Alcohol and Violent Death: The Role of Alcohol in Homicides and Suicides in North Carolina

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Purpose
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The purpose of this study is to gain a better understanding of the role that alcohol plays in violent death in North Carolina by describing situations where alcohol was involved in the death and to examine more closely victims with BACs at or above 0.08%.
Background
NC-VDRS has collected data on over **12,500** violent deaths since 2004.

The role that alcohol plays in violent death continues to be studied and characterized, but has been identified as a risk factor for:

- Homicide
- Intimate partner violence
- Sexual Violence
- Suicide
- Youth Violence

Binge-drinking and heavy drinking have been identified by the CDC as being more likely to contribute to violence.
Excessive Consumption of Alcohol in North Carolina

- Among adults, excessive alcohol consumption includes binge-drinking and heavy drinking.
  - In 2010, the overall prevalence of binge-drinking in North Carolina was 11.3%, one of the lowest in the U.S.
    - 16.4% of men binge drink
    - 6.4% of women binge drink
- North Carolina also has a 12% lower annual per capita alcohol consumption than the U.S. average.

Source: N.C. State Center for Health Statistics, BRFSS, 2010
National Violent Death Reporting System (NVDRS)
National Violent Death Reporting System (NVDRS)

• NVDRS is a population-based surveillance system.
  • Collects data on suicides, homicides, deaths from legal intervention, unintentional firearm, undetermined intent
  • Currently moving to web-based system

• NC-VDRS is North Carolina’s statewide surveillance system.
• Collects data from three sources
  • Death certificates
  • Medical Examiner Reports
  • Law Enforcement Reports
Methods
# Alcohol-Related Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suspicion</td>
<td>Based on witness or investigator reports of alcohol use or circumstances suggesting alcohol use at time of death or preceding death</td>
</tr>
<tr>
<td>Tested for Alcohol</td>
<td>Victim was actually given toxicology screen</td>
</tr>
<tr>
<td>Alcohol Test Results</td>
<td>Results of test</td>
</tr>
<tr>
<td>Blood Alcohol Concentration (BAC)</td>
<td>Reported as mg of alcohol per dl of blood. Expressed as percentage. 0.08% is used as the legal cutoff for impaired driving.</td>
</tr>
<tr>
<td>Alcohol Problem*</td>
<td>Alcohol dependence/abuse problem</td>
</tr>
</tbody>
</table>

*Only used with suicides*
Methods: Testing for Alcohol in NC-VDRS

• Standard to screen all victims for alcohol
  • Often some of the youngest, oldest victims are not tested
  • Family members may have specific reasons/requests

• High percentage of testing among victims
  • Suicide – 85% or more
  • Homicide – 90% or more
  • Legal intervention – 92% or more

*Based on all age groups – suicides do not include children under the age of 10
Case Selection – Violent Death Victims

12,532
NC Residents

12,194
Ages 15+

3,811
Suspected of alcohol use

3,398
Test Positive for Alcohol

2,463
BAC ≥ 0.08%

935
BAC < 0.08%

Legal limit in NC is 0.08% for arrest purposes /inhibited driving
Findings to Date: All Violent Deaths
Percent of All Violent Deaths: Ages 15+, N.C. Residents, 2004-2010 (N=12,194)

- Suspicion of Alcohol Use: 31%
- Positive Screen/Alcohol in Blood: 28%
- BAC ≥ 0.08%: 20%
### Demographic Characteristics for Violent Death Victims: N.C. Residents, Ages 15+, 2004-2010

<table>
<thead>
<tr>
<th></th>
<th>Victims who Screen Positive for Alcohol (N=3,398)</th>
<th>All other Victims (N = 8,796)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td>83% male</td>
<td>74% male</td>
</tr>
<tr>
<td><strong>Race/Ethnicity</strong></td>
<td>72% white, 92% non-Hispanic</td>
<td>75% white, 96% non-Hispanic</td>
</tr>
<tr>
<td><strong>Veterans</strong></td>
<td>13%</td>
<td>16%</td>
</tr>
<tr>
<td><strong>Manner of death</strong></td>
<td>57% suicides, 39% homicides, 4% other</td>
<td>64% suicides, 31% homicides, 5% other</td>
</tr>
</tbody>
</table>
Victims with a Positive Tox Screen by Age and Sex: N.C. Residents, Ages 15+, 2004-2010

Age Group

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-19</td>
<td>2%</td>
<td>4%</td>
</tr>
<tr>
<td>20-24</td>
<td>7%</td>
<td>14%</td>
</tr>
<tr>
<td>25-34</td>
<td>17%</td>
<td>26%</td>
</tr>
<tr>
<td>35-44</td>
<td>27%</td>
<td>23%</td>
</tr>
<tr>
<td>45-54</td>
<td>29%</td>
<td>21%</td>
</tr>
<tr>
<td>55-64</td>
<td>13%</td>
<td>9%</td>
</tr>
<tr>
<td>65-74</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>75+</td>
<td>1%</td>
<td>2%</td>
</tr>
</tbody>
</table>
Mortality Rate for Victims with Positive Tox Screen: N.C. Residents, Ages 15+, 2004-2010
Victims by Age and Sex with BAC ≥ 0.08%: N.C. Residents, Ages 15+, 2004-2010

Percent of Deaths

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<tr>
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<td>32%</td>
<td>22%</td>
</tr>
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<td>12%</td>
<td>9%</td>
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Mortality Rates for Victims with BAC ≥ 0.08%: N.C. Residents, Ages 15+, 2004-2010

Age-Adjusted Rate per 100,000

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>4.9</td>
</tr>
<tr>
<td>Black</td>
<td>5.6</td>
</tr>
<tr>
<td>American Indian</td>
<td>9.7</td>
</tr>
<tr>
<td>Hispanic</td>
<td>5.5</td>
</tr>
<tr>
<td>Non-Hispanic</td>
<td>5.0</td>
</tr>
</tbody>
</table>

North Carolina Violent Death Reporting System
Findings to Date: Homicides and Suicides
Select Manner of Death: Ages 15+, NC Residents, 2004-2010

<table>
<thead>
<tr>
<th>Blood Alcohol Concentration(%)</th>
<th>Suicide</th>
<th>Homicide</th>
<th>Legal Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.01 - 0.07</td>
<td>25%</td>
<td>30%</td>
<td>29%</td>
</tr>
<tr>
<td>0.08 - 0.16</td>
<td>36%</td>
<td>36%</td>
<td>27%</td>
</tr>
<tr>
<td>0.17 - 2.4</td>
<td>25%</td>
<td>22%</td>
<td>26%</td>
</tr>
<tr>
<td>&gt; 2.4</td>
<td>13%</td>
<td>12%</td>
<td>18%</td>
</tr>
</tbody>
</table>

Total Victims with a Positive Blood Alcohol Test: 1,923 Suicide, 1,319 Homicide, 56 Legal Intervention

- 70-75% of victims who test positive for alcohol have a BAC ≥ 0.08%
- 34-44% have a BAC more than 2× legal limit
- 13% have a BAC more than 3× legal limit
Victims with a BAC more than 3x Legal Limit: N.C. Residents, Ages 15+, 2004-2010

- **Suicide**: 204 (Male 158, Female 46)
- **Homicide**: 138 (Male 129, Female 17)
- **Legal Intervention**: 10
- **Other***: 20

*Note: Other* includes accidents, suicides in prison, etc.
Mortality Rates of Victims with BAC ≥ 0.08% by Manner: N.C. Residents, Ages 15+, 2004-2010

Rate per 100,000 population

Age Group

15-19 20-24 25-34 35-44 45-54 55-64 65-74 75-84 >84

Suicide

Homicide
Location of Injury for Violent Death Victims: Ages 15+, N.C. Residents, 2004-2010

Alcohol-Related Suicides (BAC ≥ 0.08)

- House, apartment: 86%
- Street/road, sidewalk: 3%
- Motor vehicle: 1%
- Bar, nightclub: 2%
- Parking lot/public garage: 3%
- Natural area: 0.1%
- Other: 1%

All Other Suicides

- House, apartment: 86%
- Street/road, sidewalk: 3%
- Motor vehicle: 1%
- Bar, nightclub: 2%
- Parking lot/public garage: 3%
- Natural area: 0%
- Other: 1%

Alcohol-Related Homicide (BAC ≥ 0.08)

- House, apartment: 60%
- Street/road, sidewalk: 15%
- Motor vehicle: 3%
- Bar, nightclub: 3%
- Parking lot/public garage: 6%
- Natural area: 4%
- Other: 9%

All Other Homicides

- House, apartment: 63%
- Street/road, sidewalk: 16%
- Motor vehicle: 3%
- Bar, nightclub: 2%
- Parking lot/public garage: 3%
- Natural area: 3%
- Other: 12%
EXAMPLE (MEDICAL EXAMINER):
The V was a 25 year old male who was found at his residence dead from a gunshot wound to the head. EMS was called and the V was pronounced on the scene. According to reports the V and several others were partying and drinking alcoholic beverages when the V shot himself. Per toxicology report the V's **BAC was 680 mg/dL.**

[ ..........] There was no information on whether V had ever been diagnosed or treated for a mental health problem. There was no indication of previous suicide attempts. The weapon was a 12 gauge shotgun.
Conclusions
Conclusions

• Alcohol should continue to be monitored as a risk factor for violent deaths in North Carolina.
  • 20% of victims over the age of 15 have a BAC ≥ legal limit.

• Violent death victims who have a positive blood alcohol test in the NC-VDRS can be described as highly intoxicated.
  • 75% of suicide decedents had a BAC ≥ 0.08%.
  • 44% of legal intervention victims had a BAC ≥ 0.17%.
Limitations

• Victims whose screen results were listed as “unknown” were not removed.

• Alcohol was listed as present or absent in the body and so there was no classification of deaths due to alcohol poisoning versus those where alcohol was a contributing factor.
Prevention Resources

• The Community Guide
  • The Guide to Community Prevention Services

• Preventing Excessive Alcohol Consumption
  • Dram Shop Liability
  • Electronic Screening and Brief Intervention (e-SBI)
  • Increasing Alcohol Taxes
  • Maintaining Limits on Days of Sale
  • Maintaining Limits on Hours of Sale
  • Regulation of Alcohol Outlet Density
  • Enhanced Enforcement of Laws Prohibiting Sales to Minors
  • Privatization of Retail Alcohol Sales – RECOMMENDED AGAINST
Questions?

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