Dive into Data: Trends, Access, and Review Integration

Breakout session  #4
Child Fatality Prevention System Summit
March 30, 2022
A Deep Dive into Child Death Data

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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

Source: NC State Center for Health Statistics
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

Source: NC State Center for Health Statistics
1,360 Child Deaths = 76 classrooms of children lost in North Carolina in 2021

*Estimated 18 children per class: https://www.ncleg.net/enactedlegislation/statutes/pdf/bysection/chapter_115c/gs_115c-301.pdf
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

2002-2021:
US rate decreased **23%**
NC rate decreased **17%**

Source: NC State Center for Health Statistics & CDC/National Center for Health Statistics
North Carolina’s neonatal death rates are decreasing at a faster pace than postneonatal death rates

*Neonatal*=< 28 days  *Postneonatal*= >=28 days

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

- **Neonatal decreased 23%**
- **Postneonatal decreased 4%**

Source: NC State Center for Health Statistics
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

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<td>12.1</td>
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<td>5.8</td>
<td>5.1</td>
</tr>
</tbody>
</table>

* 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.

Source: NC State Center for Health Statistics

* NH = Non-Hispanic.
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.

Source: NC State Center for Health Statistics

* Ratio of Non-Hispanic Black to Non-Hispanic White (Single Race) Infant Mortality Rates
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

% Preterm (< 37 weeks gestation)

- NH White: 9.6
- NH Black or African American: 14.8
- NH American Indian/Alaskan Native: 12.3
- NH Asian or Pacific Islander: 10.2
- NH Multirace: 10.0
- Hispanic: 10.0

% Low Birth Weight (< 5 lbs 8 ozs)

- NH White: 7.3
- NH Black or African American: 15.5
- NH American Indian/Alaskan Native: 11.4
- NH Asian or Pacific Islander: 9.1
- NH Multirace: 9.4
- Hispanic: 8.1

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

Source: NC State Center for Health Statistics (SCHS)
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**

<table>
<thead>
<tr>
<th>Year</th>
<th>US Rate</th>
<th>NC Rate</th>
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<tr>
<td>2021</td>
<td>22.5</td>
<td>24.7</td>
</tr>
</tbody>
</table>

2002 – 2021:
- NC rate declined **13%**
- US rate declined **16%**

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Ages 1-4</th>
<th>Ages 5-9</th>
<th>Ages 10-14</th>
<th>Ages 15-17</th>
<th>(Exc. Infants) Ages 1-17</th>
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<tbody>
<tr>
<td>2012</td>
<td>26.6</td>
<td>12.0</td>
<td>15.9</td>
<td>38.3</td>
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<tr>
<td>2013</td>
<td>28.0</td>
<td>13.0</td>
<td>15.1</td>
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<td>21.3</td>
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<td>2014</td>
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<td>2015</td>
<td>31.7</td>
<td>11.9</td>
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<tr>
<td>2016</td>
<td>26.0</td>
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<td>16.4</td>
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<td>2017</td>
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<td>25.0</td>
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<td>17.5</td>
<td>56.4</td>
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</table>

Source: NC State Center for Health Statistics
Non-Hispanic Black & American Indian children consistently have higher mortality rates compared to other groups.

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

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
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<tbody>
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<td>48.0</td>
<td>50.2</td>
<td>47.5</td>
<td>43.0</td>
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<td>40.6</td>
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<td>45.1</td>
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<tr>
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<td>93.8</td>
<td>101.2</td>
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<td>99.0</td>
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<td>100.8</td>
<td>98.3</td>
<td>106.4</td>
<td>61.3</td>
<td>73.6</td>
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<tr>
<td>NH Asian/P.I.</td>
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<td>34.9</td>
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<td>37.9</td>
<td>44.2</td>
<td>42.5</td>
<td>46.9</td>
</tr>
</tbody>
</table>

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.

Source: NC State Center for Health Statistics
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)*

- Infants: 60%
- 1 to 4: 9%
- 5 to 9: 5%
- 10 to 14: 9%
- 15 to 17: 17%

Source: NC State Center for Health Statistics
Birth Defects are the leading cause of infant death in North Carolina in 2021, followed by deaths of undetermined cause.

*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)

- Motor vehicle injuries: 104 deaths
- Homicide: 89 deaths
- Other Unintentional injuries: 72 deaths
- Suicide: 62 deaths
- Cancer: 41 deaths
- Congenital anomalies (birth defects): 25 deaths
- Diseases of the heart: 16 deaths
- COVID-19: 14 deaths
- Chronic lower respiratory diseases: 6 deaths
- Pneumonia & influenza: 5 deaths

* Residual (all other causes) = 106 deaths

Source: NC State Center for Health Statistics
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

<table>
<thead>
<tr>
<th>Year</th>
<th>Birth Defects</th>
<th>Perinatal Conditions</th>
<th>Medical Conditions/Illnesses</th>
<th>Motor Vehicle Injuries</th>
<th>Other Unintentional Injuries</th>
<th>Homicide</th>
<th>Suicide</th>
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<tr>
<td>2012</td>
<td>9.0</td>
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<td>2013</td>
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<td>5.0</td>
<td>4.0</td>
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Source: NC State Center for Health Statistics
*Deaths per 100,000 Resident Children Ages 0 to 17*
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*

Deaths per 100,000 Children Ages 10 to 17

<table>
<thead>
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<th>Year</th>
<th>US</th>
<th>NC</th>
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<td>2002</td>
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<td>2021</td>
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</tbody>
</table>

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

Source: NC State Center for Health Statistics & National Center for Health Statistics
Suicides have been rising among NC children ages 10 to 17 over the last decade, with older teens experiencing the largest increase.

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**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

*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

<table>
<thead>
<tr>
<th>Year</th>
<th>Ages 15-17</th>
<th>Ages 10-14</th>
<th>Ages 5-9</th>
<th>Ages 0-4</th>
<th>Infants</th>
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<td>11</td>
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<td>2021</td>
<td>58</td>
<td>10</td>
<td>7</td>
<td>14</td>
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</table>

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

Source: NC State Center for Health Statistics
Firearm-related death rates have increased substantially in North Carolina in the last two years.
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

<table>
<thead>
<tr>
<th>Year</th>
<th>Rate per 100,000</th>
</tr>
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<tr>
<td>2012</td>
<td>6.7</td>
</tr>
<tr>
<td>2013</td>
<td>9.0</td>
</tr>
<tr>
<td>2014</td>
<td>8.1</td>
</tr>
<tr>
<td>2015</td>
<td>5.6</td>
</tr>
<tr>
<td>2016</td>
<td>9.3</td>
</tr>
<tr>
<td>2017</td>
<td>6.7</td>
</tr>
<tr>
<td>2018</td>
<td>10.8</td>
</tr>
<tr>
<td>2019</td>
<td>8.6</td>
</tr>
<tr>
<td>2020</td>
<td>16.8</td>
</tr>
<tr>
<td>2021</td>
<td>21.5</td>
</tr>
</tbody>
</table>

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

Source: NC State Center for Health Statistics & National Center for Health Statistics
Geographic Patterns in Infant & Child Mortality
North Carolina
Infant Mortality Rates by Perinatal Care Regions (PCR)
2021

PCR II Northwestern
N = 192

PCR IV Northeastern
N = 165

PCR VI Eastern
N = 146

PCR I Western
N = 43

PCR III Southwestern
N = 136

PCR V Southeastern
N = 138

Rate per 1,000 Live Births
- 5.3
- 5.4 - 6.0
- 6.1 - 7.7
- 7.8 - 8.6
- County Boundary

State Center for Health Statistics
Geographic Patterns in Social Determinants of Health in North Carolina
North Carolina
2020 Estimated Percent Population Below Poverty by Perinatal Care Regions (PCR)

Percent
- 11.2 - 11.3
- 11.4 - 13.3
- 13.4 - 15.1
- 15.2 - 17.7

County Boundary

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 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)


State Center for Health Statistics
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/

Questions?

Contact:

Kathleen Jones-Vessey
kathleen.jones-vessey@dhhs.nc.gov
Injury Surveillance Overview

NC Child Fatality Prevention Summit

Scott Proeschooldbell, 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
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.

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

For every 1 child injury death from 2017-2021, there were 10 hospitalizations and 554 ED visits
Leading Causes of Injury Hospitalizations: NC Residents, Ages 0-17, 2017-2021

- Fall - Unintentional: 2,883
- Motor Vehicle-Traffic (MVT) - Unintentional: 2,532
- Poisoning - Self-Inflicted: 2,380
- Fire/Burn - Unintentional: 1,734
- Other Specified/Classifiable - Assault: 1,433
- Unspecified - Unintentional: 1,216
- Poisoning - Unintentional: 1,210
- Other Specified/Classifiable - Unintentional: 626
- Struck By/Against - Unintentional: 493
- Motor Vehicle-Nontraffic - Unintentional: 483
- Other Injury Mechanism-Intent*: 3,346

Total Injury: 16,031
- Unintentional: 12,209
- Self-Inflicted: 2,570
- Assault: 1,840
- Undetermined: 238
- Legal Intervention: 6

* 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

No Injury Mechanism - Intent Determined: 259,441
- Fall - Unintentional: 175,732
- Struck By/Against - Unintentional: 80,953
- MVT - Unintentional: 80,885
- Unspecified - Unintentional: 71,394
- Natural/Environmental - Unintentional: 52,141
- Other Specified/Classifiable - Unintentional: 48,402
- Cut/Pierce - Unintentional: 26,626
- Overexertion - Unintentional: 19,127
- Poisoning - Unintentional: 15,109
- Other Injury Mechanism - Intent*: 69,896

Total Injury: 867,388
- Unintentional: 572,721
- Assault: 20,672
- Self-Inflicted: 14,084
- Undetermined: 3,851
- Legal Intervention: 65

* Other includes several smaller defined causes of injury.
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**

<table>
<thead>
<tr>
<th>Rank</th>
<th>Leading Causes of Injury Death 2016 to 2020 ORANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pedestrian Other - Unintentional</td>
</tr>
<tr>
<td>2</td>
<td>Unspecified - Assault; Suffocation - Unintentional; Suffocation - Undetermined; Suffocation - Self-Inflicted; Other Transport - Unintentional; MVT - Unintentional; Firearm - Self-Inflicted; Drowning/Submersion - Assault; Cut/Pierce - Assault</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rank</th>
<th>Leading Causes of Injury Hospitalization 2016 to 2020 ORANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fall - Unintentional</td>
</tr>
<tr>
<td>2</td>
<td>Poisoning - Self-Inflicted</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rank</th>
<th>Leading Causes of Injury ED Visits 2016 to 2020 ORANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No Mechanism or Intent Recorded</td>
</tr>
<tr>
<td>2</td>
<td>Fall - Unintentional</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rank</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Fire/Burn - Unintentional</td>
</tr>
<tr>
<td>4</td>
<td>MVT - Unintentional</td>
</tr>
<tr>
<td>5</td>
<td>Other Specified/Classifiable - Assault</td>
</tr>
</tbody>
</table>

### Top 5 Leading Causes of Injury Hospitalization 2016 to 2020 ORANGE

<table>
<thead>
<tr>
<th>Rank</th>
<th>Cause</th>
</tr>
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<td>Poisoning - Self-Inflicted</td>
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</tbody>
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</tr>
<tr>
<td>5</td>
<td>Other Specified/Classifiable - Assault</td>
</tr>
</tbody>
</table>

### Leading Causes of Injury ED Visits 2016 to 2020 ORANGE

<table>
<thead>
<tr>
<th>Rank</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No Mechanism or Intent Recorded</td>
</tr>
<tr>
<td>2</td>
<td>Fall - Unintentional</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rank</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>MVT - Unintentional</td>
</tr>
<tr>
<td>4</td>
<td>Other Specified/Classifiable - Unintentional</td>
</tr>
<tr>
<td>5</td>
<td>Natural/Environmental - Unintentional</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TOTAL</th>
<th>7,941</th>
</tr>
</thead>
</table>

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

<table>
<thead>
<tr>
<th>Demographic Group</th>
<th>Rate per 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>702.3</td>
</tr>
<tr>
<td>Female</td>
<td>758.3</td>
</tr>
<tr>
<td>Male</td>
<td>642.9</td>
</tr>
<tr>
<td>&lt;1</td>
<td>557.4</td>
</tr>
<tr>
<td>1-4</td>
<td>533.5</td>
</tr>
<tr>
<td>5-9</td>
<td>583.3</td>
</tr>
<tr>
<td>10-14</td>
<td>597.1</td>
</tr>
<tr>
<td>15-17</td>
<td>1,302.5</td>
</tr>
<tr>
<td>Hispanic White*</td>
<td>500.8</td>
</tr>
<tr>
<td>Black<em>American Indian</em></td>
<td>528.3</td>
</tr>
</tbody>
</table>

* Limited to NC residents ages 0-17
Source: NC DETECT Emergency Department (ED) Visit Data, 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)

Percent
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0

Current
Depressed
Mood

Current
Mental
Problem

Current
Mental
Treatment

History of
Suicide
Attempt(s)

Left a Suicide
Note

Disclosed
Intent

Physical
Health
Problem

Male

Female

35.7
41.5
33.0
8.2
27.3
27.5
28.7

36.1
61.3
49.6
19.3
36.2
26.7
23.9

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

Circumstance of Firearm Related Homicides in NC by Sex, 2011-2020 (ages 0-17)

- **Argument**: 44.9% (Male) vs. 36.2% (Female)
- **Crime**: 36.4% (Male) vs. 25.7% (Female)
- **Drug**: 21.3% (Male) vs. 8.7% (Female)
- **Gang**: 3.2% (Male) vs. 3.2% (Female)
- **IPV**: 48.7% (Female)

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
Overview- Firearm Deaths and Injuries
Child **Firearm** deaths surpassed **MVT injury** deaths in 2020 and 2021.


<table>
<thead>
<tr>
<th>Year</th>
<th>All Firearm Injury</th>
<th>Unintentional MVT Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>95</td>
<td>46</td>
</tr>
<tr>
<td>2018</td>
<td>72</td>
<td>62</td>
</tr>
<tr>
<td>2019</td>
<td>83</td>
<td>56</td>
</tr>
<tr>
<td>2020</td>
<td>109</td>
<td>65</td>
</tr>
<tr>
<td>2021</td>
<td>121</td>
<td>102</td>
</tr>
</tbody>
</table>

Limited to residents ages 0-17

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

- 42% of NC adults surveyed

Any of These Firearms are Currently Loaded

- 45% of those with firearms kept at home

Firearms that are Loaded and Unlocked

- 53% of those with loaded firearms at home

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](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

<table>
<thead>
<tr>
<th>STRATEGY 1</th>
<th>STRATEGY 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Increase the timeliness of ED visits for firearm injuries reporting.</td>
<td>• Disseminate surveillance findings to key stakeholders.</td>
</tr>
<tr>
<td>• Increase availability of rapid, reliable, and geographically-specific surveillance data on ED visits for nonfatal firearm injuries.</td>
<td></td>
</tr>
<tr>
<td>• Improve firearm injury syndromic surveillance methodology.</td>
<td></td>
</tr>
</tbody>
</table>
Child (ages 0-17) ED visits for firearm injury have increased by 71% from 2017-2021*.

*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.

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

NH Black residents and young adults experience a disproportionate burden of firearm-related injuries.

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 8% to 19%.

American Psychological Association (2013)
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 surrounded by suicide notes.

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

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

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.

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

Weekly / February 25, 2022

Morbidity and Mortality Weekly Report (MMWR)
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

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

Source: NC State Center for Health Statistics
Data as of March 15, 2022
SyS is already at work in NC.

COVID-like illness

Medication/Drug Overdose

Source: slide provided by Carolina Center for Health Informatics / NC DETECT https://ncdetect.org
### NC DETECT ED Case Definitions in Development or Currently Planned

<table>
<thead>
<tr>
<th>Suicide Attempts</th>
<th>Cannabis-Related Harm</th>
<th>Alcohol-Related Harm</th>
</tr>
</thead>
</table>
| Currently only have a code-based self-harm definition. Categorized by behavioral health diagnostic groupings:  
  • mood/anxiety  
  • psychotic  
  • substance use disorder  
  • etc. | Especially important to establish baselines given potential for medically legalized cannabis in NC | 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

Rate per 100,000

2017  2018  2019  2020  2021

Hispanic  White NH  Black NH  AI/AN NH  Asian NH

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

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

Compared to 359 August 2022

*This category reflects an estimate of statewide opioid-related poisoning deaths. Note that some suspected overdoses may ultimately be certified as poisoning deaths, but the majority become confirmed poisoning deaths.

767 Opioid overdose ED visits August 2022*

Compared to 803 August 2021

Opioid Overdose ED Visits by Year: 2018-2022

Percent change: YTD (Jan-Aug) vs Fall year

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

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

ED Visits by Age Group

ED Visits by Race/Ethnicity

ED Visits by Insurance Coverage

Note: counties listed in "Highest Monthly Rates of Opioid Overdose ED visits" table will likely change each month

Data Sources: NC Data Detectors, NC Injury Data System
NC-VDRS Data Dashboard

Use your phone and open our dashboard!

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.
Alcohol Dashboard

Impact of Excessive Alcohol Use on North Carolina

North Carolina has a lower prevalence of excessive drinking alcohol remains an issue the state. In North Carolina (trending upward system, 2012-2020), excessive drinking, any drinking or age 21. In North Carolina, binge drinking is the third leading cause of death (2012-2020). Wet 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.

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

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

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

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

(19520)

Questions? Contact us at SubstanceUseData@dhhs.nc.gov

Alcohol Dashboard

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 – [Fata 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
Thx!

Scott Proescholdbell
Scott.Proescholdbell@dhhs.nc.gov

www.injuryfreenc.ncdhhs.gov