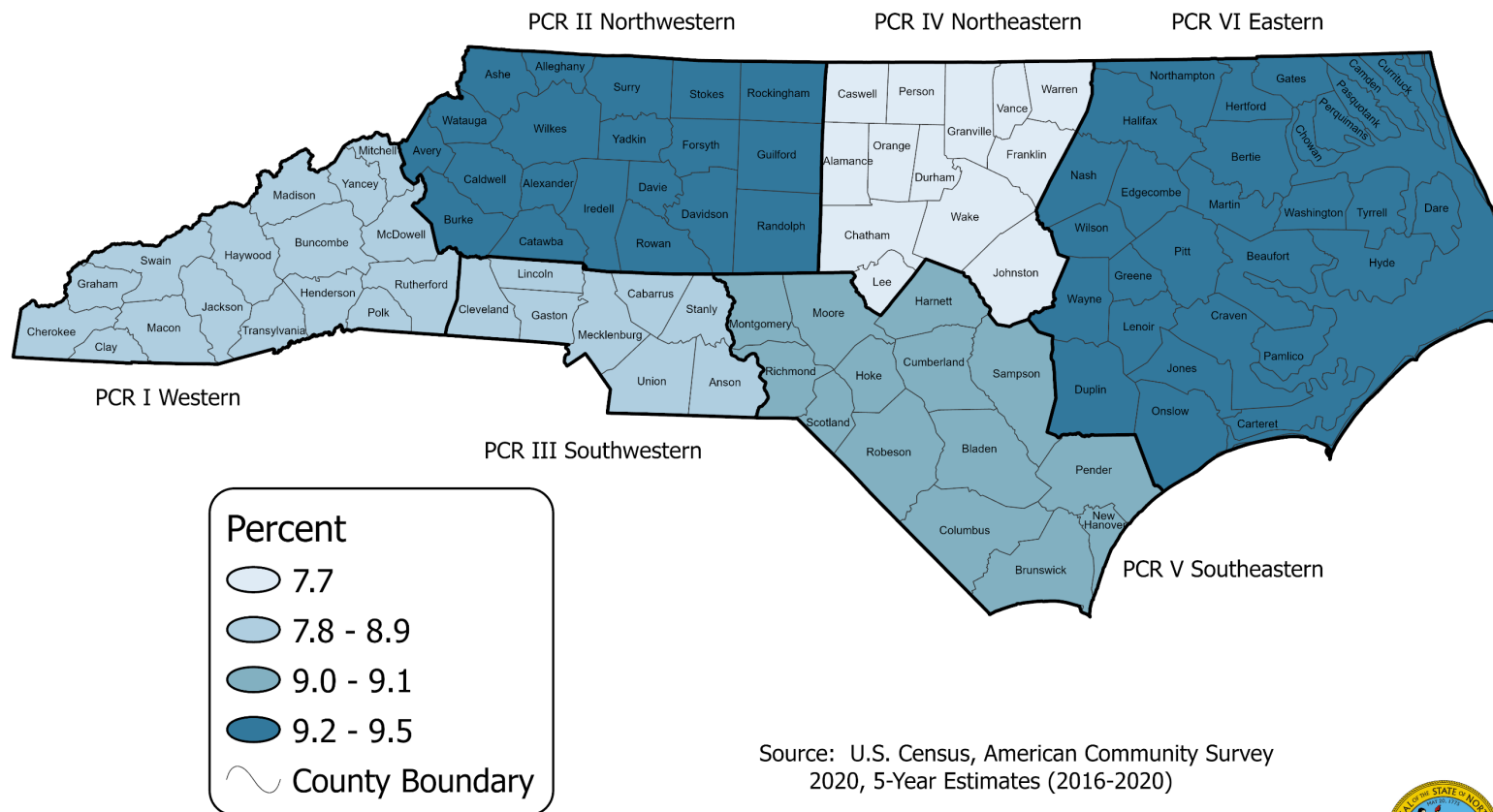
Population = Age 16 and over in the Labor Force



NC DEPARTMENT OF
HEALTH AND HUMAN SERVICES

North Carolina

2020 Estimated Percent Females Ages 18 to 44 with No High School Diploma by Perinatal Care Regions (PCR)

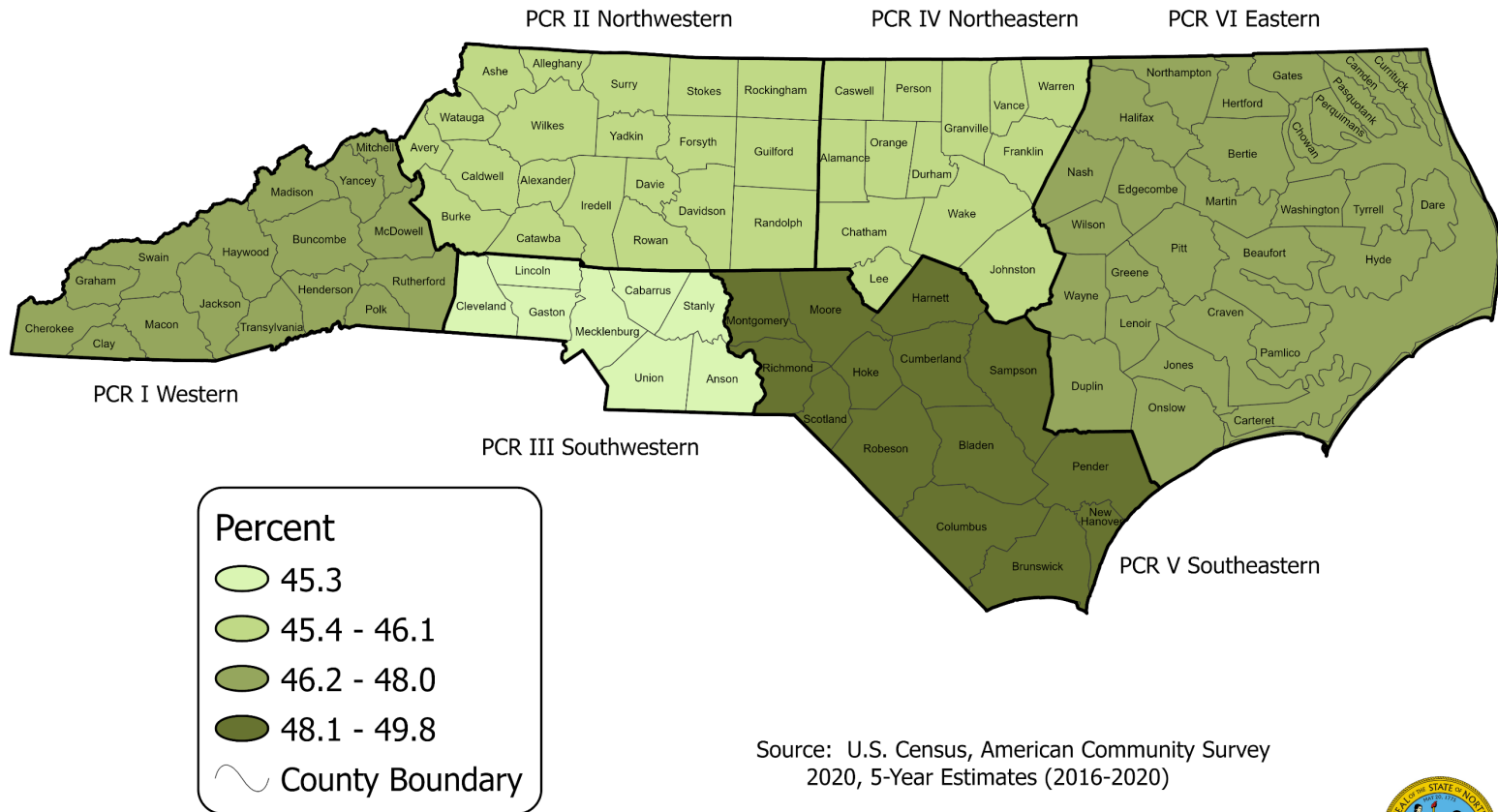


Source: U.S. Census, American Community Survey
2020, 5-Year Estimates (2016-2020)



North Carolina

2020 Estimated Percent Renters Spending Greater Than 30% of Household Income on Rent by Perinatal Care Regions (PCR)



Source: U.S. Census, American Community Survey
2020, 5-Year Estimates (2016-2020)



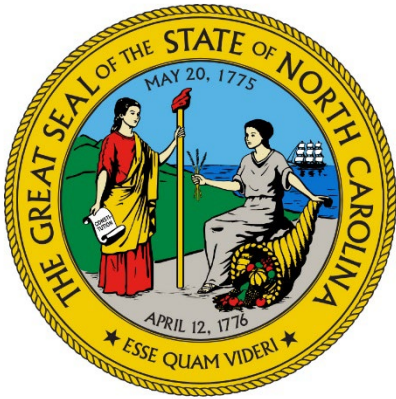
Infant Mortality & Child Death Reports available at the State Center for Health Statistics:

- **2021 Infant Mortality Report:**
<https://schs.dph.ncdhhs.gov/data/vital/ims/2021/>
- **2021 Child Death Report:**
<https://schs.dph.ncdhhs.gov/data/vital/cd/2021/>

Questions?

Contact:

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NC Department of Health and Human Services

Injury Surveillance Overview

NC Child Fatality Prevention Summit

Scott Proescholdbell, MPH

Epidemiologist and Unit Manager

Injury Epidemiology, Surveillance and Informatics Unit

March 30, 2023

Overview

- Overview of Injury & Violence Surveillance
- Unintentional Injuries (MVT)
- NC-VDRS/NC-FASTER (homicide/suicide/firearm)
- Syndromic Surveillance System (SyS)
- SyS for Behavioral Health/Mental Health
- Q&A

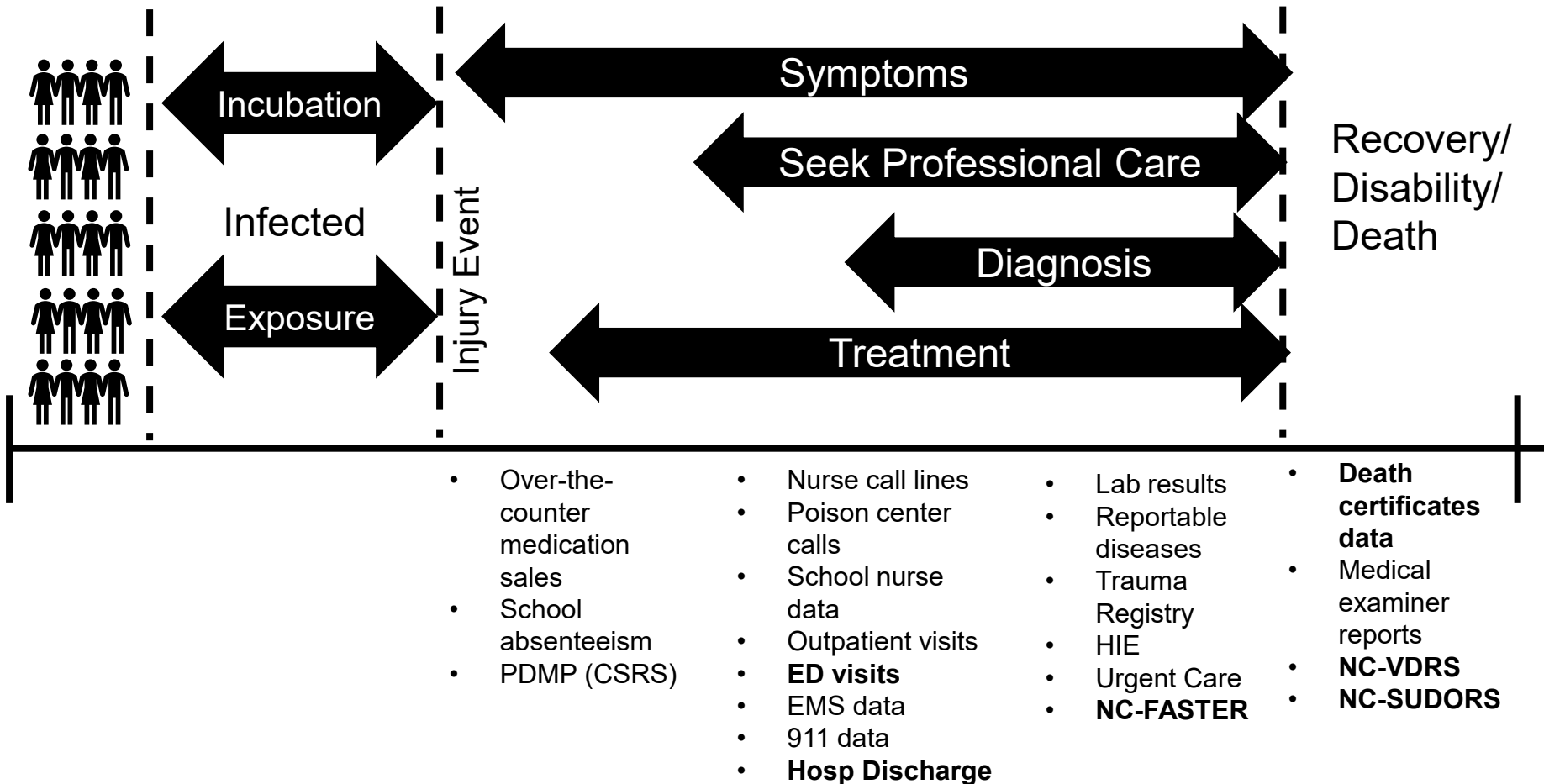
Overview: Injury Surveillance Systems

Public Health Surveillance

“ Public health surveillance is the ongoing systematic collection, analysis, and interpretation of outcome-specific data for use in the planning, implementation and evaluation of public health practice.”

Stephen B. Thacker, 1994

Injury Surveillance Timeline: Potential Data Sources



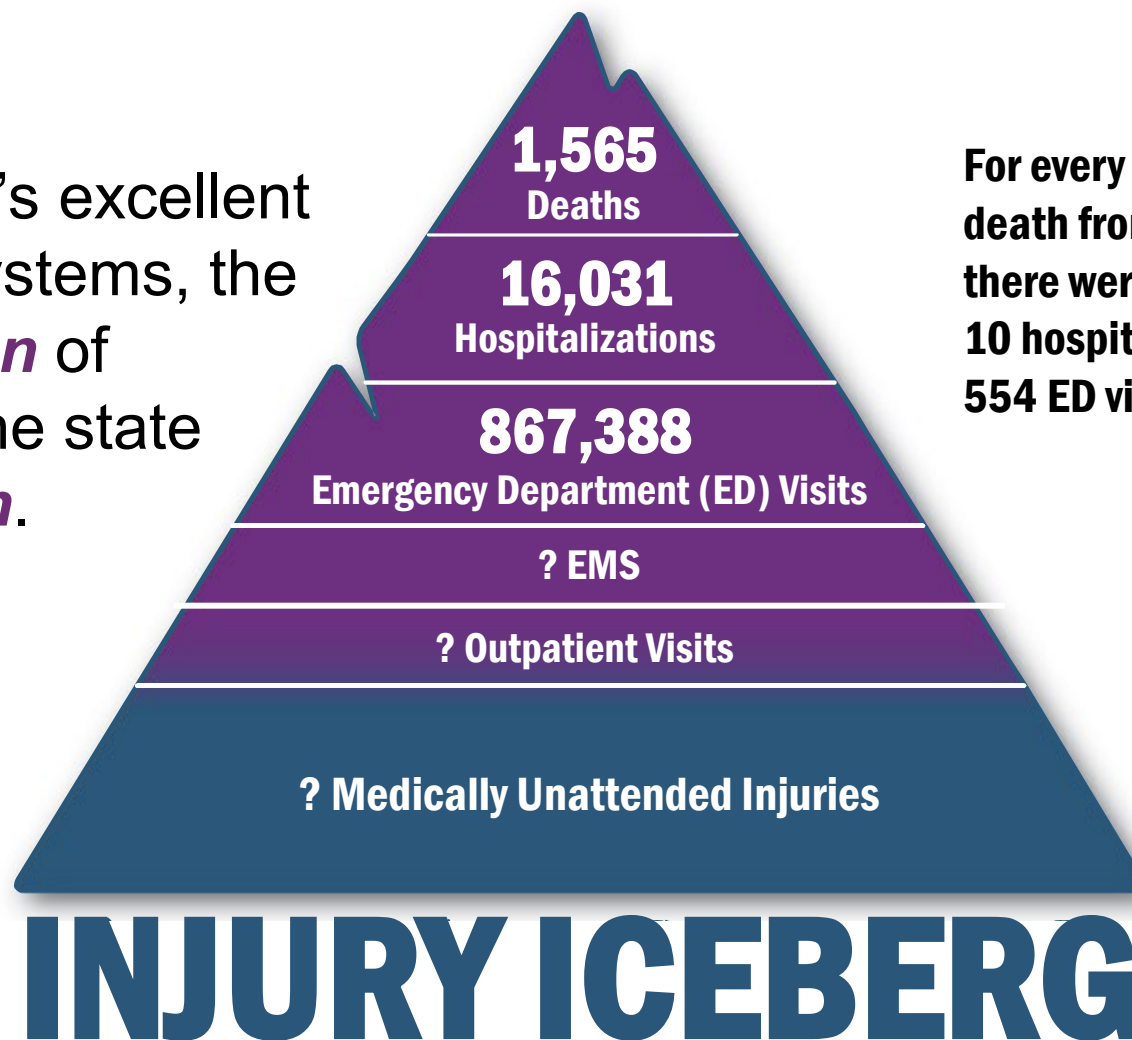
Adapted from: Lombardo, J., S. & Buckeridge, D., L. (2007). *Disease surveillance: A public health informatics approach*. Wiley-Interscience

Finagle's Laws on Information

- **The information you have is not what you want.**
- **The information you want is not what you need.**
- **The information you need is not what you can obtain.**

Child injury deaths are just the tip of the iceberg.

Despite NC's excellent reporting systems, the *total burden* of injuries in the state is *unknown*.



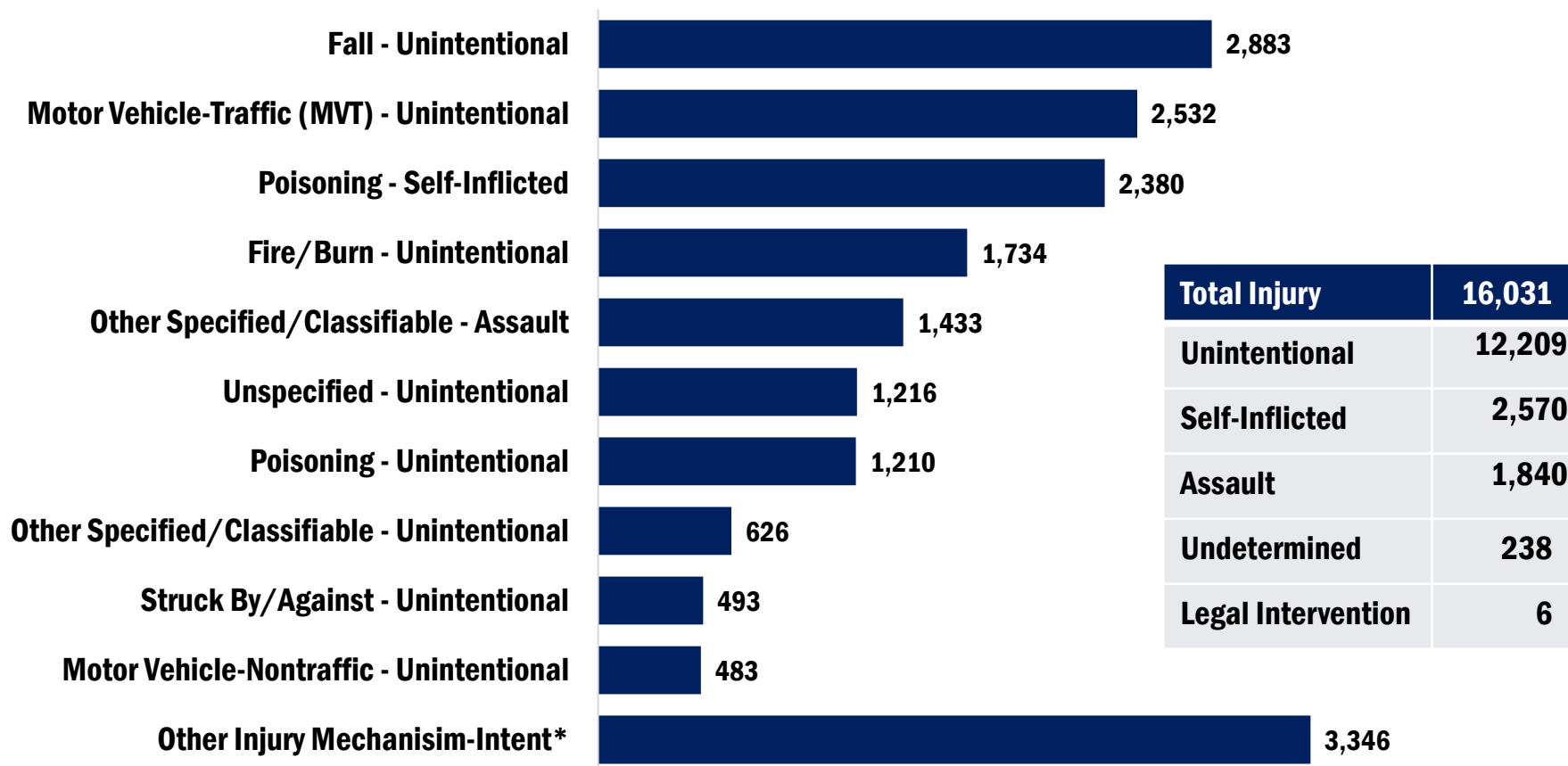
For every 1 child injury death from 2017-2021, there were 10 hospitalizations and 554 ED visits

Limited to residents ages 0-17

Source: NC State Center for Health Statistics, Vital Statistics Deaths (2017-2021) and Hospital Discharge Data (2017-2021); NC DETECT, ED Visit Data (2017-2021)

Analysis by the DPH Injury and Violence Prevention Branch, Injury Epidemiology and Surveillance, and Informatics Unit

Leading Causes of Injury Hospitalizations: NC Residents, Ages 0-17, 2017-2021



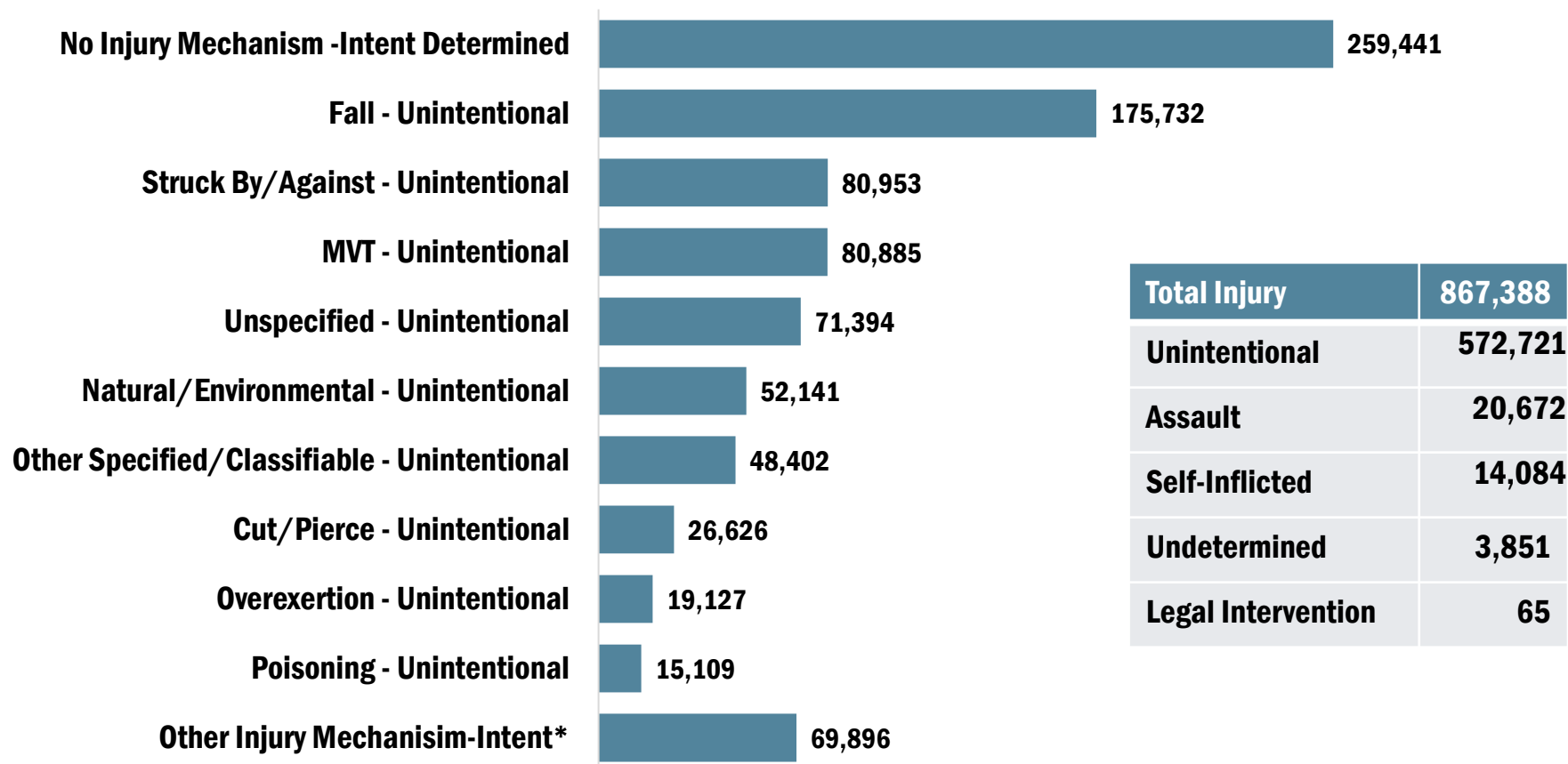
* Other includes several smaller defined causes of injury; includes 2% of child injury hospitalizations missing external cause information to describe injury mechanism intent.

Note: Injury mechanism and intent categories are not mutually exclusive, an individual may have multiple injuries documented within a single hospitalization. Limited to residents ages 0-17

Source: NC State Center for Health Statistics, Vital Statistics Hospital Discharge Data (2017-2021)

Analysis by the DPH Injury and Violence Prevention Branch, Injury Epidemiology and Surveillance, and Informatics Unit

Leading Causes of Injury ED Visits: NC Residents, Ages 0-17, 2017-2021



* Other includes several smaller defined causes of injury

30% of child injury ED visits missing external cause information to describe injury mechanism intent; Limited to residents ages 0-17

Note: Injury mechanism and intent categories are not mutually exclusive, an individual may have multiple injuries documented within a single ED visit.

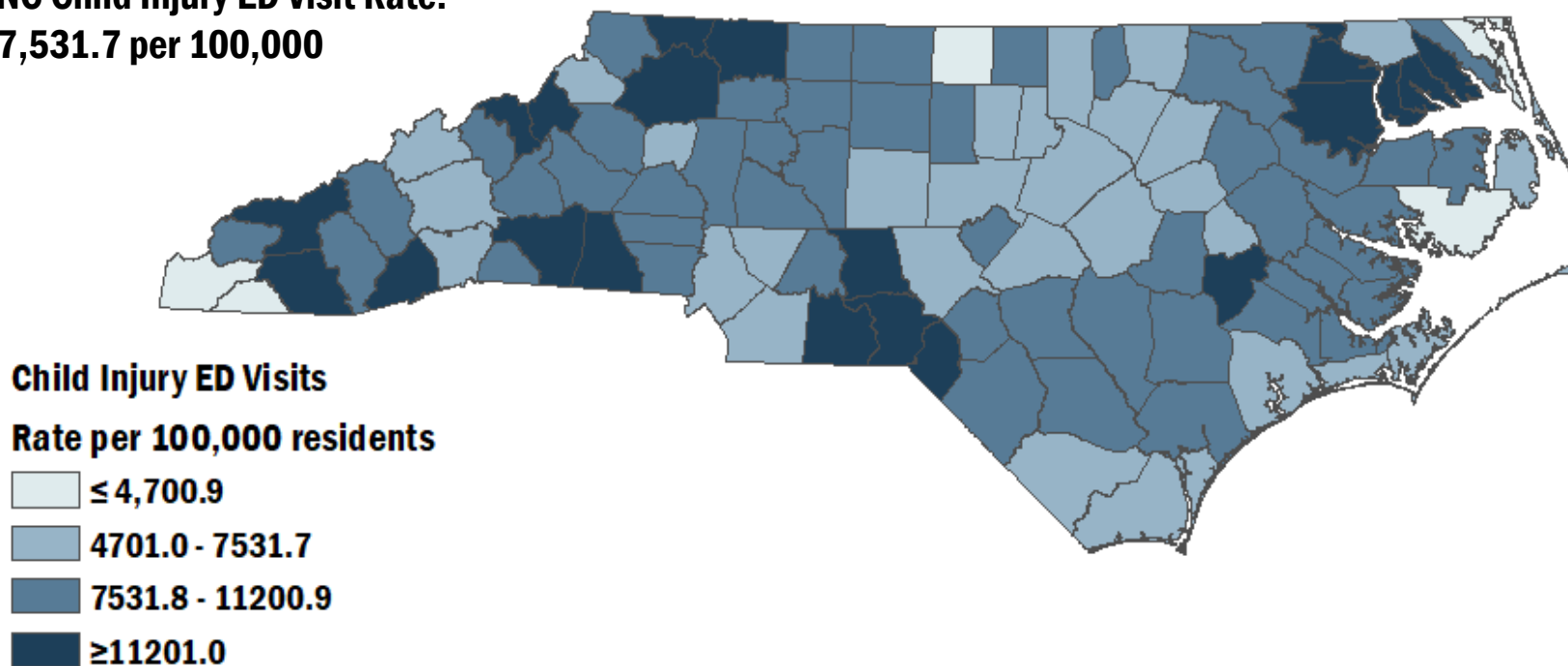
Source: NC DETECT, ED Visit Data (2017-2021)

Analysis by the DPH Injury and Violence Prevention Branch, Injury Epidemiology and Surveillance, and Informatics Unit

Injury ED visit rates among children varied drastically by county

Child Injury ED Visit Rates by County of Residence, 2017-2021

**NC Child Injury ED Visit Rate:
7,531.7 per 100,000**



Limited to residents ages 0-17

Source: NC DETECT, ED Visit Data (2017-2021)

Analysis by the DPH Injury and Violence Prevention Branch, Injury Epidemiology and Surveillance, and Informatics Unit

Top 5 Deaths, Hosp and ED visits for 0-17

**Top 5 Leading Causes of Injury Death, Hospitalization, and Emergency Department Visits by County*
Ages 0 to 17, 2016-2020**

Leading Causes of Injury Death 2016 to 2020 ORANGE			Leading Causes of Injury Hospitalization 2016 to 2020 ORANGE			Leading Causes of Injury ED Visits 2016 to 2020 ORANGE		
Rank	Cause	#	Rank	Cause	#	Rank	Cause	#
1	Pedestrian Other - Unintentional	2	1	Fall - Unintentional	40	1	No Mechanism or Intent Recorded	3,853
2	Unspecified - Assault; Suffocation - Unintentional; Suffocation - Undetermined; Suffocation - Self-Inflicted; Other Transport - Unintentional; MVT - Unintentional; Firearm - Self-Inflicted; Drowning/Submersion - Assault; Cut/Pierce - Assault	1	2	Poisoning - Self-Inflicted	30	2	Fall - Unintentional	1,234
3			3	Fire/Burn - Unintentional	29	3	MVT - Unintentional	446
4			4	MVT - Unintentional	21	4	Other Specified/Classifiable - Unintentional	439
5			5	Other Specified/Classifiable - Assault	19	5	Natural/Environmental - Unintentional	404
TOTAL		11	TOTAL		187	TOTAL		7,941

https://injuryfreenc.dph.ncdhhs.gov/DataSurveillance/pdf/Top5TablesByCounty2016-2020_ages0-17.pdf

Overview- MVT Injury ED Visits

MVT injury rates are highest for youth ages 15-17 and non-Hispanic Black youth

Motor Vehicle Traffic ED Visit Rates among NC Children by Demographic Group, 2017-2021

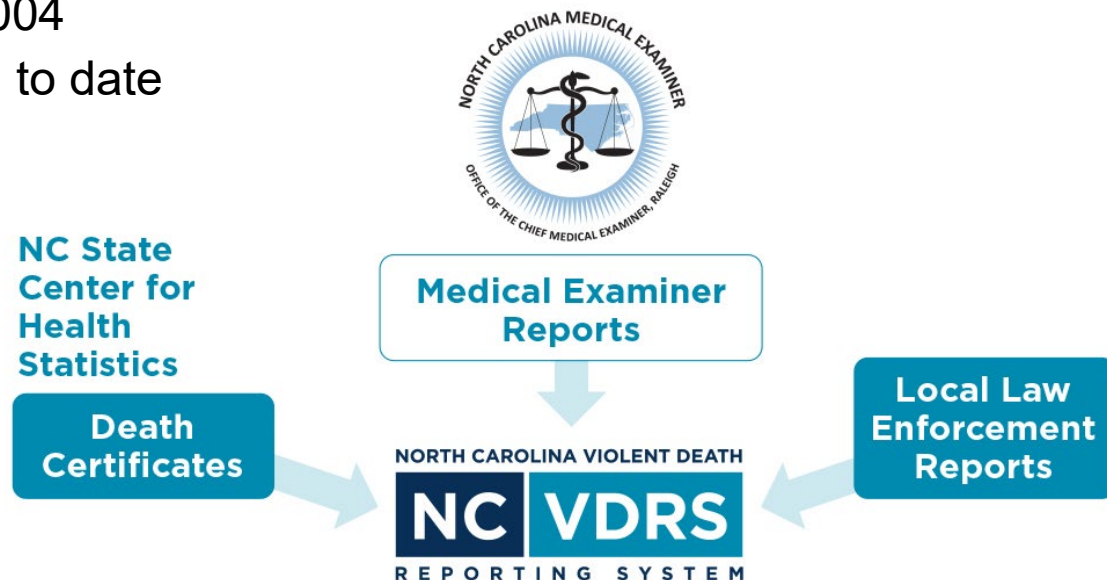


Overview- NC-VDRS

NC-VDRS

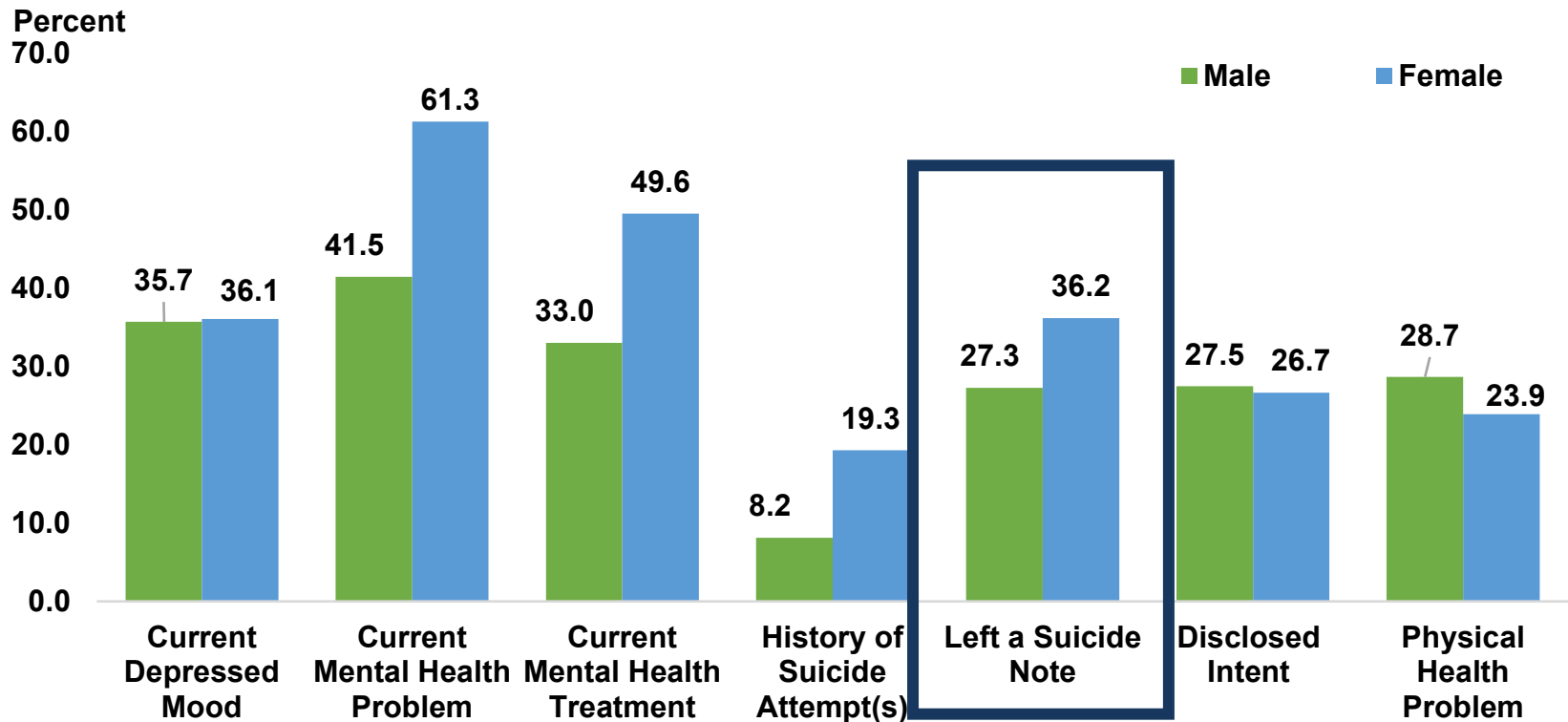
North Carolina-Violent Death Reporting System

- **CDC-funded statewide surveillance system** collecting data on deaths resulting from violence such as homicide, suicide, legal intervention
- **Funded in 2003**
 - Data collection began in 2004
 - ~35,000 incidents reported to date
- **Multi-sourced incident-based system**



A quarter of all firearm related suicide victims tell someone or disclose their intent

Circumstance of Firearm Related Suicides in NC by Sex, 2011-2020 (ages 10-17)



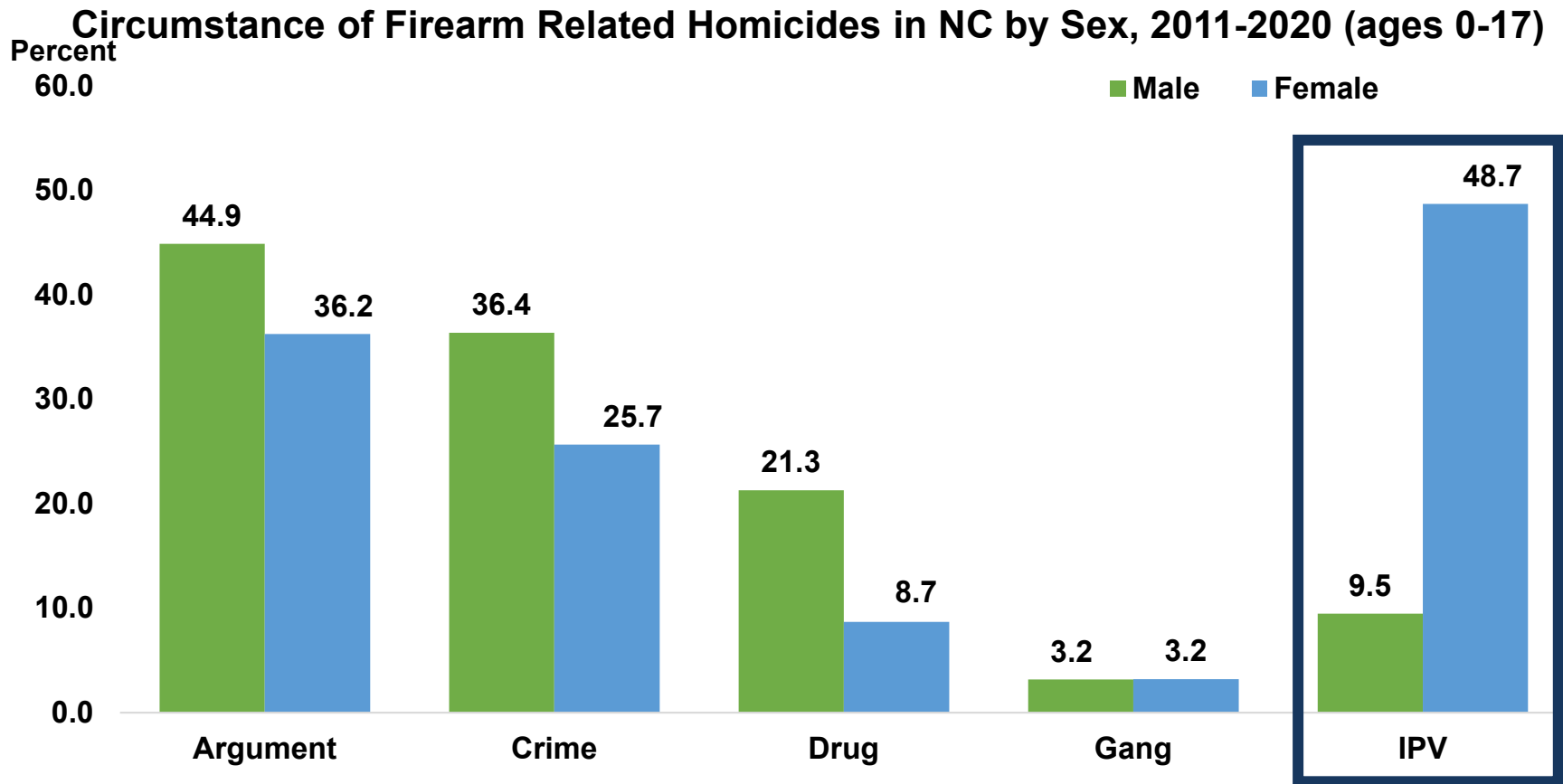
Limited to NC residents ages 10 and older
Source: NC-VDRS, 2011-2020 (downloaded Feb 20, 2023)
Analysis by Injury Epidemiology, Surveillance and Informatics (ESI) Unit



NC DEPARTMENT OF
HEALTH AND
HUMAN SERVICES
Division of Public Health

NORTH CAROLINA VIOLENT DEATH
NC VDRS
REPORTING SYSTEM

Nearly half of all firearm related female homicides are a result of intimate partner violence



Limited to NC residents ages 10 and older
Source: NC-VDRS, 2011-2020 (downloaded Feb 20, 2023)
Analysis by Injury Epidemiology, Surveillance and Informatics (ESI) Unit



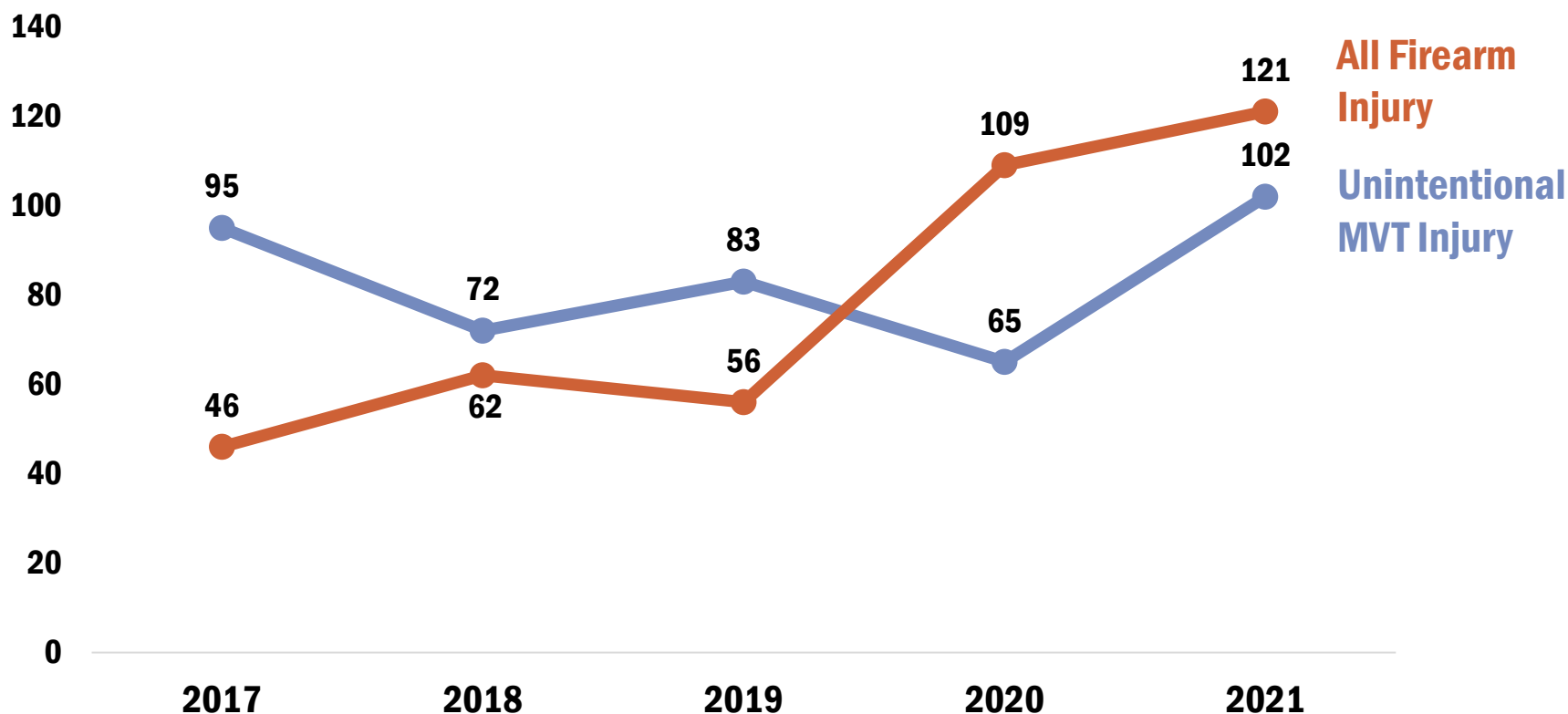
NC DEPARTMENT OF
HEALTH AND
HUMAN SERVICES
Division of Public Health

NORTH CAROLINA VIOLENT DEATH
NC VDRS
REPORTING SYSTEM

Overview- Firearm Deaths and Injuries

Child **Firearm** deaths surpassed **MVT** injury deaths in 2020 and 2021.

North Carolina Child (Ages 0-17) Motor Vehicle Traffic and Firearm Deaths, 2016-2021



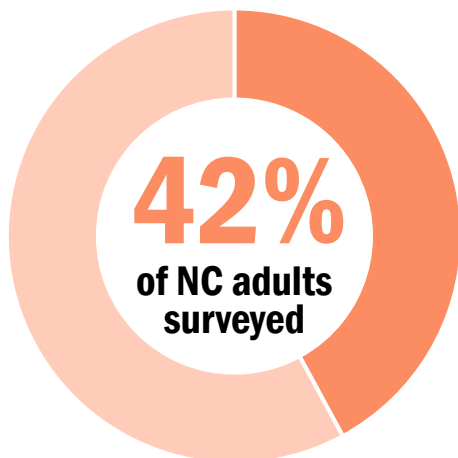
Limited to residents ages 0-17

Source: NC State Center for Health Statistics, Vital Statistics Deaths (2017-2021)

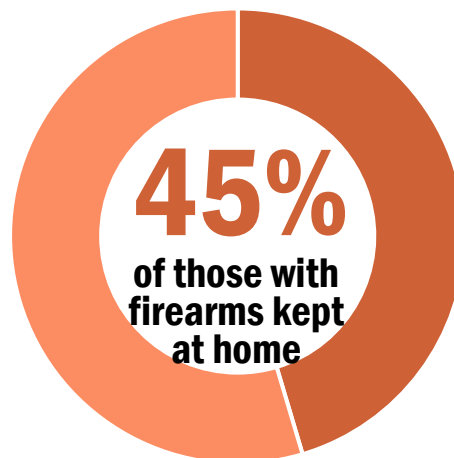
Analysis by the DPH Injury and Violence Prevention Branch, Injury Epidemiology and Surveillance, and Informatics Unit

More than 2/5 of NC adults **have a firearm in or around the home**. Over half of firearms that are stored **loaded** are also **unlocked**.

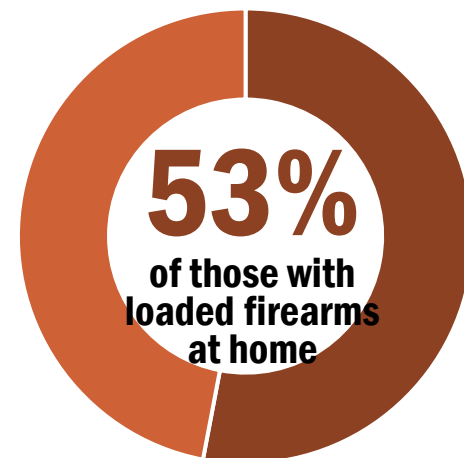
Firearms **Kept In or Around the Home**



Any of These Firearms are **Currently Loaded**



Firearms that are **Loaded and Unlocked**



High school students reported they could readily obtain a loaded firearm **within an hour**

NC BRFSS Firearm Safety Module, 2021 <https://schs.dph.ncdhhs.gov/data/brfss/2021/nc/all/topics.htm#fr>

Overview-NC-FASTER/AVERT (nonfatal firearm and violence)

NC-FASTER

Firearm Injury Surveillance Through Emergency Rooms



- **NC is one of 10 states funded** for enhanced surveillance of non-fatal firearm injuries
- **3-year award**, started September 1, 2020

STRATEGY 1

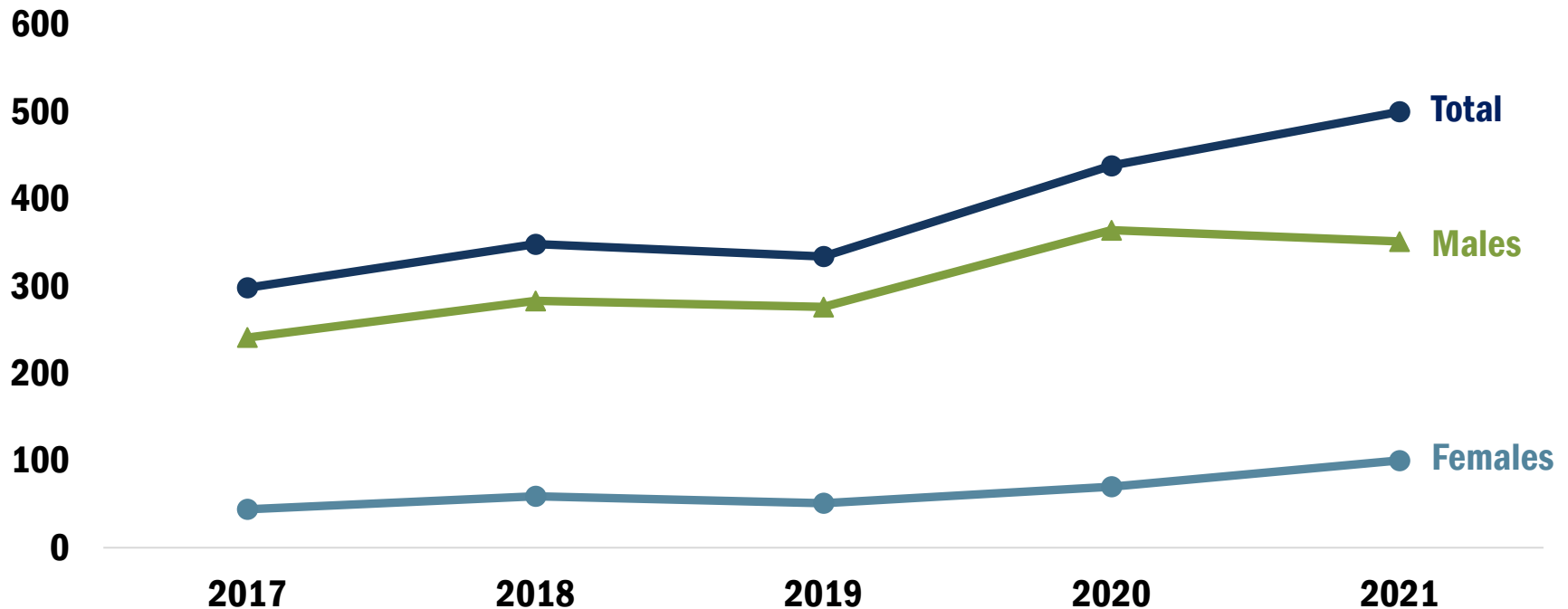
- **Increase the timeliness** of ED visits for firearm injuries reporting.
- **Increase availability** of rapid, reliable, and geographically-specific surveillance data on ED visits for nonfatal firearm injuries.
- **Improve** firearm injury syndromic **surveillance methodology**.

STRATEGY 2

- **Disseminate surveillance findings** to key stakeholders.

Child (ages 0-17) ED visits for firearm injury have increased by 71% from 2017-2021*.

Number of Child Firearm Injury ED Visits

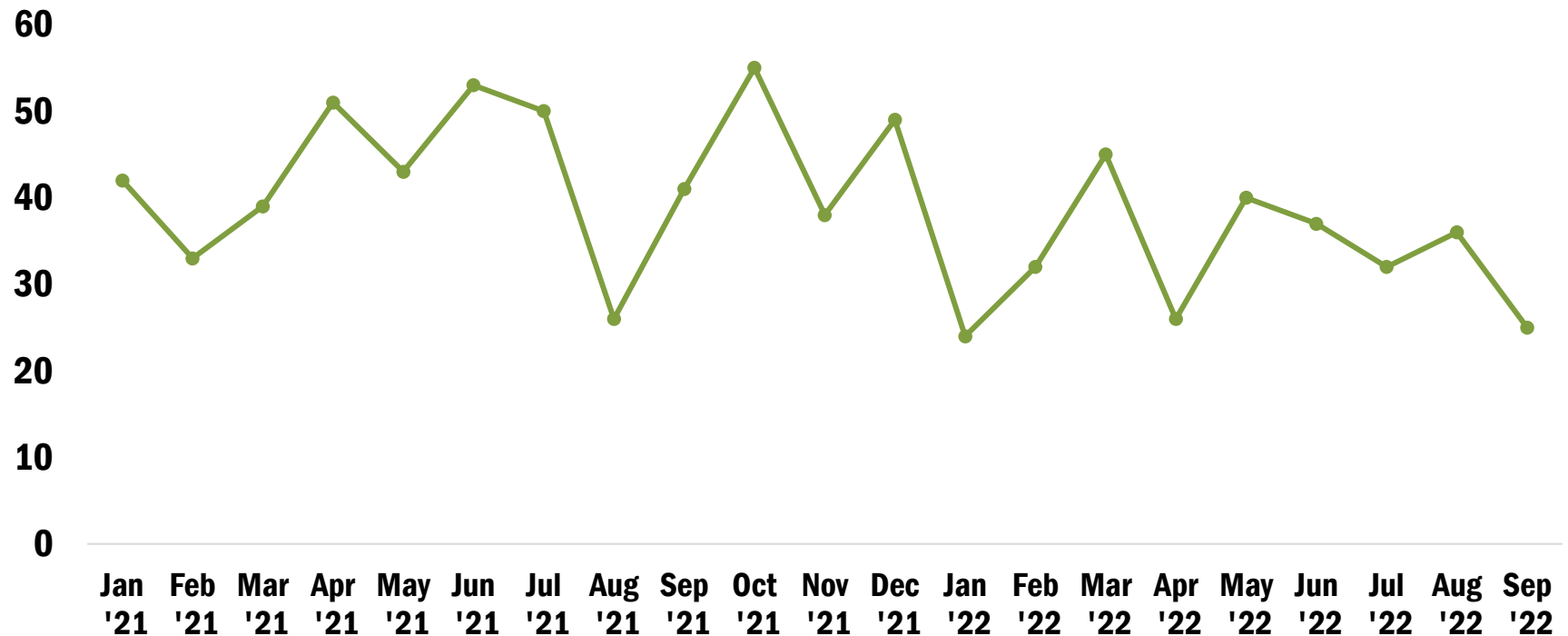


*Note: Overall ED visits among children (any cause) decreased by 29% in 2020 compared to 2019 and remained 24% lower in 2021.
Data limited to North Carolina Residents ages 0-17
Source: NC DETECT Emergency Department (ED) Visit Data, 2017-2021

Between 24 and 55 firearm injury ED visits* occur among youth 0-17 on

NC FASTER Firearm ED Visits, Ages 0-17, All intents, January 2021-September 2022

Number of Child Firearm ED Visits



*Note: NC FASTER CDC V2 All Intent Firearm ED Visits, includes free text search in addition to ICD-10-CM codes.

Data limited to North Carolina Residents ages 0-17

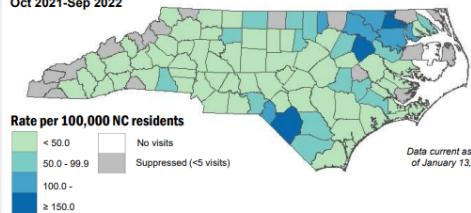
Source: NC DETECT, NC FASTER Firearm ED Visit Data, 2017-2021

NC-FASTER Data Products

Quarterly & Annual Reports

Rates of firearm-related injury ED visits were highest in Northampton, Robeson, and Vance counties.

Firearm-Related Injury ED Visit Rates by County of Residence: Oct 2021-Sep 2022



Counties with the Highest Annual Firearm-Related Injury ED Visit Rates: Oct 2021-Sep 2022

County	Count	Annual Rate†
Hertford	38	164.4
Edgecombe	81	159.4
Robeson	197	151.5
Scotland	51	147.2
Vance	62	138.6
Halifax	63	127.3
Bertie	21	112.2
Chowan	15	108.6
Northampton	20	104.8
Richmond	43	97.0
Statewide	3,808	35.9

Over half of non-suppressed counties (46/81) had annual rates lower than the state rate of 35.9 firearm-related ED visits per 100,000 residents; nine counties had rates of 100 per 100,000 residents or higher.

† Rates are calculated using the most recent 12 months of data and 2020 population estimates. Counties listed in the 'Highest Rates of Firearm-Related Injury ED Visits' table will likely change each quarter. Therefore, the counties listed this quarter cannot be generalized as the top burden counties for the year.

Preventing Firearm-Related Injuries: What Works

Prohibiting Possession for Domestic Violence Perpetrators

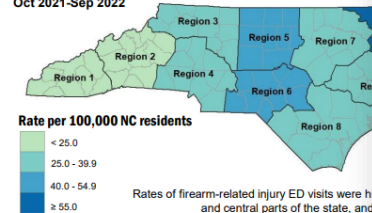
Prohibiting perpetrators of domestic violence from buying or possessing guns and ammunition has been shown to reduce intimate partner homicide by 6% to 19%.

American Psychological Association (2013)

For more information, visit <https://ncdetect.org>

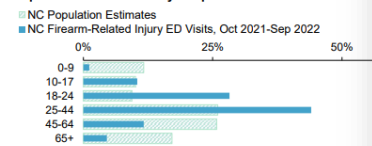
Public Health Region 9 experienced the highest related injury ED visit rates over the last 12 months.

Firearm-Related Injury ED Visit Rates by NC Public Health Region: Oct 2021-Sep 2022



NH Black residents and young adults experience a disproportionate burden of firearm-related injury ED visits.

Demographics of Firearm-Related Injury ED Visits Compared to Population Estimates: July - September 2022



18-24 and 25-44 year olds accounted for 28% and 44% of firearm-related ED visits despite representing only 9% and 26% of the population, respectively. Additionally, Non-Hispanic Black residents accounted for 60% of ED visits but only 22% of the population in the state.

Firearm-Related Emergency Department Visits in North Carolina

Quarter 3: July - September 2022

There were **849** firearm-related ED visits from Jul-Sep 2022 compared to **1,125** from Jul-Sep 2021.

Some counties and groups experienced a significant increase in firearm-related injury ED visits for July - September 2022.

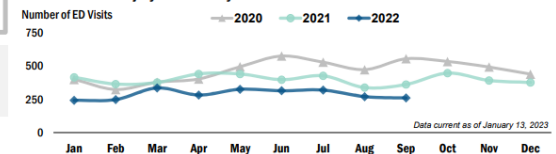
County-Level Groups with Significant Increases in Firearm-Related Injury ED Visits in Q3 2022 vs. Prior 3-Year Average

County	Group	Number of Visits	Percent Increase
Bladen	Male	8	+243%
Cleveland	Black NH	15	+137%
	Ages 25-44	10	+43%
Davidson	Total Visits	14	+31%
Forsyth	Hispanic	12	+64%
	Ages 18-24	24	+60%
Granville	Black NH	11	+230%
Rockingham	Male	15	+88%
	Total Visits	17	+70%
Rural Counties	Ages 65+	20	+28%
Surry	Ages 45-64	8	+700%
	Male	16	+380%
	Total Visits	16	+380%
	White NH	10	+275%

NH = Non-Hispanic
Note: Significant is defined as an observation count for Q3, 2022 that is > 2 standard deviations from the mean of observations for Q3 of 2019-2021. The table is limited to top 15 county-level groups with the highest percent increase from the mean. There were a total of 13 county-level groups with significant increases in firearm-related injury ED visits.

Firearm-related injury ED visits decreased slightly from July - September 2022.

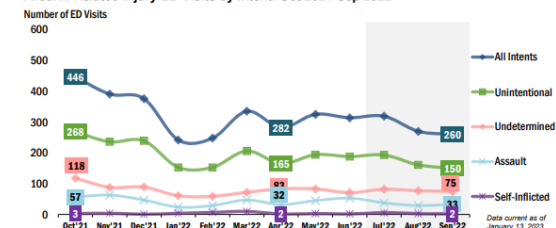
Firearm-Related Injury ED Visits by Month: 2020-2022



The number of firearm-related injury ED visits in quarter 3 remained lower than in previous years.

Most firearm-related injury ED visits (61%) from July - September 2022 were for unintentional injuries.

Firearm-Related Injury ED Visits by Intent: Oct 2021-Sep 2022



Firearm injury ED visits during the current quarter (Jul-Sep 2022) decreased across all intents.

<https://ncdetect.org/nc-faster-firearm-quarterly-reports/>

Overview-Syndromic Surveillance System (SyS)

Syndromic Surveillance – Mental/Behavioral Health

Mental health patients fill the ER, waiting weeks for help

Due to a lack of mental health community services, more patients are languishing in emergency departments — sometimes up somewhere in North Carolina.

> *Inj Prev*. 2022 Aug 3;ip-2022-044620. doi: 10.1136/ip-2022-044620. Online ahead of print.

National estimates of emergency department visits for medication-related self-harm: United States, 2016–2019

Andrew I Geller^{1,2}, Daniel C Ehlman^{3,4}, Maribeth C Lovegrove⁵, Daniel S Budnitz^{5,2}

Affiliations + expand

PMID: 35922136 DOI: 10.1136/ip-2022-044620



Hundreds of Suicidal Teens Sleep in Emergency Rooms. Every Night.

With mental psychiatric services in short supply, teens are spending days, even weeks, in hospital emergency departments awaiting the help they need.

Morbidity and Mortality Weekly Report (MMWR)

CDC



Pediatric Emergency Department Visits Before and During the COVID-19 Pandemic

Weekly / February 25, 2022



MENTAL HEALTH

New mental health data show 'unsustainable' burden on NC hospitals

Rising mental health-related emergency room visits, more involuntary commitments and longer wait times for psychiatric hospital beds are symptoms of much larger problems within the state's mental health system, health experts say.



by Taylor Knopf
August 22, 2022



ment Visits Related to Mental
8 Years, by Disorder Category† —
Care Survey, United States,

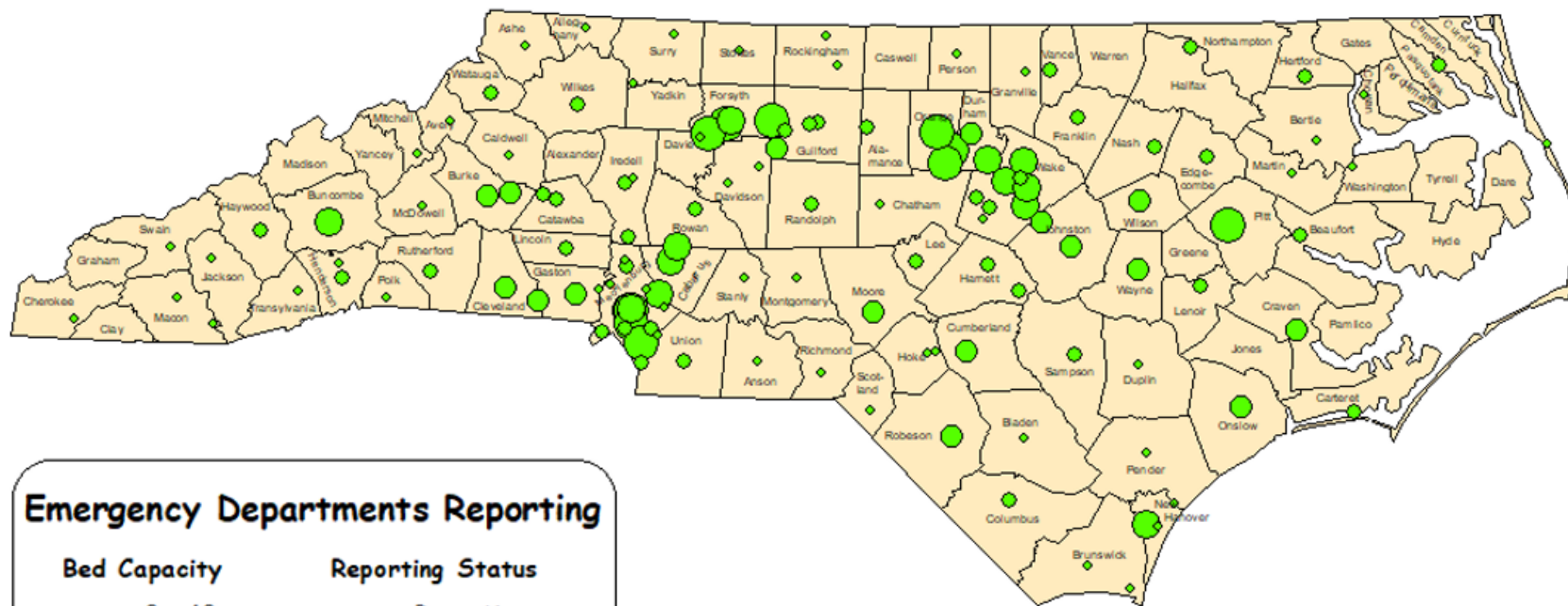
Syndromic Surveillance (SyS)

- **Using real-time data to understand what is happening to a community's health**
 - **Infectious Diseases >20 years- since 9/11 & anthrax)**
 - **Injuries (~10 year in NC but minimal until overdose)**
 - **Natural and man-made disasters (Hurricanes and winter storms)**
 - **Mass gatherings**
- **Focus is on timeliness over specificity**
- **In the U.S., the most common data source is emergency department (ED) data (limited dataset)**
- **Key words and/or ICD10-CM based**



Source: slide provided by Carolina Center for Health Informatics / NC DETECT <https://ncdetect.org>

Emergency Departments (EDs) Reporting to NC DETECT by General Bed Capacity



Emergency Departments Reporting

Bed Capacity

- ◊ 0 - 40
- 41 - 70
- 71 - 110
- 111 - 300
- more than 300

Reporting Status

- Reporting
- Test Mode
- County

- 130 civilian EDs reporting 3x/day
- NC DETECT processing & adding syndromes con-currently
- Teams systematically reviewing

Source: NC State Center for Health Statistics
Data as of March 15, 2022

SyS is already at work in NC.



Early Warning Indicators

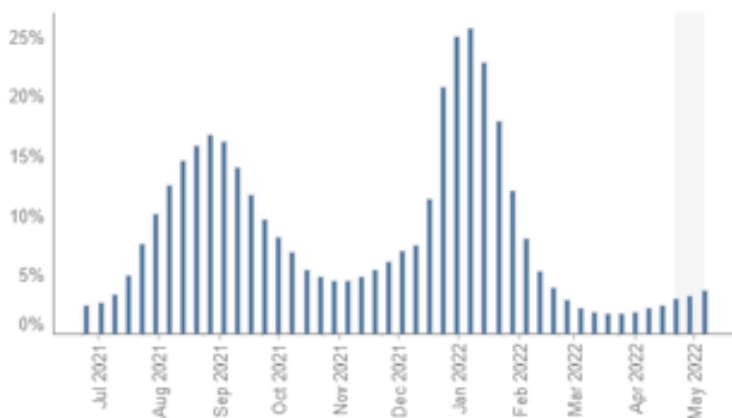
Rising levels of these can be an early sign of community spread and illness.

COVID-like illness

4% → Previous Week 3%

Emergency Room Visits for COVID Symptoms

The percentage of all emergency department visits that are for COVID-like symptoms can signal how much illness there is in a community.



Emergency department visits that are for COVID-like illnesses (CLI). [More Inf.](#)

Medication/Drug Overdose

1,081

NORTH CAROLINA EMERGENCY DEPARTMENT (ED) VISITS FOR OVERDOSE INVOLVING MEDICATIONS OR DRUGS WITH DEPENDENCY POTENTIAL: JANUARY 2022

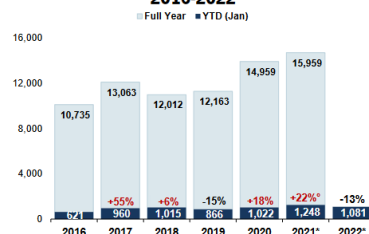
1,081 Overdose ED Visits for Med/Drugs[^] with Dependency Potential in January 2022

compared to 1,248 in January 2021

Data Source: NC DETECT. ED Syndrome: Overdose: Unintentional/ Undetermined Medication or Drug Overdose (>14<99) (ICD-9/10-CM)

[^]Report is based on initial encounter, unintentional and undetermined intent cases only, for ICD10CM overdose codes of drugs and medications with dependency potential within T40, T42, T43, T50.7, and T50.9.
Note: Report is restricted to N.C. residents between the ages 15 to 65 years.

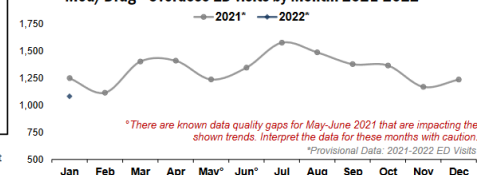
Med/Drug[^] Overdose ED visits by Year: 2016-2022*



Percent change: YTD (year to date) total compared to YTD total of previous year. *There are known data quality gaps for May-June 2021 that are impacting the shown trends. Interpret the data for these months with caution. *Provisional Data: 2021-2022 ED Visits

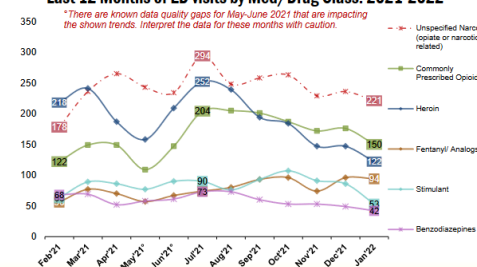
NORTH CAROLINA INJURY AND VIOLENCE PREVENTION

Med/Drug[^] Overdose ED visits by Month: 2021-2022*



*There are known data quality gaps for May-June 2021 that are impacting the shown trends. Interpret the data for these months with caution. *Provisional Data: 2021-2022 ED Visits

Last 12 Months of ED visits by Med/Drug Class: 2021-2022*



*Fentanyl/ fentanyl analogs drug category is a new ICD10CM diagnosis code as of October 2020, prior to this month, this category was a non-specific "other synthetic narcotic" code which we suspected to be predominantly fentanyl-related cases. Note: Chart does not depict all possible drug classes. Drug classes shown are not mutually exclusive. A person may have more than one drug overdose diagnosis code, therefore, a person may be represented in multiple lines in the graph above. For case definitions, go to <https://www.injuryfreenc.ncdhhs.gov/DataSurveillance/poisoning/SummaryTableforPoisoningDefinitions.pdf>

www.injuryfreenc.ncdhhs.gov

2/18/2022

Source: slide provided by Carolina Center for Health Informatics / NC DETECT <https://ncdetect.org>

NC DETECT ED Case Definitions in Development or Currently Planned

Suicide Attempts

Currently only have a code-based self-harm definition.

Categorized by behavioral health diagnostic groupings:

- mood/anxiety
- psychotic
- substance use disorder
- etc.

Cannabis-Related Harm

Especially important to **establish baselines** given potential for medically legalized cannabis in NC

Alcohol-Related Harm

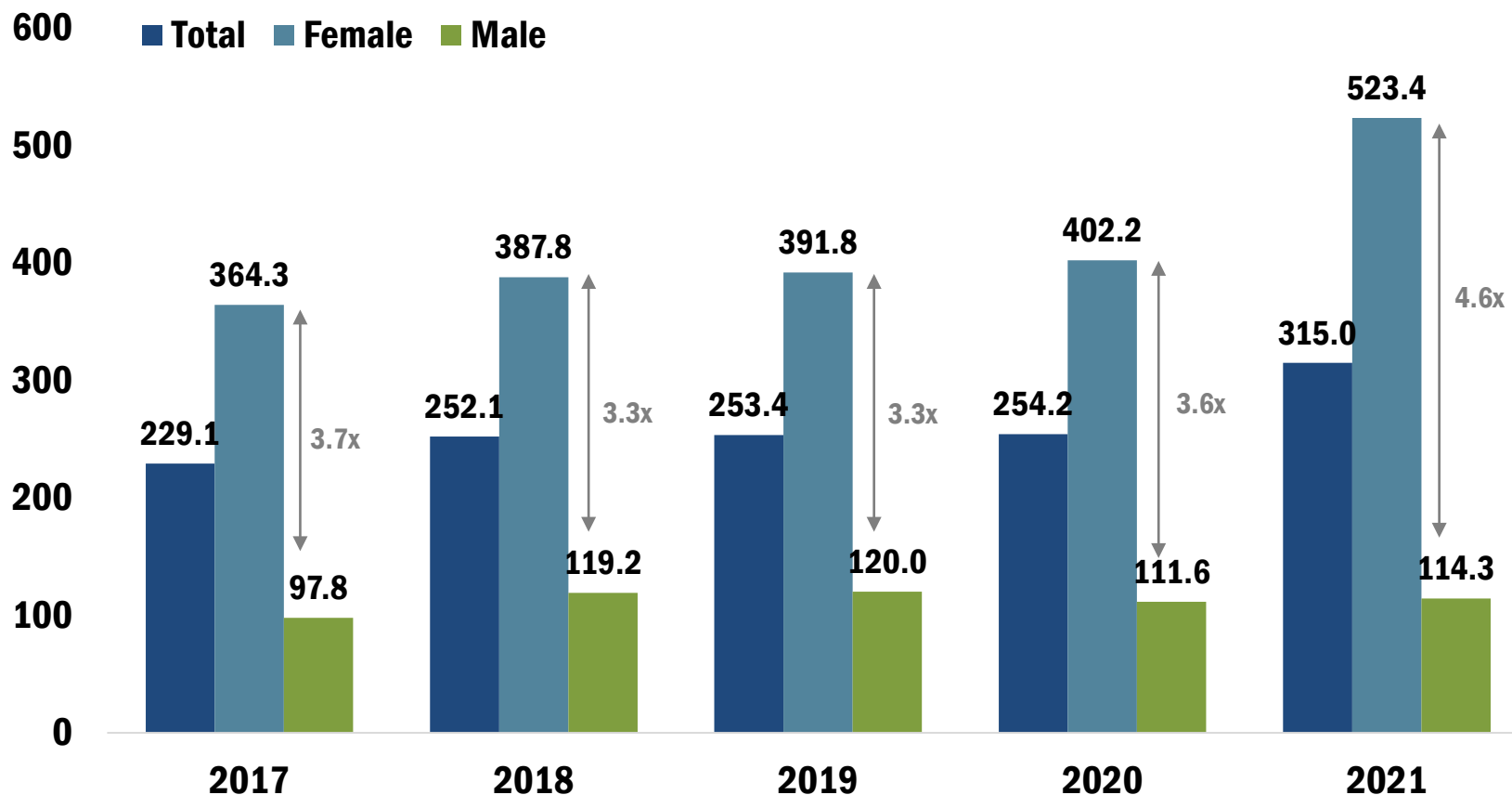
Especially important given the **increase in alcohol sales and use** during the pandemic

All three case definitions would also be categorized by age, gender, payor source, and county/region.

Self-Harm ED Visit Data

The ratio of self-harm ED visits between females and males increased in 2021

Crude Self-Harm ED Visit Rates per 100,000, Ages 10-17, 2017-2021

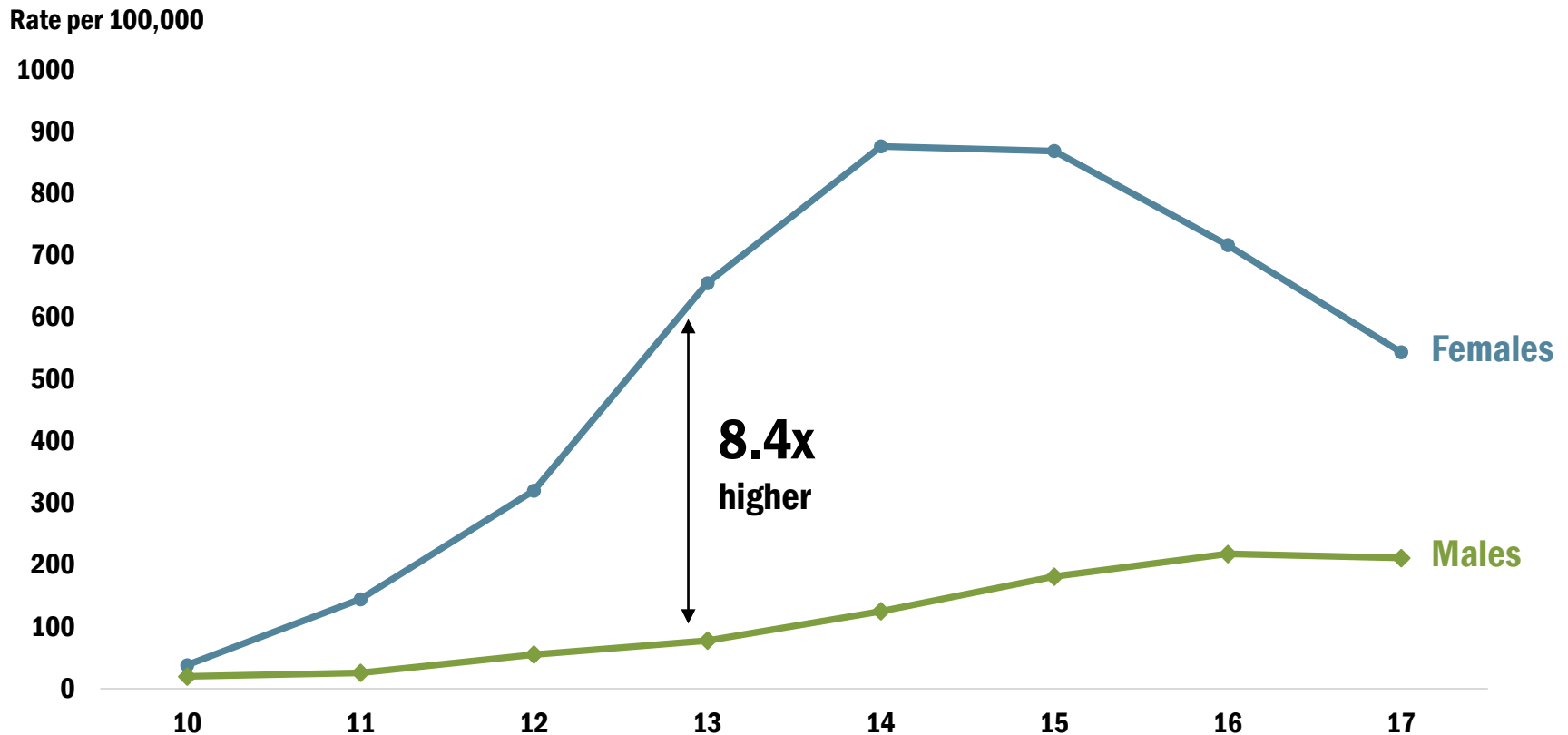


Limited to NC residents ages 0-17

Source: NC DETECT Emergency Department (ED) Visit Data, 2017-2021

Self-harm ED visit rates are 8.4x higher among 13-year-old females than males

Crude Self-Harm ED Visit Rates per 100,000, by Sex and Age, Ages 10-17, 2017-2021

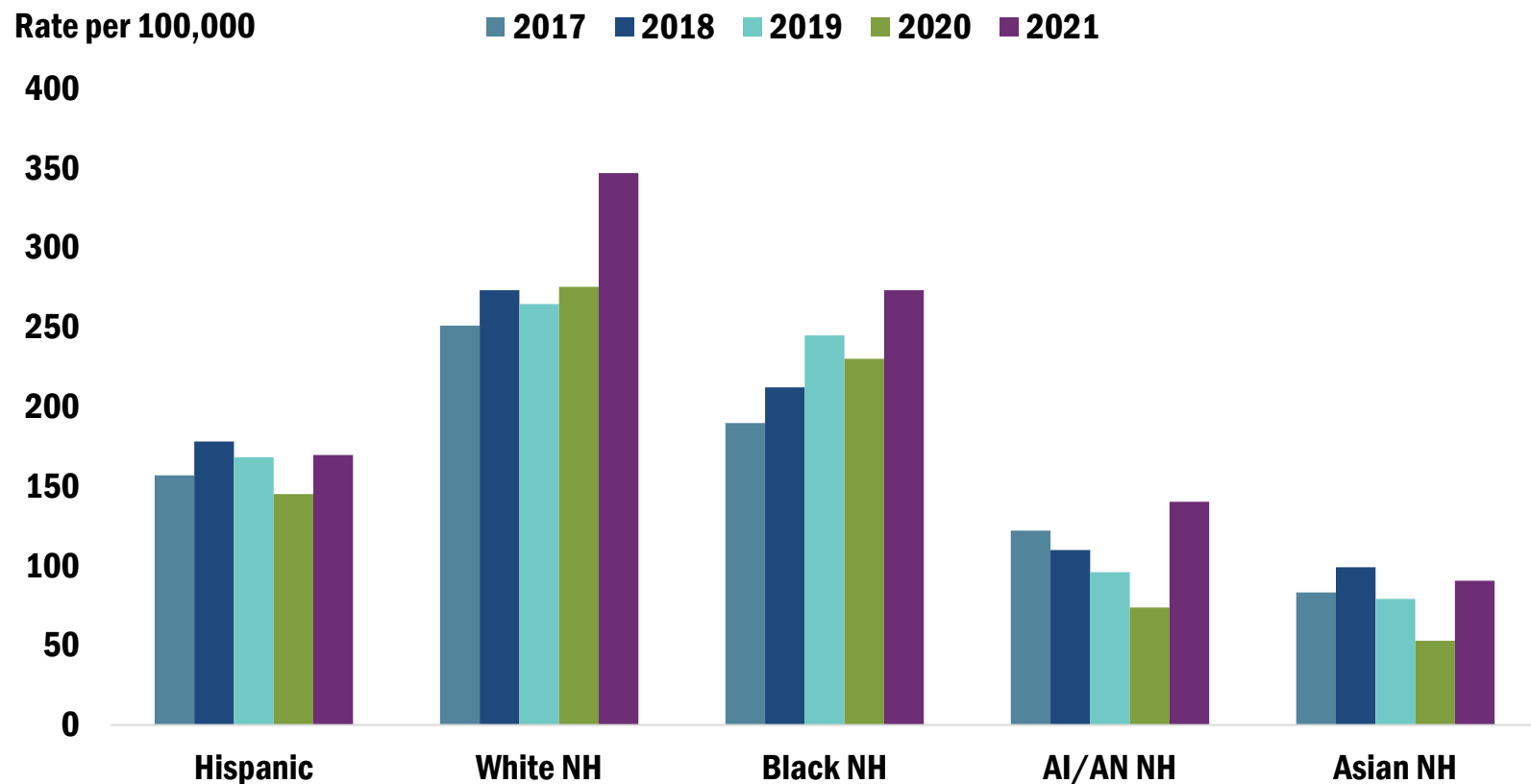


Limited to NC residents ages 0-17

Source: NC DETECT Emergency Department (ED) Visit Data, 2017-2021

Rates of self-inflicted injury increased for youth among all race/ethnicities in 2021.

Crude Self-Harm ED Visit Rates per 100,000, Ages 10-17 by Race/Ethnicity, 2019-2021



NH – Non-Hispanic

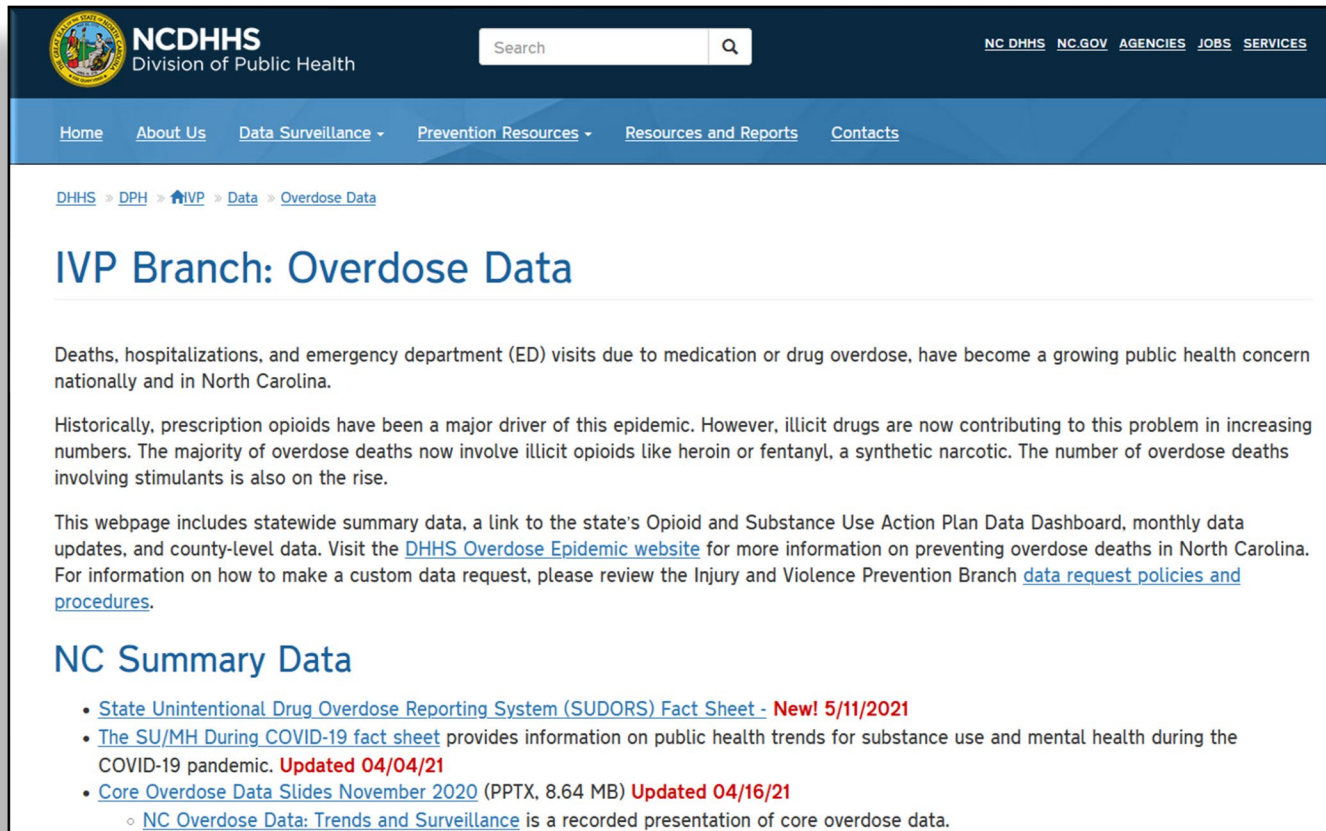
Limited to NC residents ages 0-17

Source: NC DETECT Emergency Department (ED) Visit Data, 2017-2021

Injury Surveillance and Data Resources

injuryfreenc.dph.ncdhhs.gov/DataSurveillance

Additional Resources



The screenshot shows the NCDHHS Division of Public Health website. The header includes the NCDHHS logo, a search bar, and links for NC DHHS, NC.GOV, AGENCIES, JOBS, and SERVICES. The main navigation bar has links for Home, About Us, Data Surveillance, Prevention Resources, Resources and Reports, and Contacts. The breadcrumb trail reads: DHHS > DPH > IVP > Data > Overdose Data. The page title is "IVP Branch: Overdose Data". The content includes a paragraph about the growing public health concern of medication or drug overdose, a paragraph about the historical role of prescription opioids and the current contribution of illicit drugs, and a paragraph about the data available on the webpage. The "NC Summary Data" section lists three resources: the SUDORS Fact Sheet (updated 5/11/2021), the SU/MH During COVID-19 fact sheet (updated 04/04/21), and the Core Overdose Data Slides November 2020 (updated 04/16/21). A note indicates that the Core Overdose Data Slides is a recorded presentation of core overdose data.

NCDHHS
Division of Public Health

Search

NC DHHS NC.GOV AGENCIES JOBS SERVICES

Home About Us Data Surveillance Prevention Resources Resources and Reports Contacts

DHHS > DPH > IVP > Data > Overdose Data

IVP Branch: Overdose Data

Deaths, hospitalizations, and emergency department (ED) visits due to medication or drug overdose, have become a growing public health concern nationally and in North Carolina.

Historically, prescription opioids have been a major driver of this epidemic. However, illicit drugs are now contributing to this problem in increasing numbers. The majority of overdose deaths now involve illicit opioids like heroin or fentanyl, a synthetic narcotic. The number of overdose deaths involving stimulants is also on the rise.

This webpage includes statewide summary data, a link to the state's Opioid and Substance Use Action Plan Data Dashboard, monthly data updates, and county-level data. Visit the [DHHS Overdose Epidemic website](#) for more information on preventing overdose deaths in North Carolina. For information on how to make a custom data request, please review the Injury and Violence Prevention Branch [data request policies and procedures](#).

NC Summary Data

- [State Unintentional Drug Overdose Reporting System \(SUDORS\) Fact Sheet - New! 5/11/2021](#)
- [The SU/MH During COVID-19 fact sheet](#) provides information on public health trends for substance use and mental health during the COVID-19 pandemic. **Updated 04/04/21**
- [Core Overdose Data Slides November 2020](#) (PPTX, 8.64 MB) **Updated 04/16/21**
 - [NC Overdose Data: Trends and Surveillance](#) is a recorded presentation of core overdose data.

Core Overdose
Slides

County-level
Slides

Factsheets

Deaths, ED, and
Hosp by county
and drug

SubstanceUseData@dhhs.nc.gov

Monthly Surveillance Reports

349

Suspected Overdose Deaths*, North Carolina Office of the Chief Medical Examiner (OCME) Data: August 2022

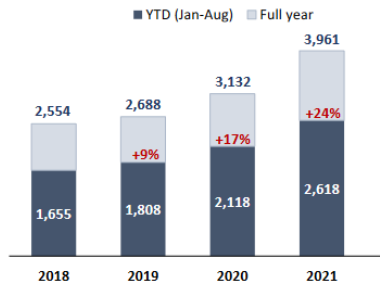
349

Suspected Overdose Deaths*, August 2022

Compared to **359** August 2021

*This category reflects an estimate of statewide non-examiner system overdose deaths. Note that some suspected overdoses may ultimately be certified poisoning deaths, but the majority become confirmed poisoning deaths.

Suspected Overdose Deaths*: 2018-2021



NC Office of the Chief Medical Examiner (OCME)

Last 24 Months of Confirmed^ & Suspected Overdose Deaths*

Time required to investigate cases accounts for lower counts of confirmed cases in recent months

Confirmed Poisonings^ Suspected Overdose Deaths*

767

NORTH CAROLINA EMERGENCY DEPARTMENT (ED) VISITS FOR OPIOID OVERDOSE: AUGUST 2022

Opioid Overdose ED Visits by Month: 2021-2022*

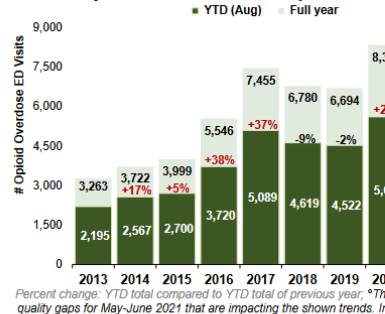
767 Opioid overdose ED visits August 2022*

Compared to **803** August 2021

Data Source: NC DETECT; ED: Custom Event: Overdose: Opioid Overdose V.2 (ICD-10-CM)

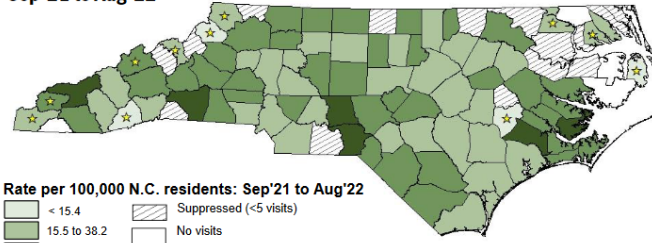
Note: Counts based on ICD-10-CM diagnosis code of an opioid overdose: T40.0 (Opium), T40.1 (Heroin), T40.2 (Other Opioid), T40.3 (Methadone), T40.4 (Other Synthetic Narcotics), and T40.6 (Other and Unspecified Narcotics).

Opioid Overdose ED Visits by Year: 2018-2021



NORTH CAROLINA INJURY AND VIOLENCE PREVENTION

Last 12 Months Opioid Overdose ED Visits Rate by County of Residence: Sep'21 to Aug'22



Highest Rates of Opioid Overdose ED visits among Counties Last 12 Months: Sep'21-Aug'22

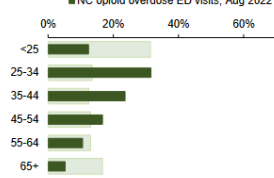
County	Count	Rate*
Jones	13	138.0
Montgomery	32	117.8
Richmond	50	111.5
Pamlico	13	102.2
Swain	14	98.1
Rutherford	64	95.5
Columbus	41	73.9
Scotland	25	71.8
Robeson	90	68.9
Burke	62	68.5
Statewide	6,158	58.7

*Please note that rates are calculated using the last 12 months of data and 2020 population estimates. Counties listed in "Highest Monthly Rates of Opioid Overdose ED visits" table will likely change each month.

Demographics of Opioid Overdose ED Visits Compared to Overall NC Population Estimates

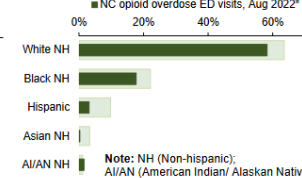
ED Visits by Age Group

NC Population Estimates
NC opioid overdose ED visits, Aug 2022*



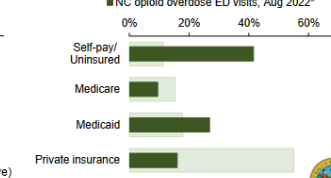
ED Visits by Race/Ethnicity

NC Population Estimates
NC opioid overdose ED visits, Aug 2022*



ED Visits by Insurance Coverage

NC Population Estimates
NC opioid overdose ED visits, Aug 2022*



Data Sources: ED Data-NC DETECT is North Carolina's statewide syndromic surveillance system. ED visit data from NC DETECT are provisional and should not be considered final. For training on NC DETECT, contact amy_lising@med.unc.edu; Population Data-U.S. Census Bureau, <http://quickfacts.census.gov>; Insurance coverage Data-Kaiser Family Foundation estimates based on the Census Bureau's American Community Survey, 2008-2019, www.kff.org/other/state-indicator/total-population.

Note: Self-pay ED visits are compared to the uninsured overall population estimate category. *Provisional Data: 2021-2022 ED Visits

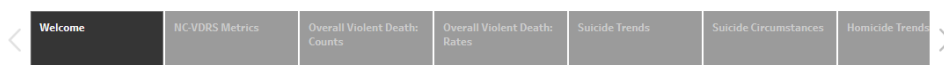
NORTH CAROLINA INJURY AND VIOLENCE PREVENTION

www.injuryfreenc.ncdhhs.gov

9/13/2022

NC-VDRS Data Dashboard

Use your phone and open our dashboard!



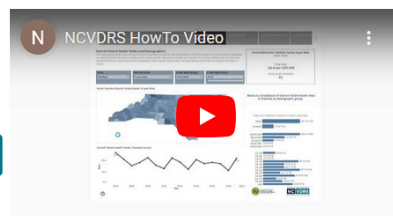
NCDHHS **NC Injury and Violence Prevention Branch** **NC Violent Death Reporting System**

Each year, **50,000 Americans die from violence**. Homicide and suicide are, respectively, the **third and fourth leading causes of death** for everyone in the United States under age 40, except infants. Overall, almost twice as many people in the United States die from suicide than homicide.

Most communities lack the information they need to understand and ultimately prevent these violent deaths. Responding to the need for better, more complete information, the U.S. Centers for Disease Control and Prevention established the National Violent Death Reporting System (NVDRS) in 2002. Participation in NVDRS is through competitive cooperative agreements. North Carolina was awarded funding in August 2003. Today, NVDRS is implemented in all 50 states, the District of Columbia, and Puerto Rico.

The **North Carolina Violent Death Reporting System (NC-VDRS)** is a CDC-funded statewide surveillance system that collects detailed information on deaths that occur in North Carolina resulting from violence: homicide, suicide, unintentional firearm deaths, legal intervention, and deaths for which intent could not be determined. NC-VDRS is a multi-source incident based system that **gathers information from death certificates, medical examiner reports, and law enforcement reports**. The goal of this system is to aid researchers, legislators, and community interest groups in the development of public health prevention strategies to reduce violent deaths. NC-VDRS began collecting data in January 2004.

Check out the following 'How-To' video to learn about the different ways you can use the dashboard, navigate its features, and apply the information to best meet your needs.



FAQ and User Guide
Click on the icon below to access the FAQ and user guide.

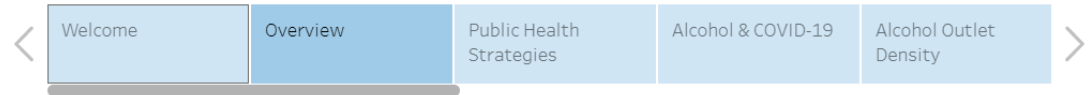


Questions? Contact us at beinjuryfreenc@dhhs.nc.gov
State of North Carolina • Department of Health and Human Services
Division of Public Health • Chronic Disease and Injury Section • Injury and Violence Prevention Branch
www.ncdhhs.gov • publichealth.nc.gov • www.injuryfreenc.ncdhhs.gov
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Alcohol Dashboard

Alcohol & the Public's Health in North Carolina







Impact of Excessive Alcohol Use on North Carolina

North Carolina has a lower prevalence of excessive drinking

alcohol remains an ss the state. In North ng is **trending upward** system, 2012-2020). enters for Disease y drinking, any drinking r than age 21." In North orted binge drinking in rting heavy drinking in ol consumption is vor, violence, suicide, d is the third leading arolina. **Excessive pendence.** 9 in 10 adults ot alcohol-dependent

What is Excessive Drinking?

Excessive drinking is defined by the Center for Disease Control (CDC) as "binge drinking, heavy drinking, any drinking by pregnant women or people younger than age 21."

		
Binge Drinking 	4+ drinks	5+ drinks
Heavy Drinking 	8+ drinks per week	15+ drinks per week



Binge drinking is associated with short-term consequences, such as fatal car crashes and overdose.
Heavy drinking is associated with deaths due to illness caused by long-term alcohol misuse, such as liver cirrhosis.

Adult Alcohol Consumption

Behavioral Risk Factor Surveillance System (BRFSS)

Adult alcohol consumption is an important public health concern. Alcohol use can reduce individual lifespan and at the community level, impact adult productivity and unemployment, impacting community health overall.

26% of North Carolinian adults who drink report binge drinking in the last 30 days

Binge drinking is the most costly and common kind of excessive drinking behavior. Binge drinking can lead to unintentional injury, violence, poor pregnancy outcomes, and death.

49% of adults in NC report having at least 1 drink in the last 30 days

26% of all adult drinkers in NC report report *binge drinking* in the last 30 days

12% of all adult drinkers in the last 30 days report *heavy drinking*

(BRFSS 2020)

Questions? Contact us at SubstanceUseData@dhhs.nc.gov
State of North Carolina • Department of Health and Human Services
Division of Public Health • Injury and Violence Prevention Branch
<http://www.ncdhhs.gov> • <https://publichealth.nc.gov/> • <https://www.injuryfreenc.ncdhhs.gov/>
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NC DEPARTMENT OF
**HEALTH AND
HUMAN SERVICES**
Division of Public Health

https://dashboards.ncdhhs.gov/t/DPH/views/AlcoholDashboard_2020Update_04042021/Story?%3Aembed=y&%3AisGuestRedirectFromVizportal=y

Where to find data on suicide/self-harm?

- **NC Injury and Violence Prevention Branch [Suicide Data Page](#)**
 - NC-VDRS Annual Report
 - NC-VDRFS Fact Sheets
 - [NC-VDRS Data Dashboard](#)
 - NC DETECT Self-Inflicted Injury Report
- **State Center for Health Statistics (SCHS) Death Certificate Data**
 - [NC Health Data Query System](#)
- **CDC WISQARS – [Fatal Injury and Violence Data](#)**

IVPB Data Support now available!

Book time with an IVPB epidemiologist to discuss available data products, to talk through custom data requests, or for general data questions.

- [IVPB Data Request Policy](#)

- [IVPB Data Support Bookings](#)



IVPB Data Support

✓ SELECT A SERVICE

<p>Overdose Data Support <input type="radio"/></p> <p>Book time with Mary Beth to discuss overd... Read more</p> <p>30 minutes </p>	<p>Alcohol Use & Related Harms Data Support <input type="radio"/></p> <p>Book time with Mary Beth to discuss alcoho... Read more</p> <p>30 minutes </p>
<p>General Injury Data Support <input type="radio"/></p> <p>Book time with Shana to discuss general inj... Read more</p> <p>30 minutes </p>	<p>Suicide and Firearm Data Support <input type="radio"/></p> <p>Book time with Shana to discuss suicide an... Read more</p> <p>30 minutes </p>

Thx!

Scott Proescholdbell

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www.injuryfreenc.ncdhhs.gov