The Burden of Suicide in North Carolina

December 2013

Injury Epidemiology and Surveillance Unit

Injury and Violence Prevention

North Carolina Division of Public Health

The Burden of Suicide in North Carolina

December 2013

State of North Carolina
Pat McCrory, Governor

Department of Health and Human Services
Aldona Z. Wos, M.D., Secretary

Division of Public Health
Robin Cummings, M.D., Acting State Health Director

Injury and Violence Prevention Branch

www.injuryfreenc.ncdhhs.gov

N.C. DHHS is an equal opportunity employer and provider. 12/13

ACKNOWLEDGEMENTS

Authors, Contributors, and Reviewers

Anna Austin, M.P.H.
CDC/CSTE Applied Epidemiology Fellow
Epidemiology and Surveillance Unit
Injury and Violence Prevention Branch, North Carolina Division of Public Health

Kathleen Creppage, M.P.H., C.P.H.
CDC/CSTE Applied Epidemiology Fellow
Epidemiology and Surveillance Unit
Injury and Violence Prevention Branch, North Carolina Division of Public Health

Stephanie Finkbeiner, M.P.H.
Epidemiology and Surveillance Unit
Injury and Violence Prevention Branch, North Carolina Division of Public Health

Scott K. Proescholdbell, M.P.H.
Head, Epidemiology and Surveillance Unit
Injury and Violence Prevention Branch, North Carolina Division of Public Health

Jane Ann Miller, M.P.H.
Public Health Program Consultant
Youth Suicide Prevention
Injury and Violence Prevention Branch, North Carolina Division of Public Health

Tammy Norwood
Program Manager, North Carolina Violent Death Reporting System
Injury and Violence Prevention Branch, North Carolina Division of Public Health

Special Thanks

This report was supported in part by Cooperative Agreement Number 5U17CE423098-08 from the Centers for Disease Control and Prevention (CDC). Its contents are solely the responsibility of the authors and do not necessarily represent official views of the CDC.

This report contains data from the North Carolina Violent Death Reporting System (NC-VDRS), a CDC-funded surveillance system operated by the Injury and Violence Prevention Branch, Division of Public Health, N.C. Department of Health and Human Services. We thank and acknowledge the ongoing support and assistance of the N.C. State Center for Health Statistics, N.C. Office of the Chief Medical Examiner, N.C. State Bureau of Investigation, and many local law enforcement agencies throughout North Carolina that have provided information to the NC-VDRS. The substantial efforts of the above organizations and individuals have ensured the accuracy and completeness of NC-VDRS as a highly credible data source for North Carolina.

This report also contains data from the following sources: hospital discharges from the N.C. State Center for Health Statistics; ED visits from the North Carolina Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT); Web-based Injury Statistics Query and Reporting System (WISQARS) from the CDC, National Center for Injury Prevention and Control; and the N.C. Youth Risk Behavior Survey (YRBS) from the Healthy Schools Initiative by the N.C. Department of Public Instruction and the N.C. Division of Public Health. We thank and acknowledge these organizations for their significant contributions in providing quality data for this report.

We wish to acknowledge the following authors and publications for helping to establish the format and content for this report: *Suicide in North Carolina: Deaths, Hospitalizations and Youth Survey Results* (Schmid, 2004); *The Burden of Suicide in Wisconsin* (Wisconsin Department of Health Services, Injury Research Center at the Medical College of Wisconsin, Mental Health America of Wisconsin, and Wisconsin Suicide Prevention Initiative, 2008); and *Suicide in Oregon: Trends and Risk Factors* (Shen and Millet, 2012).

Table of Contents

Acknowledgements 3
Introduction 7
Executive Summary 8
Overall Burden of Suicide and Self-Inflicted Injuries 11
Suicide and Self-Inflicted Injuries over Time and Compared to the U.S. 15
Years of Potential Life Lost from Suicide 16
Hospitalization Charges for Self-Inflicted Injuries 18
Demographics of Suicide and Self-Inflicted Injury Victims 18
Age and Gender *22*
Race and Gender *25*
Marital Status *25*
Years of Completed Education *25*
Suicide and Self-Inflicted Injuries by North Carolina County of Residence 26
Suicide Method 32
Self-Inflicted Injury Type 33
Suicide Circumstances 34
Toxicology Testing 35
Suicidal Injury Location 36
Youth and Young Adult (Ages 10 to 24) Suicide 37
Youth and Young Adult Suicide and Self-Inflicted Injuries over Time 39
Demographics of Youth and Young Adult Suicide and Self-Inflicted Injury Victims 40
Age and Gender *42*
Race and Gender *43*
Suicide Method for Youth and Young Adults 43
Self-Inflicted Injury Type for Youth and Young Adults 44
Suicide Circumstances for Youth and Young Adults 45
Suicidal Behavior from the North Carolina Youth Risk Behavior Survey 46
Older Adult (Ages 65 or older) Suicide 47
Older Adult Suicide and Self-Inflicted Injuries over Time 49
Demographics of Older Adult Suicide and Self-Inflicted Injury Victims 50
Age and Gender *52*
Race and Gender *53*
Suicide Method for Older Adults 53
Self-Inflicted Injury Type for Older Adults 54

Suicide Circumstances for Older Adults 55

VETERAN SUICIDE 57

Veteran Suicide over Time 59

Demographics of Veteran Suicide Victims 60

Age and Gender 61

Race and Gender 62

Suicide Method for Veterans 62

Suicide Circumstances for Veterans 63

SUICIDE PREVENTION RECOMMENDATIONS 65

GLOSSARY 67

APPENDICES 68

Appendix A: Data Sources 68

Appendix B: Methods and Technical Notes 70

Appendix C: Suicide Prevention Resources 72

REFERENCES 73

INTRODUCTION

Suicidal behavior is a serious and persistent public health problem with devastating effects on victims, families, and communities. Suicide was the 10th leading cause of death in the U.S. for 2010 and ranks among the top five leading causes of death for ages 15 to 54 in North Carolina (Centers for Disease Control and Prevention (CDC), 2010). More than 38,000 Americans (CDC, 2012) and more than 1,000 North Carolinians die from self-inflicted injuries each year. However, suicides represent only a fraction of the outcome of suicidal behavior. Non-fatal self-inflicted injuries from suicide attempts requiring hospitalization or an ED visit are much more common than fatal self-inflicted injuries. In 2010, more than 487,000 people in the U.S. (CDC, 2012) and more than 9,630 residents of N.C. received ED treatment for self-inflicted injuries. Furthermore, specific groups in the population, such as youth and young adults, older adults, and military veterans are more vulnerable to suicide and self-inflicted injury. In addition to death and serious injury, suicidal behavior often produces a heavy burden of medical expenses, disability, loss of wages and productivity, and feelings of guilt, anger, and depression in victims and family members.

This report provides an overview of the public health burden of suicide and self-inflicted injury in North Carolina residents for age 10 and older overall and for the specific groups of youth and young adults (ages 10 to 24), older adults (age 65 or older), and military veterans (ages 18 or older). The objective of this report is to provide state and local health officials, public educators, policy-makers, researchers, and the public with information to identify those who are most susceptible to suicidal behavior and to guide the prioritization of resources, development of strategies, and evaluation of programs for suicide prevention in N.C. Recommendations for suicide prevention are summarized at the end of this report.

To evaluate the scope of suicidal behavior in N.C., an analysis was performed of suicides and self-inflicted injury hospitalizations from 2009 to 2011 and self-inflicted injury ED visits from 2009 to 2012 with stratification by demographic characteristics of victims. The analysis included suicide methods and self-inflicted injury types, circumstances surrounding suicides, toxicology testing of suicide victims, and injury location resulting in suicide using the North Carolina – Violent Death Reporting System (NC-VDRS) data for the years 2009 to 2011. Suicide trends from 1999 to 2010 and estimates of years of potential life lost from suicide during 2008 to 2010 in N.C. were compared to U.S. data using the CDC's Web-based Injury Statistics Query and Reporting System (WISQARS). Self-inflicted injury hospitalization charges from 2009 to 2011 in N.C. were calculated to provide an estimate of the economic burden of suicidal behavior resulting in hospitalization. Survey responses from the N.C. Youth Risk Behavior Survey (YRBS) in 2009 and 2011 were evaluated to assess the frequency of suicide ideation and attempts among N.C. high school students.

All rates in this report are expressed per 100,000 persons in the N.C. population or subgroup over the specified time. Rates should be interpreted with caution, particularly for small numbers of cases. Small numbers have substantial variation over time (i.e., a large standard error). The wider the 95 percent confidence interval (i.e., the greater the difference between the lower and upper bounds of the confidence interval), the less accurate the rate is; therefore, more caution should be used when interpreting the data. Refer to the Glossary for definitions of suicides, self-inflicted injury hospitalizations, and self-inflicted injury ED visits and explanations of crude and adjusted rates. The data sources analyzed and methodology used for this report are defined in Appendix A and Appendix B. Suicide prevention resources are listed in Appendix C.

EXECUTIVE SUMMARY

The overall burden of suicide and self-inflicted injury in North Carolina was demonstrated by the following measures:

- The N.C. age-adjusted suicide rate remained relatively unchanged from 1999 to 2010; the state rate exceeded the U.S. rate each year until finally dropping below the U.S. rate in 2010.
- Among residents of N.C., there were a total of 3,536 suicides (14.3 per 100,000 residents) and 19,754 self-inflicted injury hospitalizations (79.9 per 100,000) during the three-year period from 2009 to 2011, and a total of 38,605 self-inflicted injury ED visits (111.9 per 100,000) during the four-year period from 2009 to 2012.
- The age-adjusted rate of years of potential life lost from suicide per 100,000 persons in N.C. from 2008 to 2012 was 292 years, slightly higher than the U.S. rate of 282 years.
- Suicide resulted in more years of potential life lost than other common causes of early death in N.C. including homicide, congenital abnormalities, cerebrovascular disease, liver disease, and diabetes mellitus.
- Hospitalization charges for self-inflicted injuries in N.C. totaled $297 million from 2009 to 2011.

Suicide and self-inflicted injury trends in North Carolina differed by gender and age, as follows:

- Males were 3.7 times more likely to die from suicide than females; females were 1.4 times more likely to be hospitalized and 1.3 times more likely to visit an ED for self-inflicted injury than males (Figure 1).
- Adolescents between ages 10 and 19 had the lowest suicide rates, and adults had similar suicide rates across age groups. The self-inflicted injury hospitalization rate was highest between ages 15 and 44, while the self-inflicted injury ED visit rate peaked for ages 15 to 24 and declined with older age. Adolescents and young adults had considerably higher rates of suicidal behavior resulting in non-fatal injury than in death; conversely, older adults had similar fatal and non-fatal self-inflicted injury rates (Figure 2).

Figure 1: Rate of Suicides (2009-2011), Self-Inflicted Injury Hospitalizations (2009-2011) and Self-Inflicted Injury ED Visits (2009-2012) for Ages 10 or Older in North Carolina by Gender

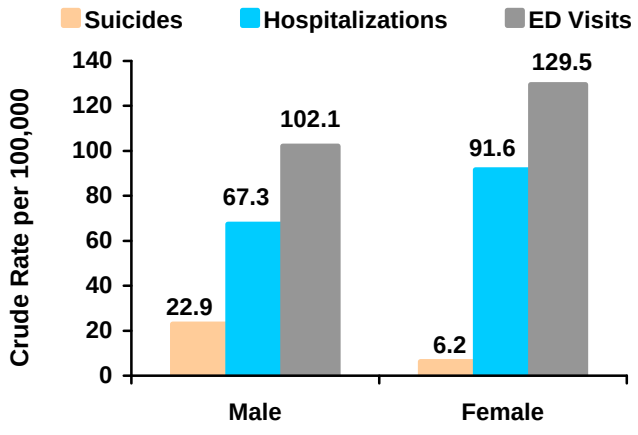
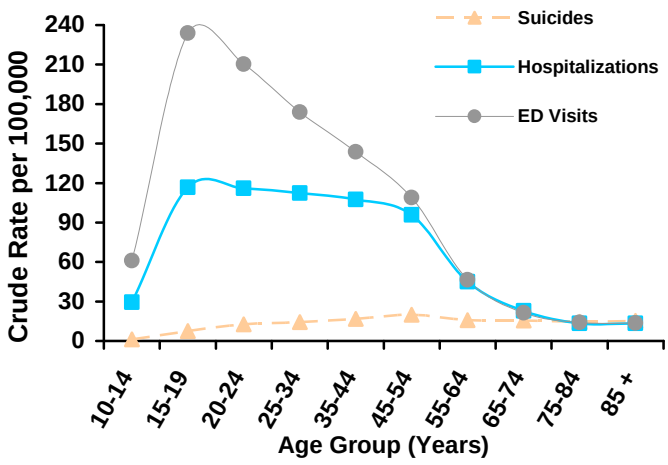


Figure 2: Rate of Suicides (2009-2011), Self-Inflicted Injury Hospitalizations (2009-2011) and Self-Inflicted Injury ED Visits (2009-2012) for Ages 10 or Older in North Carolina by Age



Stratification of suicide and self-inflicted injury trends by gender and age showed:

- Males had a higher suicide rate than females across all ages with an increase with age and a peak of 45.0 per 100,000 for males age 85 or older (Figure 3 and Figure 4).
- Females had a higher self-inflicted injury hospitalization rate than males for ages 10 to 74 with a peak of 156.7 per 100,000 for females ages 15 to 19 and a substantial decrease beyond age 54.
- Females had a higher self-inflicted injury ED visit rate than males for ages 10 to 74 with a peak of 295.7 per 100,000 for females ages 15 to 19 and a decline with older age.

Figure 3: Male Rate of Suicides (2009-2011), Self-Inflicted Injury Hospitalizations (2009-2011) and Self-Inflicted Injury ED Visits (2009-2012) for Ages 10 or Older in North Carolina by Age

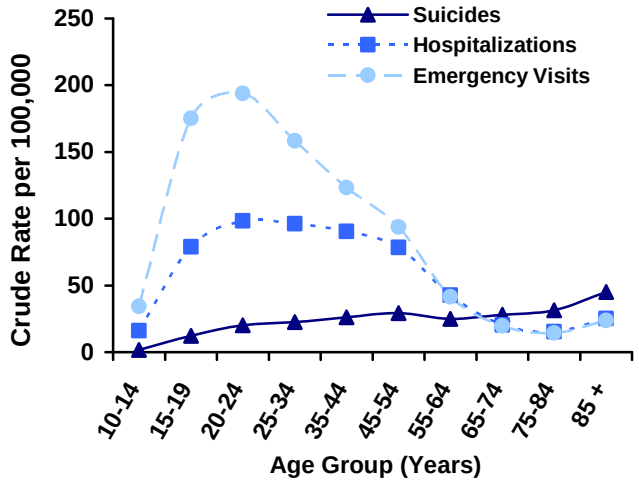
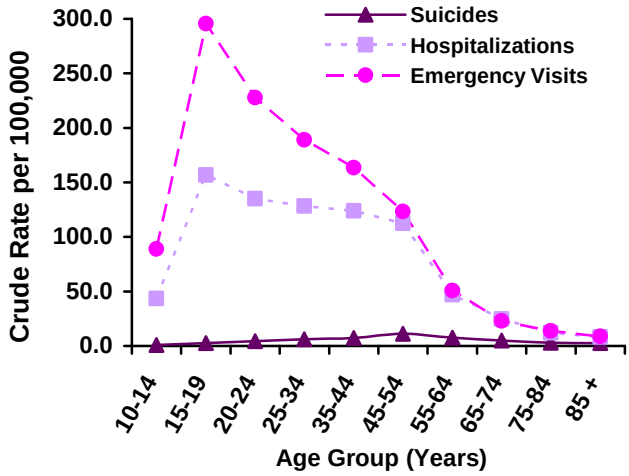


Figure 4: Female Rate of Suicides (2009-2011), Self-Inflicted Injury Hospitalizations (2009-2011) and Self-Inflicted Injury ED Visits (2009-2012) for Ages 10 or Older in North Carolina by Age



Characteristics of suicide victims in North Carolina during 2009 to 2011 included:

- Most suicide victims were male (77.6%), white (89.4%), non-Hispanic (97.4%), between ages 25 and 64 (72.0%), married (43.8%), and educated for 12 or more years (78.7%).
- The suicide rate per 100,000 by race from highest to lowest was: whites (17.2), American Indians (12.4), blacks (5.4) and Asians and Pacific Islanders (5.3). The highest suicide rate by race and gender was for white men (27.1 per 100,000) and white women (7.7 per 100,000). American Indian women only had 17 suicides. Non-Hispanics were 3 times more likely to die from suicide than Hispanics (15.0 vs. 5.2 per 100,000, respectively).
- The most common circumstances surrounding suicide were being described as having a current depressed mood (42.1%), a history of treatment for mental illness (40.9%) or currently receiving treatment (39.8%), a current mental health problem (40.6%), and a crisis within two weeks (32.3%).
- Of the 87.8 percent of suicide victims tested for alcohol, the presence of alcohol was found in 30.0 percent of victims and was most frequent in males, those ages 20 to 54 years, and American Indians and whites.
- The majority of injuries resulting in suicides (82.5%) occurred in a house or apartment.

The Burden of Suicide in North Carolina

Suicide methods and self-inflicted injury types for North Carolinians included:

- The most common suicide methods were firearm (59.3%), hanging, strangulation or suffocation (20.0%), and poisoning (17.3%). A handgun was the most common firearm used by 70.4 percent of firearm suicide victims. Prescription pharmaceuticals were the leading type of poison in 69.7 percent of suicide poisonings.
- Males more often used highly lethal means, such as firearms (64.7%); females were about as likely to use a firearm (40.6%) as poisoning (38.2%).
- The most common self-inflicted injury hospitalizations were for poisoning (80.5%) and cut or pierce injuries (11.1%). Poisoning (68.5%) and cut or pierce injuries (22.4%) were also the leading self-inflicted injuries treated in EDs.

The following trends were noted for youth/young adults, older adults, and veterans in North Carolina:

- Among youth and young adults ages 10 to 24, there were 422 suicides (7.2 per 100,000) and 5,167 self-inflicted injury hospitalizations (88.4 per 100,000) from 2009 to 2011, and 13,331 ED visits (170.1 per 100,000) for self-inflicted injury from 2009 to 2012.
- For older adults age 65 or older, there were 563 suicides (15.2 per 100,000) and 690 self-inflicted injury hospitalizations (18.6 per 100,000) from 2009 to 2011, and 917 ED visits (18.1 per 100,000) for self-inflicted injuries between 2009 and 2012.
- During 2009 to 2011, a total of 505 N.C. veterans died from suicide with a suicide rate 1.5 times the overall suicide rate (22.0 vs. 14.3 per 100,000, respectively).
- Some common circumstances for suicide victims ages 10 to 24 were an intimate partner problem (38.6%), other relationship problem (17.1%), and substance abuse problem excluding alcohol (16.3%). The most common circumstance for older adult suicide victims was a physical health problem (58.0%). Common circumstances for veteran suicide victims were problems with physical health (31.1%), an intimate partner (22.3%), and alcohol (10.8%). A common suicide circumstance for all three groups was a crisis within two weeks which occurred in 47.3% of youth suicides (ages 10 to 24), 20.9% of older adult suicides, and 27.2% of veteran suicides.

Based on these key findings, the authors of this report make the following recommendations for suicide prevention in North Carolina:

- Promote awareness that suicide is a public health problem that is preventable.
- Develop and implement community-based suicide prevention programs.
- Promote efforts to reduce access to lethal means and methods of self-harm.
- Implement training for recognition of at-risk behavior and delivery of effective treatment.
- Improve community linkages and individual’s access to mental health and substance abuse services.
- Improve and expand surveillance systems.

Overall Burden of Suicide and Self-Inflicted Injuries

Evaluating trends and identifying risk factors for suicide and self-inflicted injuries are essential first steps to reducing the burden on victims, families, and communities in North Carolina. This section provides statistics on the overall burden of completed suicides and suicide attempts based on hospitalizations and ED visits for self-inflicted injuries in N.C. residents age 10 or older, unless otherwise specified.

Key Findings:

Suicide and Self-Inflicted Injuries Over Time and Compared to the U.S.

The sustained suicide rate over time from 1999 to 2010 (Figure 5) demonstrated the persistent nature of this public health problem in N.C. and in the U.S. During this time, the N.C. age-adjusted suicide rate per 100,000 persons remained relatively unchanged from a low of 12.9 in 1999 to a high of 14.3 in 2008. In comparison, the age-adjusted suicide rate per 100,000 in the U.S. increased slightly from a low of 12.1 in 2000 to a high of 14.1 in 2010. The N.C. rate exceeded the national rate in each year.

In North Carolina, a total of 8,902 suicides (12.2 per 100,000) and 48,845 self-inflicted injury hospitalizations (66.9 per 100,000) occurred from 2004 to 2011, and 63,472 self-inflicted injury ED visits (96.9 per 100,000) were reported from 2006 to 2012 (Table 1). Note that only 79 percent of EDs were reporting in 2006. Overall, age-adjusted rates (Figure 6) were similar to crude rates (Table 1).

Years of Potential Life Lost from Suicide

Years of potential life lost before age 65 was estimated as a result of premature death from suicide. Between 2008 and 2010, the aggregate age-adjusted rate of years of potential life lost from suicide per 100,000 persons in N.C. was 292 years, slightly higher than the aggregate national rate of 282 years (Figure 7). Over this three-year period, a total of 70,526 years of potential life were lost from suicide in North Carolina (Table 2). Suicide resulted in more years of potential life lost as compared to other common causes of early death in N.C., including homicide, congenital abnormalities, cerebrovascular disease, liver disease and diabetes mellitus (Table 2 and Figure 8).

Hospitalization Charges for Self-Inflicted Injuries

Hospitalization charges for self-inflicted injuries provide an estimate of the economic burden of suicidal behavior resulting in hospitalization. However, this estimate does not account for the indirect costs of loss in productivity and quality of life from self-inflicted injuries that contribute to an even greater burden on victims and families. Self-inflicted injury hospitalization charges in N.C. from 2009 to 2011 totaled $297 million with average charges of $14,154 and median charges of $8,706 per hospitalization (Table 3). From 2004 to 2011 self-inflicted injury hospitalizations totaled close to $600 million dollars in N.C. (Table 3).

Demographics of Suicide and Self-Inflicted Injury Victims

Demographic characteristics for suicide victims in N.C. during 2009 to 2011 are shown by year in Table 4 and for the aggregate 3-year period. Most suicide victims in N.C. from 2009 to 2011 were male (77.6%), white (89.4%), non-Hispanic (97.4%) and between the ages of 25 and 64 (72.0%).

Men were 3.7 times more likely to die from suicide than women (22.9 vs. 6.2 per 100,000, respectively). By race, the suicide rate per 100,000 from highest to lowest was: whites (17.2), American Indians (12.4), blacks (5.4), and Asians and Pacific Islanders (5.3) (Table 5). Non-Hispanics were 2.9 times more likely to die from suicide than Hispanics (15.0 vs. 5.2 per 100,000, respectively). By age, adolescents had the lowest suicide rate of 1.2 per 100,000 for ages 10 to 14 and 7.6 for ages 15 to 19. Adults had similar suicide rates across age groups with the highest rate by age in the 45 to 54 age group (19.9 per 100,000). Although adults age 65 or older represented only 15.8 percent of the total suicides from 2009 to 2011, the older adult suicide rate during this time ranged from 14.5 per 100,000 for ages 75 to 84 to 15.5 per 100,000 for ages 65 to 74 (Table 5).

In contrast to suicides, different gender and age trends were observed for self-inflicted injury hospitalizations from 2009 to 2011 (Table 6 and Table 7) and ED visits during 2009 to 2012 (Table 8 and Table 9) in N.C. Females as compared to males were 1.4 times more likely to be hospitalized (91.7 vs. 67.3 per 100,000, respectively) and 1.3 times more likely to visit an ED (129.5 vs. 102.1 per 100,000, respectively) for self-inflicted injury. The self-inflicted injury hospitalization rate was highest between ages 15 and 44, while the self-inflicted injury ED visit rate peaked for ages 15 to 24 and declined with older age. Adolescents and young adults had considerably higher rates of suicidal behavior resulting in non-fatal injury than in death; conversely, older adults had similar fatal and non-fatal self-inflicted injury rates. For example, adolescents between the ages of 15 and 19 were half as likely to die by suicide (7.6 per 100,000) as adults age 85 or older (15.3 per 100,000) but 9 times more likely to be hospitalized (116.7 vs. 13.3 per 100,000, respectively) and 17 times more likely to visit an ED (233.8 vs. 13.6 per 100,000, respectively) for self-inflicted injury (Table 5).

Highlight:

Females had much higher non-fatal self-inflicted injury rates than males for **most** age groups.

Most non-fatal self-inflicted injury-related hospitalizations and ED visits were due to **poisonings** between 2009 and 2011 and 2009 and 2012, respectively.

Stratification by both gender and age provided a greater understanding of the differences between men and women in suicides (Table 10 and Figure 9), self-inflicted injury hospitalizations (Table 11 and Figure 10), and self-inflicted injury ED visits (Table 12 and Figure 11) in N.C. from 2009 to 2012. Males had a higher suicide rate than females across all age groups. For males, the trend in the suicide rate increased from ages 10 to 44 years, hit a small peak for ages 45 to 54 years, and then sharply rose again until it peaked at 45.0 per 100,000 for age 85 or older. Among women, the trend in the suicide rate increased from ages 10 to 44, peaked at 11.0 per 100,000 for ages 45 to 54, and gradually declined for age 55 or older.

Females had a higher self-inflicted injury hospitalization rate than males for all age groups except ages 75 or older. The highest self-inflicted injury hospitalization rates by gender were observed in males aged 20 to 24 years (98.3 per 100,000) and females aged 15 to 19 years (156.7 per 100,000). Generally, the steady decline in rates occurred after age 45 in both males and females. Females had a higher self-inflicted injury ED visit rate than males for ages 10 to 54 years and a similar rate to males for ages 55 years or older. The ED visit rate peaked at 193.9 per 100,000 for males aged 20 to 24 years and at 295.7 per 100,000 for females aged 15 to 19 years, followed by a decline in older age groups for both males and females.

For suicide victims stratified by race and gender in N.C. for 2009 to 2011, whites accounted for 88.9 percent of male and 91.1 percent of female victims while blacks comprised 9.1 percent of male and 5.3 percent of female victims (Table 13). American Indian, Asian and Pacific Islander, and other and unspecified race combined represented less than 4 percent of suicide victims for both males and females. By race and gender, the highest suicide rate was observed in white men (27.1 per 100,000) and white women (7.7 per 100,000) where there were sufficient numbers to calculate rates.

In N.C. for 2009 to 2011, adult suicide victims (age 18 or older) were most commonly married (43.8%) as compared to never married (27.5%), divorced (21.4%), or widowed (7.2%) (Figure 12). Most adult suicide victims completed high school with 78.7 percent having 12 or more years of education (Figure 13).

Suicide and Self-Inflicted Injuries by North Carolina County of Residence

The number and crude rate of suicides (Figure 14 and Table 14) and self-inflicted injury hospitalizations (Figure 15 and Table 15) from 2009 to 2011 and self-inflicted injury ED visits (Figure 16 and Table 16) from 2009 to 2012 are displayed stratified by N.C. county of residence. The top 20 counties with the highest rates are bolded in the tables.

Suicide Method

The leading methods of suicide in N.C. during 2009 to 2011 were firearm (59.3%), hanging, strangulation, or suffocation (20.0%), and poisoning (17.2%) (Table 17). For both males and females, firearms were the most common method (64.7% and 40.6%, respectively). However, a much higher percentage of females died by suicide related to poisoning as opposed to males (38.2% versus 11.2%, respectively). A handgun was the most common firearm used and was used by 70.4 percent of firearm suicide victims (Table 18). Prescription pharmaceuticals were the leading type of poison used and were used in 69.7 percent of suicide poisonings (Table 19).

Self-Inflicted Injury Type

Poisoning injuries (82.7%) and cut or pierce injuries (11.9%) represented the majority of self-inflicted injury hospitalizations in N.C. from 2004 to 2008 with similar trends by gender (Table 20). Furthermore, poisoning injuries (70.8%) and cut or pierce injuries (21.8%) were the leading types of self-inflicted injuries treated in EDs with similar trends by gender (Table 21).

Suicide Circumstances

Circumstances surrounding suicides in N.C. for 2009 to 2011 were available in NC-VDRS for 92.7 percent of suicide victims (Table 22). A wide range of circumstances lead to suicide, and each victim may have had more than one circumstance. The most common circumstances were related to mental health including being described as having a current depressed mood (42.1%), having ever been treated for mental illness (40.9%), and having a current mental health problem (40.6%). At the time of suicide, 38.0 percent of victims were currently being treated for mental illness. The most common current mental health problems were depression or dysthymia (81.1%) and bipolar disorder (9.1%) (Table 23).

A crisis within two weeks was reported for 32.3 percent of victims (Table 22). Other common circumstances of suicide were problems with an intimate partner (27.6%), physical health problems (20.3%), and alcohol (14.1%) and substance abuse excluding alcohol (13.3%) problems. A suicide note was left by 30.2 percent of victims, and intent to complete suicide was disclosed by 27.6 percent. A history of suicide attempts was reported for 16.4 percent of victims who died by suicide.

Toxicology Testing

Toxicology testing was performed on suicide victims at the medical examiner's direction to identify substances believed to have contributed to the death or circumstances surrounding the death. A positive test for a substance does not necessarily indicate that substance was present at a lethal level. Alcohol was tested in 87.8 percent of all suicides in N.C. from 2009 to 2011. Testing was relatively infrequent for other substances, including opiates (13.7%), cocaine (13.7%), antidepressants (10.9%), amphetamines (7.2%), marijuana (7.0%), and other drugs (15.4%) (Table 24). Of those victims tested, the results were positive for the presence of alcohol in 30.0 percent, opiates in 57.3 percent, cocaine in 7.2 percent, antidepressants in 69.3 percent, amphetamines in 4.3 percent, marijuana in 0.4 percent, and other drugs in 92.3 percent.

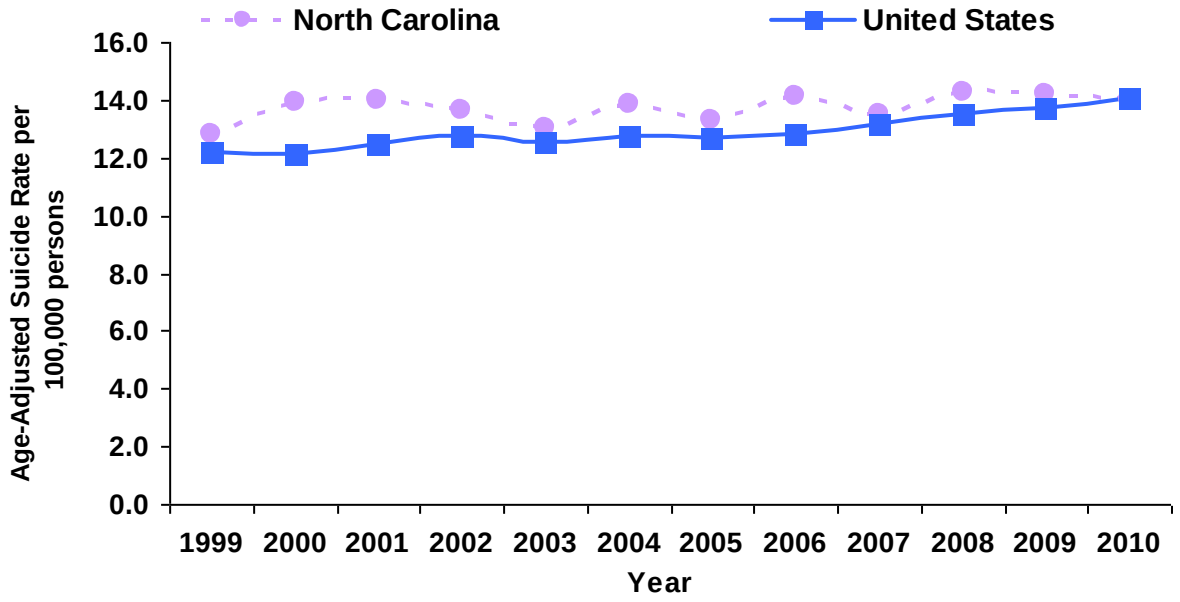
Of the 87.8 percent of suicide victims who were tested for the presence of alcohol in their blood, thirty-four percent of male victims and twenty-three percent of female victims had positive test results for detectable blood alcohol levels. The majority of suicide victims with positive blood alcohol tests were between the ages of 20 to 54, with the fewest victims falling between ages 45 to 54 (34.2%) and the most victims falling between ages 20 to 24 (39.5%) (Table 25). By race, the proportion of suicide victims with positive test results ranked as follows: American Indians (31.7%), whites (30.3%), blacks (27.2%), and Asians (15.4 %) and Pacific Islanders.

Suicidal Injury Location

The majority of injuries resulting in suicides (82.5%) in N.C. between 2009 and 2011 occurred in a house or apartment (Table 26). Other locations where more than 1 percent of injuries resulting in suicides were reported included: a natural area (3.4%); motor vehicle (2.5%); street, road, sidewalk or alley (2.2%); hotel or motel (1.5%); jail, prison, or detention facility (1.3%); and parking lot/public garage (1.1%).

Suicide and Self-Inflicted Injuries Over Time and Compared to the U.S.

Figure 5: Age-Adjusted Suicide Rate for Age 10 or Older in North Carolina and the United States Over Time* (1999-2010)



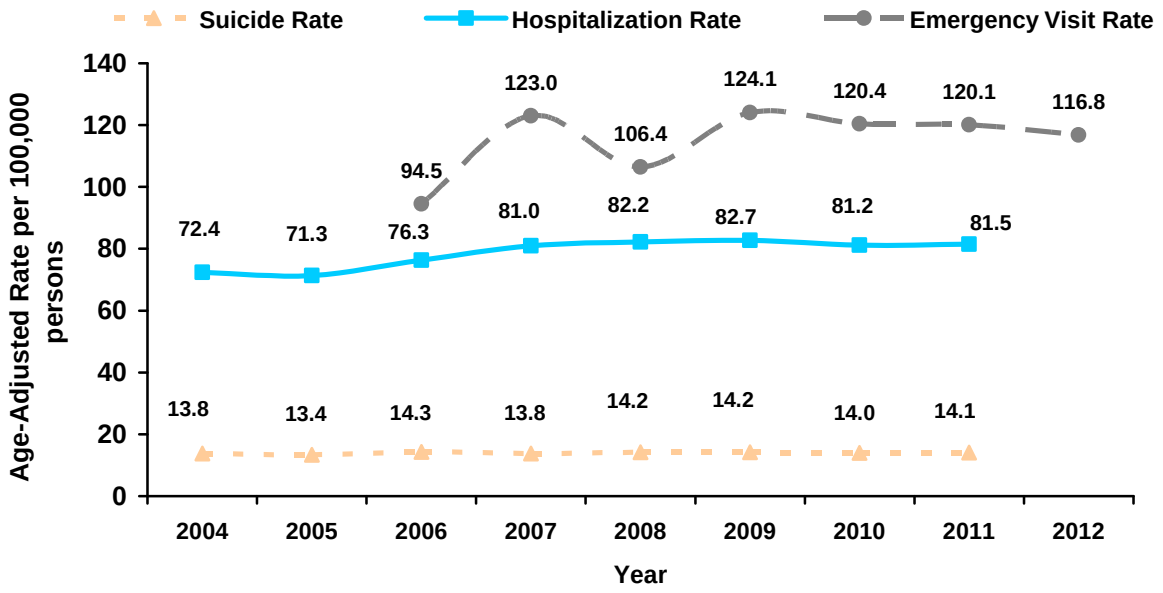
* Data Source: CDC WISQARS

Table 1: Suicides, Self-Inflicted Injury Hospitalizations and Self-Inflicted Injury ED Visits for Age 10 or Older in North Carolina by Year (2004-2012)

	Suicides			Hospitalizations			Emergency Department Visits		
Year	**Number**	**Rate**	**95% CI**	**Number**	**Rate**	**95% CI**	**Number**	**Rate**	**95% CI**
2004	1,017	13.8	12.9 - 14.6	5,312	72.0	70.1 - 73.9	NA*	NA*	NA*
2005	1,009	13.5	12.6 - 14.3	5,299	70.7	68.8 - 72.6	NA*	NA*	NA*
2006	1,107	14.5	13.6 - 15.3	5,784	75.6	73.7 - 77.6	7,138 ‡	93.4 ‡	91.2 - 95.5 ‡
2007	1,085	13.9	13.1 - 14.7	6,236	80.0	78.0 - 81.9	9,436	121.0	118.6 - 123.4
2008	1,148	14.4	13.6 - 15.3	6,460	81.3	79.3 - 83.3	8,293	104.4	102.1 - 106.6
2009	1,157	14.3	13.5 - 15.2	6,565	70.0	68.3 - 71.7	9,809	121.5	119.1 - 123.9
2010	1,177	14.2	13.4 - 15.0	6,567	68.9	67.2 - 70.5	9,630	116.5	114.2 - 118.8
2011	1,202	14.3	13.5 - 15.1	6,622	68.6	66.9 - 70.2	9,684	115.4	113.1 – 117.7
2012	NA*	NA*	NA*	NA*	NA*	NA*	9,482	97.2	95.3 - 99.2
TOTAL	**8,902**	**12.2**	**11.9 - 12.5**	**48,845**	**66.9**	**66.4 - 67.5**	**63,472**	**96.9**	**96.1 – 97.6**

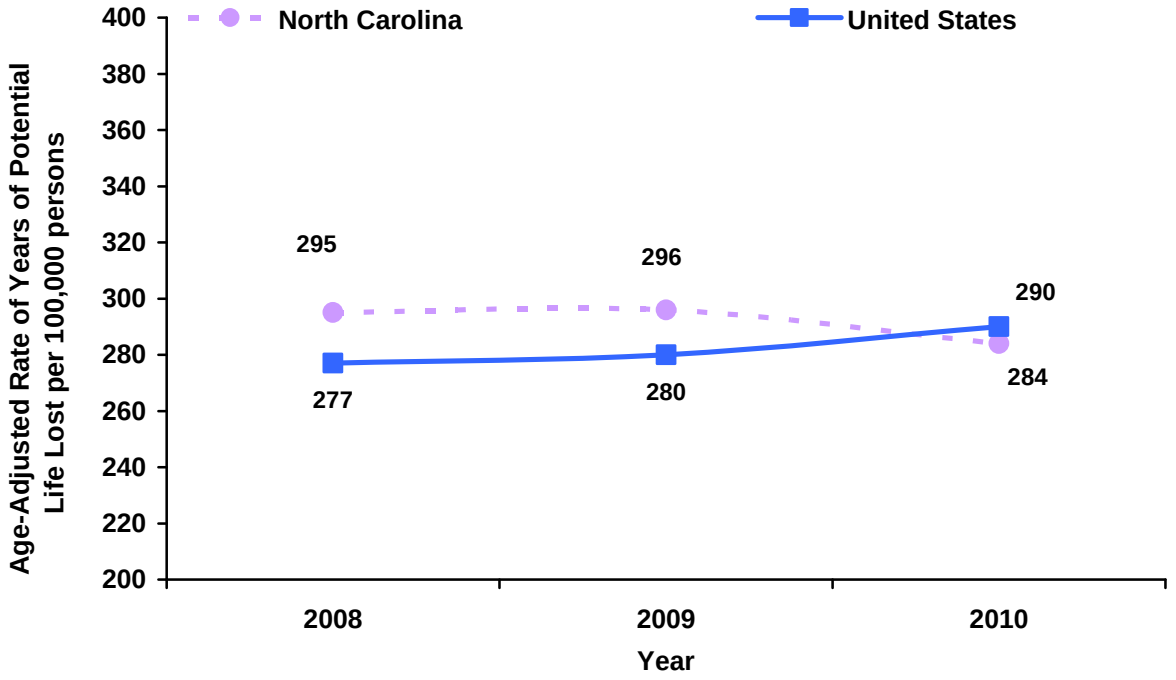
Crude rate per 100,000 N.C. population
95% CI = 95 Percent Confidence Interval for rate
*NC-VDRS and hospital data not available for 2012; ED visit data not available for 2004-2005
‡ Only 79 percent of EDs reporting in 2006

Figure 6: Age-Adjusted Rate of Suicides, Self-Inflicted Injury Hospitalizations and Self-Inflicted Injury ED Visits for Age 10 or Older in North Carolina by Year (2004-2012)



Years of Potential Life Lost from Suicide

Figure 7: Age-Adjusted Rate of Number of Years of Potential Life Lost Before Age 65 from Suicides in North Carolina and the United States Over Time* (2008-2010)

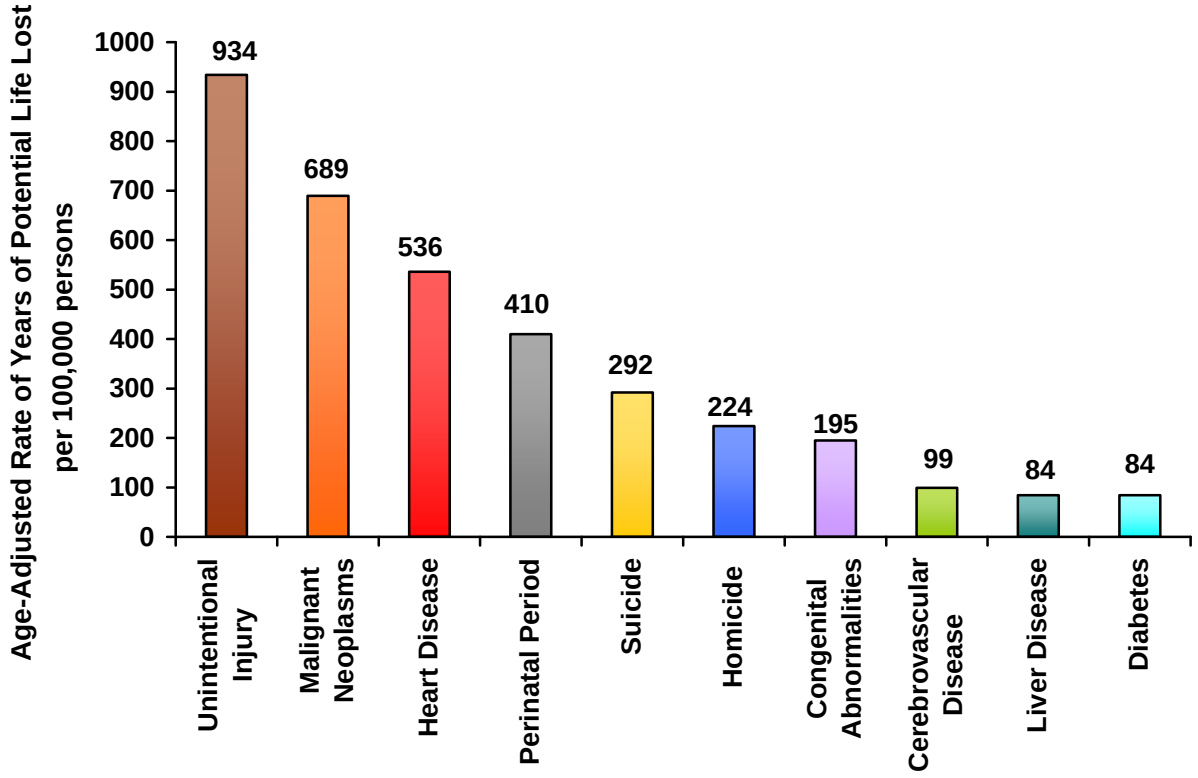


* Data Source: CDC WISQARS

Table 2: Number of Years of Potential Life Lost and Before Age 65 from Suicides Compared to Other Causes of Death in North Carolina by Year* (2008-2010)					
Cause of Death	**Number of Years of Potential Life Lost**				
Year	**2008**	**2009**	**2010**	**TOTAL**	**PERCENT**
Unintentional Injury	81,533	74,384	71,115	227,032	19.6
Malignant Neoplasms	59,712	60,608	62,434	182,754	15.8
Heart Disease	48,289	46,913	44,652	139,854	12.1
Perinatal Period	34,585	34,625	28,981	98,191	8.5
Suicide	**23,561**	**23,892**	**23,073**	**70,526**	**6.1**
Homicide	21,129	16,991	16,183	54,303	4.7
Congenital Abnormalities	16,660	16,163	13,928	46,751	4.0
Cerebrovascular Disease	8,910	8,578	8,179	25,667	2.2
Liver Disease	7,451	7,075	7,172	21,698	1.9
Diabetes Mellitus	7,442	7,241	7,239	21,922	1.9
All Others	89,148	93,953	86,658	269,759	23.3

* Data Source: CDC WISQARS

Figure 8: Age-Adjusted Rate of Years of Potential Life Lost Before Age 65 from Suicides Compared to Other Causes of Death in North Carolina* (2008-2010)



* Data Source: CDC WISQARS

Hospitalization Charges for Self-Inflicted Injuries

Table 3: Estimated Hospitalization Charges for Self-Inflicted Injuries for Age 10 or Older in North Carolina by Year (2004-2011)				
Year	**Number of Hospitalizations with Data**	**Average Charges**	**Median Charges**	**Total Charges**
2004	5,309	$8,929	$5,281	$47,404,692
2005	5,297	$10,259	$5,989	$54,342,364
2006	5,781	$10,928	$6,480	$63,173,020
2007	6,234	$11,733	$7,041	$73,145,238
2008	6,457	$11,950	$7,506	$77,161,272
2009	6,562	$12,798	$7,822	$83,983,084
2010	6,564	$14,350	$8,508	$94,191,471
2011	6,610	$15,305	$9,406	$101,162,692
2009-2011	19,736	$14,154	$8,706	$297,337,247*
TOTAL	**48,814**	**$96,252**	**$58,033**	**$594,563,833**

* This number is not duplicated in total charges.

Demographics of Suicide and Self-Inflicted Injury Victims

Table 4: Demographics of Suicide Victims Age 10 or Older in North Carolina by Year (2009-2011)						
	2009		**2010**		**2011**	
Gender	**Number**	**Rate**	**Number**	**Rate**	**Number**	**Rate**
Male	916	**23.3**	907	**22.7**	920	**22.7**
Female	241	**5.8**	270	**6.3**	282	**6.5**
Race						
American Indian	16	*	15	*	14	*
Asian/Pacific Islander	12	*	6	*	13	*
Black	96	**5.5**	95	**5.2**	102	**5.5**
Other / Unspecified	1	*	0	*	6	*
White	1,032	**17.1**	1,061	**17.4**	1,067	**17.2**
Hispanic Ethnicity						
Hispanic	34	**6.7**	29	**4.8**	28	**3.3**
Non-Hispanic	1,123	**14.8**	1,148	**15.0**	1,174	**13.2**
Age Group (Years)						
10-14	7	*	4	*	11	*
15-19	60	**9.3**	45	**6.8**	43	**6.6**
20-24	70	**10.5**	90	**13.6**	92	**13.6**
25-34	181	**14.7**	168	**13.5**	189	**15.0**
35-44	235	**17.8**	216	**16.3**	211	**16.0**
45-54	258	**19.3**	285	**20.8**	269	**19.6**
55-64	174	**16.1**	189	**16.6**	176	**14.8**
65-74	96	**14.7**	99	**14.2**	128	**17.6**
75-84	56	**14.4**	58	**14.9**	57	**14.3**
85 +	20	**13.4**	23	**15.6**	26	**16.9**
TOTAL	**1,157**	**14.3**	**1,177**	**14.2**	**1,202**	**14.3**

Table 5: Demographics of Suicide Victims Age 10 or Older in North Carolina (2009-2011)				
Gender	**Number**	**Percent**	**Rate**	**95% CI**
Male	2,743	77.6	**22.9**	22.0 - 23.7
Female	793	22.4	**6.2**	5.8 - 6.6
Race				
American Indian	45	1.3	**12.4**	7.3 -13.3
Asian / Pacific Islander	31	0.9	**5.3**	2.9 - 6.0
Black	293	8.3	**5.4**	4.0 - 5.1
Other / Unspecified	7	0.2	*	*
White	3,160	89.4	**17.2**	14.5 - 15.6
Hispanic Ethnicity				
Hispanic	91	2.6	**5.2**	3.1 - 4.7
Non-Hispanic	3,445	97.4	**15.0**	12.7 - 13.6
Age Group (Years)				
10-14	22	0.6	**1.2**	0.7 - 1.7
15-19	148	4.2	**7.6**	6.3 - 8.8
20-24	252	7.1	**12.6**	11.0 - 14.1
25-34	538	15.2	**14.4**	13.2 - 15.6
35-44	662	18.7	**16.7**	15.4 - 18.0
45-54	812	22.9	**19.9**	18.6 - 21.3
55-64	539	15.2	**15.8**	14.5 - 17.2
65-74	323	9.1	**15.5**	13.8 - 17.2
75-84	171	4.8	**14.5**	12.4 - 16.7
85 +	69	1.9	**15.3**	11.7 - 18.9
TOTAL	**3,536**	**100**	**13.3**	**13.8 – 14.8**

For Tables **4** and **5**: Gender, race, Hispanic ethnicity or age-specific crude rate per 100,000 N.C. population
* The number of deaths was too small to support calculation of a rate.
For Table **5**: 95% CI = 95 Percent Confidence Interval for Rate

Table 6: Demographics of Self-Inflicted Injury Hospitalizations for Age 10 or Older in North Carolina by Year (2009-2011)						
	2009		2010		2011	
Gender	**Number**	**Rate**	**Number**	**Rate**	**Number**	**Rate**
Male	2,673	**68.1**	3,859	**67.7**	2,683	**66.1**
Female	3,892	**93.7**	2,708	**90.4**	3,939	**90.9**
Unknown	0	*	0	*	0	*
Age Group (Years)						
10-14	169	**28.1**	161	**25.5**	221	**34.4**
15-19	787	**121.9**	726	**110.1**	773	**118.3**
20-24	752	**112.6**	796	**120.3**	782	**115.3**
25-34	1,447	**117.1**	1,406	**112.8**	1,352	**107.1**
35-44	1,423	**107.9**	1,421	**107.1**	1,412	**107.3**
45-54	1,295	**97.0**	1,332	**97.3**	1,277	**93.2**
55-64	490	**45.4**	494	**43.4**	548	**46.1**
65-74	139	**21.3**	163	**23.4**	171	**23.5**
75-84	48	**12.3**	45	**11.6**	64	**16.1**
85 +	15	*	23	**15.6**	22	**14.3**
TOTAL	**6,565**	**70.0**	**6,567**	**68.9**	**6,622**	**68.6**

Gender or age-specific crude rate per 100,000 N.C. population
* The number of deaths was too small to support calculation of a rate.
95% CI = 95 Percent Confidence Interval for Rate

Table 7: Demographics of Self-Inflicted Injury Hospitalizations for Age 10 or Older in North Carolina (2009-2011)				
Gender	**Number**	**Percent**	**Rate**	**95% CI**
Male	8,064	40.8	**67.3**	65.9 - 68.8
Female	11,690	59.2	**91.7**	90.0 - 93.3
Unknown	0	0.0	*	*
Age Group (Years)				
10-14	551	2.8	**29.4**	26.9 - 31.8
15-19	2,286	11.6	**116.7**	111.9 - 121.5
20-24	2,230	11.8	**116.1**	111.3 - 120.8
25-34	4,205	21.3	**112.3**	108.9 - 115.7
35-44	4,256	21.6	**107.4**	104.2 - 110.7
45-54	3,904	19.8	**95.9**	92.8 - 98.9
55-64	1,532	7.8	**45.0**	42.7 - 47.2
65-74	473	2.4	**22.8**	20.7 - 24.8
75-84	157	0.8	**13.3**	11.3 - 15.4
85 +	60	0.3	**13.3**	10.0 - 16.7
TOTAL	**19,754**	**100**	**79.9**	**78.8 - 81.0**

Gender or age-specific crude rate per 100,000 N.C. population
* The number of deaths was too small to support calculation of a rate.
95% CI = 95 Percent Confidence Interval for Rate

Table 8: Demographics of Self-Inflicted Injury ED Visits for Age 10 or Older in North Carolina by Year (2009-2012)								
	2009		2010		2011		2012	
Gender	**Number**	**Rate**	**Number**	**Rate**	**Number**	**Rate**	**Number**	**Rate**
Male	4,122	**105.1**	4,108	**102.8**	4,174	**102.9**	4,013	**133.1**
Female	5,686	**136.9**	5,521	**129.3**	5,509	**127.1**	5,468	**91.6**
Unknown	1	*	1	*	1	*	1	*
Age Group (Years)								
10-14	329	**54.7**	328	**52.0**	411	**64.0**	472	**72.8**
15-19	1,609	**249.3**	1,456	**220.7**	1,448	**221.5**	1,589	**244.2**
20-24	1,358	**203.4**	1,432	**216.5**	1,457	**214.8**	1,442	**206.8**
25-34	2,275	**184.1**	2,167	**173.8**	2,204	**174.6**	2,065	**162.9**
35-44	1,920	**145.7**	2,018	**152.1**	1,902	**144.5**	1,741	**132.6**
45-54	1,565	**117.3**	1,526	**111.5**	1,469	**107.2**	1,369	**100.2**
55-64	543	**50.3**	486	**42.7**	552	**46.5**	555	**46.3**
65-74	136	**20.8**	153	**21.9**	161	**22.2**	163	**20.8**
75-84	56	**14.4**	48	**12.3**	56	**14.1**	61	**15.1**
85 +	18	*	16	*	24	**15.6**	25	**15.6**
TOTAL	**9,809**	**121.5**	**9,630**	**116.5**	**9,684**	**115.4**	9,482	**97.2**

Gender or age-specific crude rate per 100,000 N.C. population
95% CI = 95 Percent Confidence Interval for Rate
* The number of deaths was too small to support calculation of a rate.

Table 9: Demographics of Self-Inflicted Injury ED Visits for Age 10 or Older in North Carolina (2009-2012)				
Gender	**Number**	**Percent**	**Rate**	**95% CI**
Male	16,417	47.5	**102.1**	127.8 - 131.2
Female	22,184	57.4	**129.4**	100.5 - 103.6
Unknown	4	0.01	*	*
Age Group (Years)				
10-14	1,540	4.0	**61.0**	58.0 - 64.1
15-19	6,102	15.8	**233.8**	228.0 - 239.7
20-24	5,689	14.7	**210.3**	204.9 - 215.8
25-34	8,711	22.6	**173.8**	170.1 - 177.4
5-44	7,581	19.6	**143.7**	140.5 - 147.0
45-54	5,929	15.4	**109.0**	106.2 - 111.8
55-64	2,136	5.5	**46.4**	44.4 - 48.3
65-74	613	1.6	**21.4**	19.7 - 23.1
75-84	221	0.6	**14.0**	12.1 - 15.8
85 +	83	0.2	**13.6**	10.7 - 16.5
TOTAL	**38,605**	**100**	**111.9**	**110.8 – 113.1**

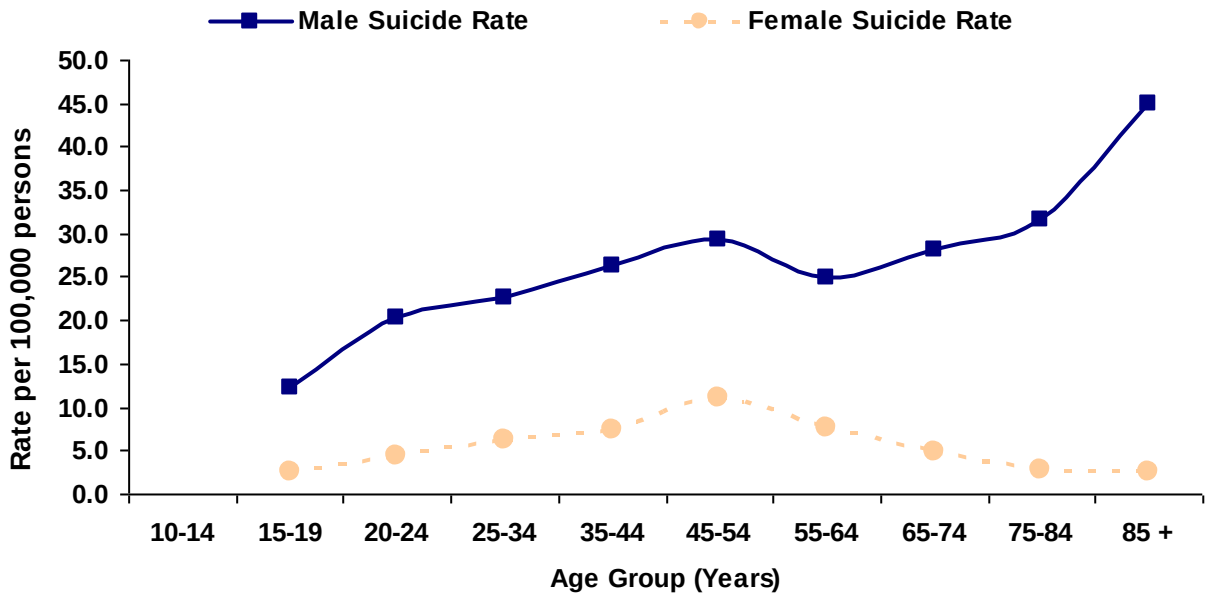
Gender, race, Hispanic ethnicity and age-specific crude rate per 100,000 N.C. population
95% CI = 95 Percent Confidence Interval for Rate
* The number of deaths was too small to support calculation of a rate.

Age and Gender

Table 10: Suicides for Age 10 or Older in North Carolina by Age and Gender (2009-2011)						
	Male			Female		
Age (Years)	Number	Percent	Rate	Number	Percent	Rate
10-14	15	0.5	*	7	0.9	*
15-19	124	4.5	**12.3**	24	3.0	**2.5**
20-24	209	7.6	**20.2**	43	5.4	**4.4**
25-34	420	15.3	**22.6**	118	14.9	**6.2**
35-44	512	18.7	**26.2**	150	18.9	**7.5**
45-54	581	21.2	**29.3**	231	29.1	**11.0**
55-64	402	14.6	**24.9**	137	17.3	**7.6**
65-74	268	9.8	**28.1**	55	6.9	**4.9**
75-84	151	5.5	**31.5**	20	2.5	**2.9**
85 +	61	2.2	**45.0**	8	1.0	*
TOTAL	**2,743**	**100**	**22.9**	**793**	**100**	**6.2**

Gender and age-specific crude rate per 100,000 N.C. population

Figure 9: Age-Specific Crude Rate of Suicide for Ages 10 or Older in North Carolina by Age and Gender (2009-2011)



Breaks in the graph indicate suppressed rate.

Table 11: Self-Inflicted Injury Hospitalizations for Age 10 or Older in North Carolina by Age and Gender (2009-2011)

	Male			Female		
Age (Years)	**Number**	**Percent**	**Rate**	**Number**	**Percent**	**Rate**
10-14	154	1.9	**16.0**	397	3.4	**43.4**
15-19	793	9.8	**78.8**	1,493	12.8	**156.7**
20-24	1,016	12.6	**98.3**	1,314	11.2	**134.9**
25-34	1,785	22.1	**96.1**	2,420	20.7	**128.2**
35-44	1,768	21.9	**90.4**	2,488	21.3	**124.0**
45-54	1,554	19.3	**78.5**	2,350	20.1	**112.3**
55-64	691	8.6	**42.8**	841	7.2	**47.0**
65-74	195	2.4	**20.4**	278	2.4	**24.7**
75-84	74	1.0	**15.4**	83	0.7	**11.9**
85 +	34	0.5	**25.1**	26	0.2	**8.3**
TOTAL	**8,064**	**100**	**67.3**	**11,690**	**100**	**91.6**

Gender and age-specific crude rate per 100,000 N.C. population

Figure 10: Age-Specific Crude Rate of Self-Inflicted Injury Hospitalizations for Age 10 or Older in North Carolina by Age and Gender (2009-2011)

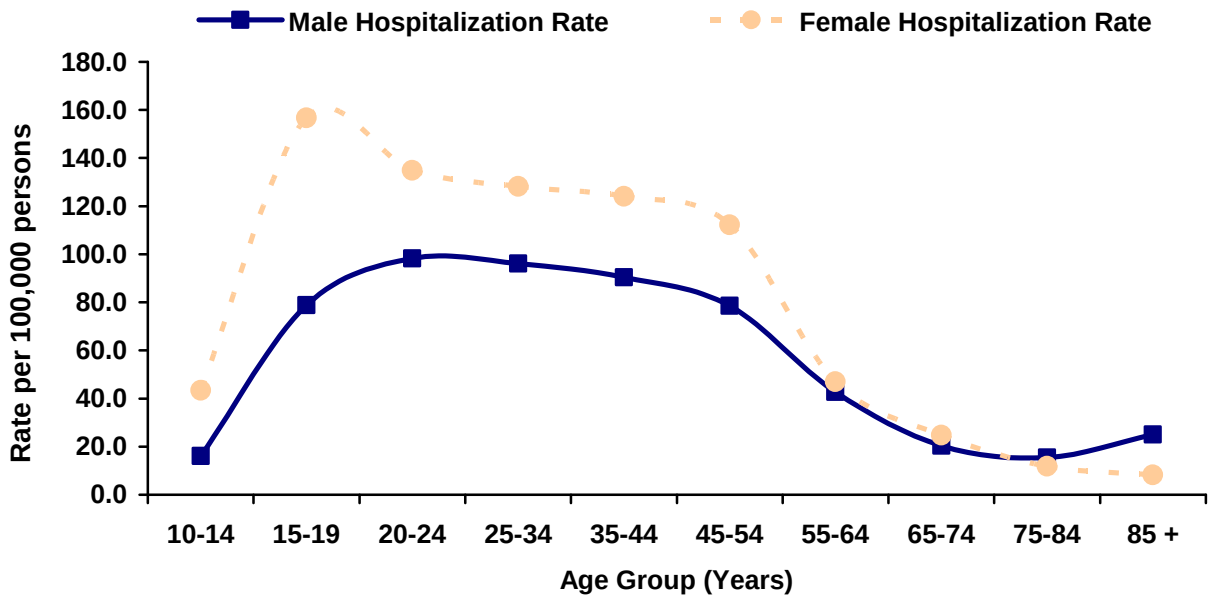
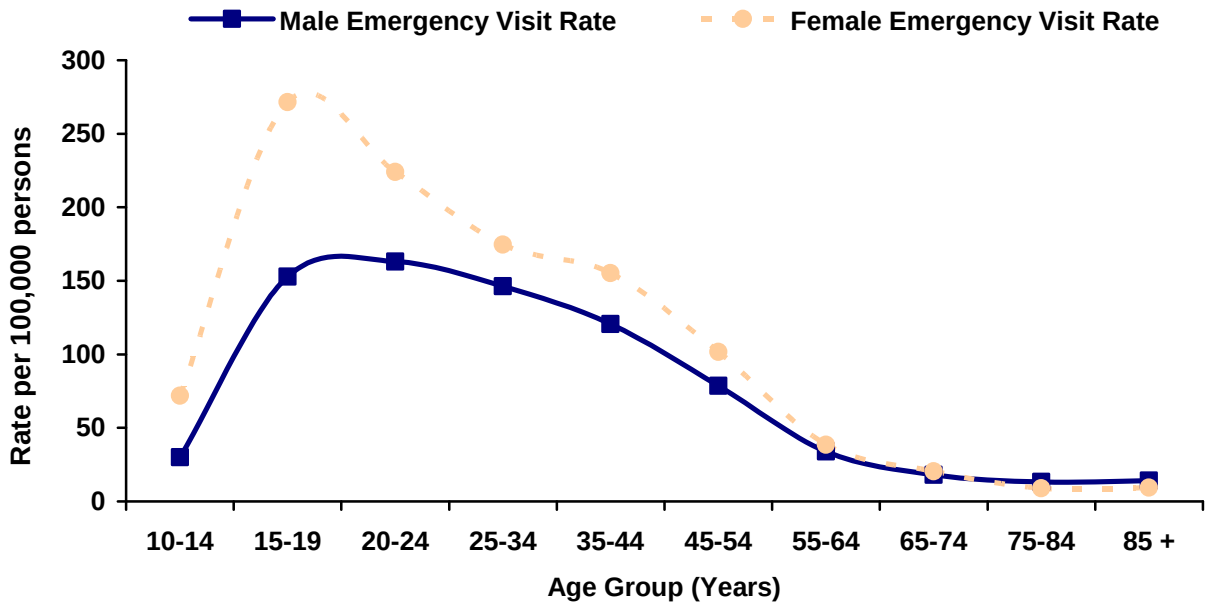


Table 12: Self-Inflicted Injury ED Visits for Age 10 or Older in North Carolina by Age and Gender (2009-2012)						
	Male			Female		
Age (Years)	Number	Percent	Rate	Number	Percent	Rate
10-14	443	2.7	**34.3**	1,906	4.9	**88.9**
15-19	2,347	14.3	**175.1**	3,754	16.9	**295.7**
20-24	2,699	16.4	**193.9**	2,990	13.5	**227.7**
25-34	3,969	24.0	**158.4**	4,775	21.5	**188.9**
35-44	3,208	19.5	**123.3**	4,373	19.7	**163.6**
45-54	2,480	15.1	**93.8**	3,449	15.6	**123.4**
55-64	909	5.5	**41.6**	1,227	5.5	**50.7**
65-74	258	1.6	**19.6**	355	1.6	**23.0**
75-84	93	0.6	**14.4**	128	0.6	**13.7**
85 +	44	0.3	**23.7**	37	0.2	**8.7**
TOTAL	**16,417**	**100**	**102.1**	**22184**	**100**	**129.4**

Gender and age-specific crude rate per 100,000 N.C. population

Figure 11: Age-Specific Crude Rate of Self-Inflicted Injury ED Visits for Age 10 or Older in North Carolina by Age and Gender (2009-2012)



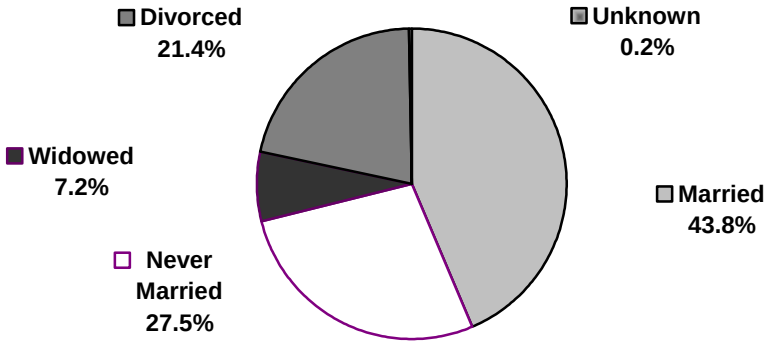
Race and Gender

Table 13: Suicides for Age 10 or Older in North Carolina by Race and Gender (2009-2011)						
	Male			Female		
Race	Number	Percent	Rate	Number	Percent	Rate
American Indian	28	1.0	**15.5**	17	2.1	*
Asian/Pacific Islander	19	0.7	*	12	1.5	*
Black	251	9.1	**10.0**	42	5.3	**1.4**
Other/Unspecified	7	0.3	*	0	0.0	*
White	2,438	88.9	**27.1**	722	91.1	**7.7**
TOTAL	**2,743**	**100**	**22.9**	**793**	**100**	**6.2**

Gender and race-specific crude rate per 100,000 N.C. population
* The number of deaths was zero or too small to support calculation of a rate.

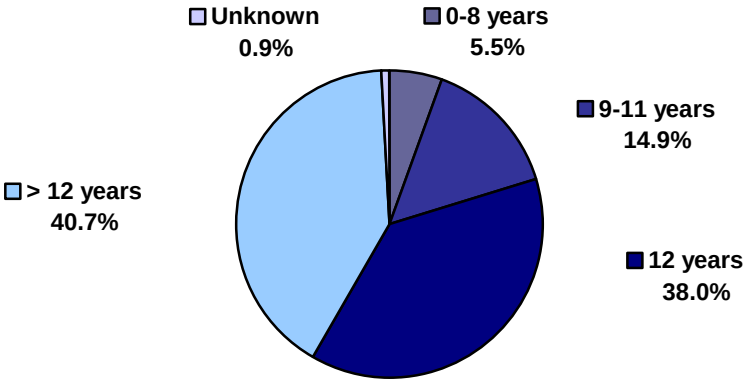
Marital Status

Figure 12: Percentage of Suicides for Adults (Ages 18 or Older) in North Carolina by Marital Status (2009-2011)



Years of Completed Education

Figure 13: Percentage of Suicides for Adults (Age 18 or Older) in North Carolina by Years of Completed Education (2009-2011)



Suicide and Self-Inflicted Injuries by North Carolina County of Residence

Figure 14: Map of Suicide Rates for Age 10 or Older by North Carolina County of Residence (2009-2011)

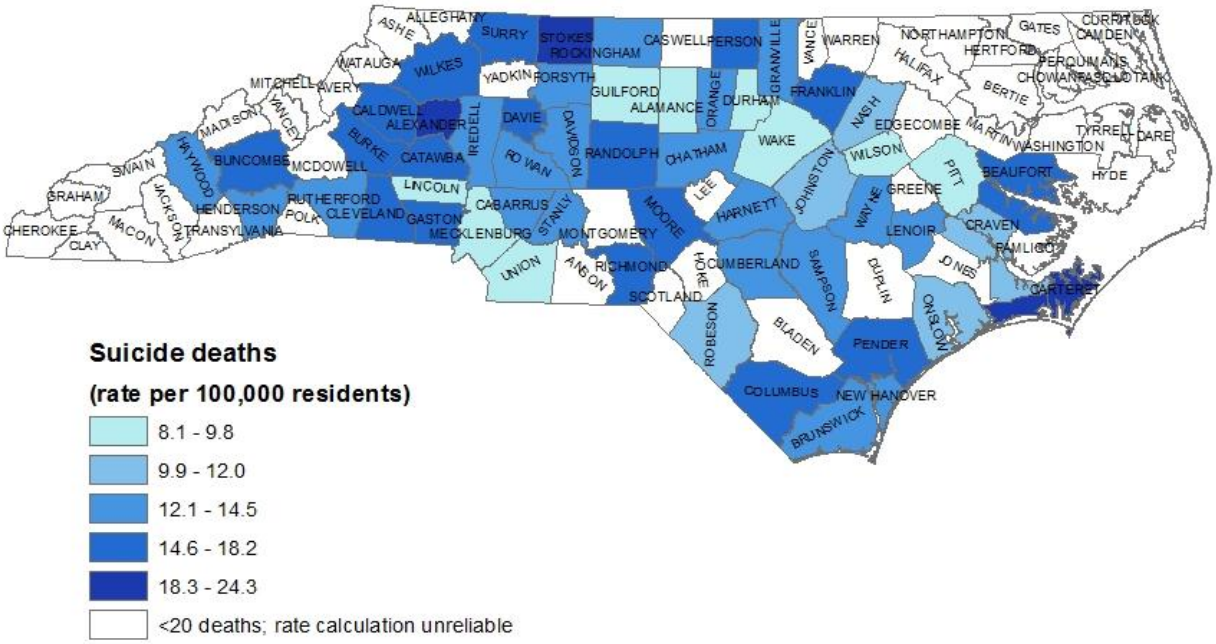


Table 14: Suicides for Age 10 or Older by North Carolina County of Residence (2009-2011)								
County	**Number**	**Rate**	**County**	**Number**	**Rate**	**County**	**Number**	**Rate**
Alamance	42	9.2	**Franklin**	**30**	**16.5**	Pamlico	11	*
Alexander	**23**	**20.7**	**Gaston**	**105**	**16.9**	Pasquotank	7	*
Alleghany	10	*	Gates	3	*	**Pender**	**26**	**16.5**
Anson	12	*	Graham	5	*	Perquimans	3	*
Ashe	14	*	Granville	26	14.6	**Person**	**21**	**18.0**
Avery	14	*	Greene	7	*	Pitt	43	8.6
Beaufort	**21**	**14.8**	Guilford	141	9.6	Polk	8	*
Bertie	7	*	Halifax	19	*	**Randolph**	**66**	**15.5**
Bladen	13	*	Harnett	43	12.3	**Richmond**	**21**	**15.1**
Brunswick	40	12.3	Haywood	25	14.3	Robeson	48	12.0
Buncombe	**123**	**17.3**	Henderson	46	14.5	Rockingham	36	12.9
Burke	**43**	**15.8**	Hertford	5	*	Rowan	60	14.4
Cabarrus	72	13.5	Hoke	13	*	Rutherford	26	13.1
Caldwell	**45**	**18.3**	Hyde	1	*	Sampson	27	14.4
Camden	2	*	Iredell	65	13.6	Scotland	4	*
Carteret	**49**	**24.7**	Jackson	18	*	Stanly	23	12.7
Caswell	6	*	Johnston	62	12.2	**Stokes**	**31**	**22.0**
Catawba	**77**	**16.5**	Jones	3	*	**Surry**	**36**	**16.4**
Chatham	25	13.0	Lee	17	*	Swain	8	*
Cherokee	13	*	Lenoir	25	14.3	Transylvania	19	*
Chowan	2	*	Lincoln	22	9.4	Tyrrell	4	*
Clay	5	*	McDowell	18	*	Union	57	9.4
Cleveland	**52**	**17.6**	Macon	13	*	Vance	19	*
Columbus	**28**	**16.5**	Madison	8	*	Wake	226	8.3
Craven	24	11.1	Martin	10	*	Warren	5	8.2
Cumberland	118	12.3	Mecklenburg	278	10.0	Washington	2	*
Currituck	7	*	Mitchell	3	*	Watauga	19	*
Dare	12	*	Montgomery	19	*	Wayne	49	13.6
Davidson	65	13.4	**Moore**	**47**	**17.8**	**Wilkes**	**33**	**16.1**
Davie	**21**	**16.9**	Nash	29	10.1	Wilson	22	9.1
Duplin	19	*	New Hanover	78	12.9	Yadkin	16	*
Durham	70	8.6	Northampton	9	*	Yancey	9	*
Edgecombe	18	*	Onslow	62	11.7			
Forsyth	139	13.0	Orange	55	13.8			

Crude rate per 100,000 population in the N.C. county

* Number of deaths was too small to support rate calculation.

Top 20 counties with the highest crude suicide rates are shown in bold.

Figure 15: Map of Self-Inflicted Injury Hospitalization Rates for Age 10 or Older by North Carolina County of Residence (2009-2011)

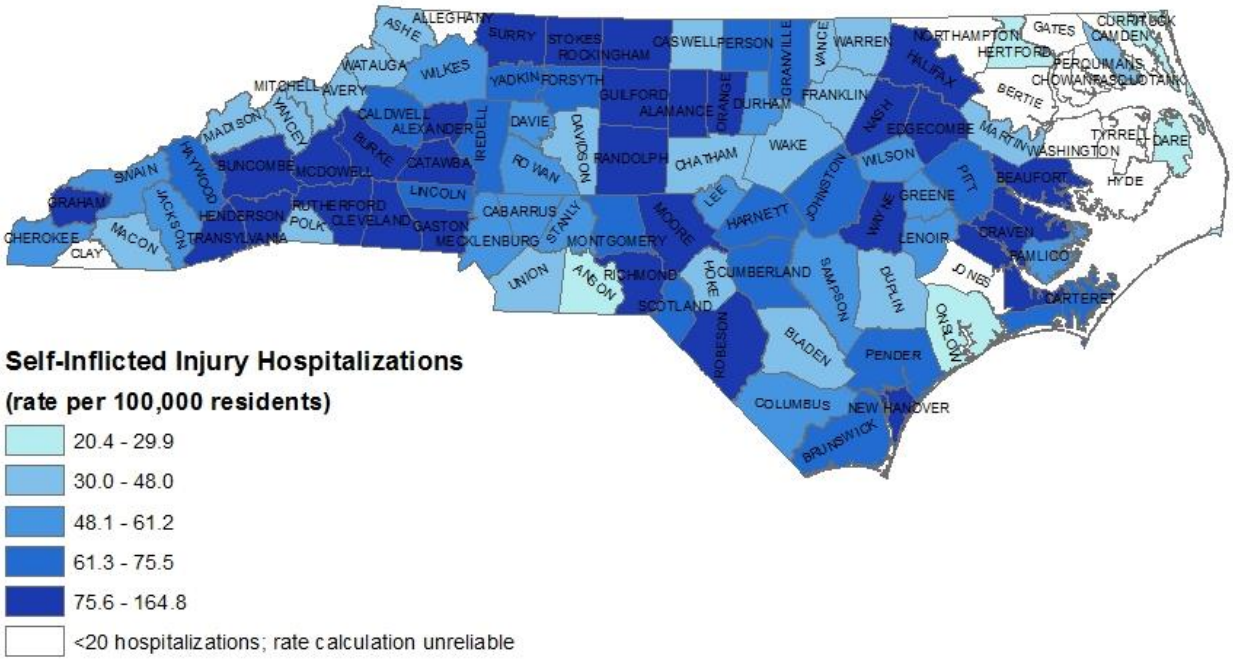


Table 15: Self-Inflicted Injury Hospitalizations for Age 10 or Older by North Carolina County of Residence (2009-2011)								
County	**Number**	**Rate**	**County**	**Number**	**Rate**	**County**	**Number**	**Rate**
Alamance	**470**	**102.5**	Franklin	88	48.0	Pamlico	22	55.8
Alexander	87	78.3	**Gaston**	**767**	**123.4**	Pasquotank	42	34.4
Alleghany	6	*	Gates	1	*	Pender	99	62.0
Anson	23	28.8	**Graham**	**24**	**91.0**	Perquimans	16	*
Ashe	38	46.6	Granville	111	61.5	Person	76	64.2
Avery	25	47.2	Greene	32	49.7	Pitt	369	72.1
Beaufort	112	78.3	**Guilford**	**1,917**	**129.1**	Polk	25	40.9
Bertie	19	*	**Halifax**	**185**	**113.6**	Randolph	337	79.0
Bladen	47	44.7	Harnett	221	62.1	**Richmond**	**123**	**87.9**
Brunswick	221	67.0	Haywood	113	63.9	**Robeson**	**328**	**80.1**
Buncombe	578	79.8	**Henderson**	**354**	**109.6**	**Rockingham**	**461**	**164.8**
Burke	**295**	**108.3**	Hertford	22	29.9	Rowan	249	60.0
Cabarrus	301	55.3	Hoke	57	38.8	**Rutherford**	**188**	**92.8**
Caldwell	162	65.5	Hyde	5	*	Sampson	107	55.9
Camden	6	*	Iredell	302	62.5	Scotland	81	75.0
Carteret	140	69.5	Jackson	60	49.6	Stanly	110	60.5
Caswell	25	35.5	Johnston	369	71.4	Stokes	113	80.0
Catawba	**412**	**89.0**	Jones	15	49.3	**Surry**	**222**	**100.5**
Chatham	77	39.8	Lee	106	60.1	Swain	22	52.2
Cherokee	49	60.0	Lenoir	99	55.6	**Transylvania**	**87**	**88.1**
Chowan	18	*	Lincoln	172	72.7	Tyrrell	4	*
Clay	8	*	**McDowell**	**28**	**95.8**	Union	276	44.9
Cleveland	**243**	**82.9**	Macon	32	45.1	Vance	55	40.5
Columbus	92	53.0	Madison	46	44.4	Wake	1,202	43.2
Craven	251	80.1	Martin	97	34.3	Warren	25	40.1
Cumberland	654	67.5	Mecklenburg	1,402	49.5	Washington	14	*
Currituck	20	27.9	Mitchell	22	47.4	Watauga	63	40.8
Dare	21	20.4	Montgomery	53	63.7	Wayne	298	80.4
Davidson	226	46.2	**Moore**	**222**	**82.9**	Wilkes	127	61.2
Davie	76	61.2	**Nash**	**255**	**88.6**	Wilson	133	54.4
Duplin	78	43.8	**New Hanover**	**538**	**87.0**	Yadkin	82	71.4
Durham	464	56.5	Northampton	19	29.0	Yancey	21	39.5
Edgecombe	**137**	**81.3**	Onslow	134	24.8			
Forsyth	803	75.5	Orange	325	79.8			

Crude rate per 100,000 population in the N.C. county

Top 20 counties with the highest self-inflicted injury hospitalization rates are shown in bold.

Figure 16: Map of Self-Inflicted Injury ED Visit Rates for Age 10 or Older by North Carolina County of Residence (2009-2012)

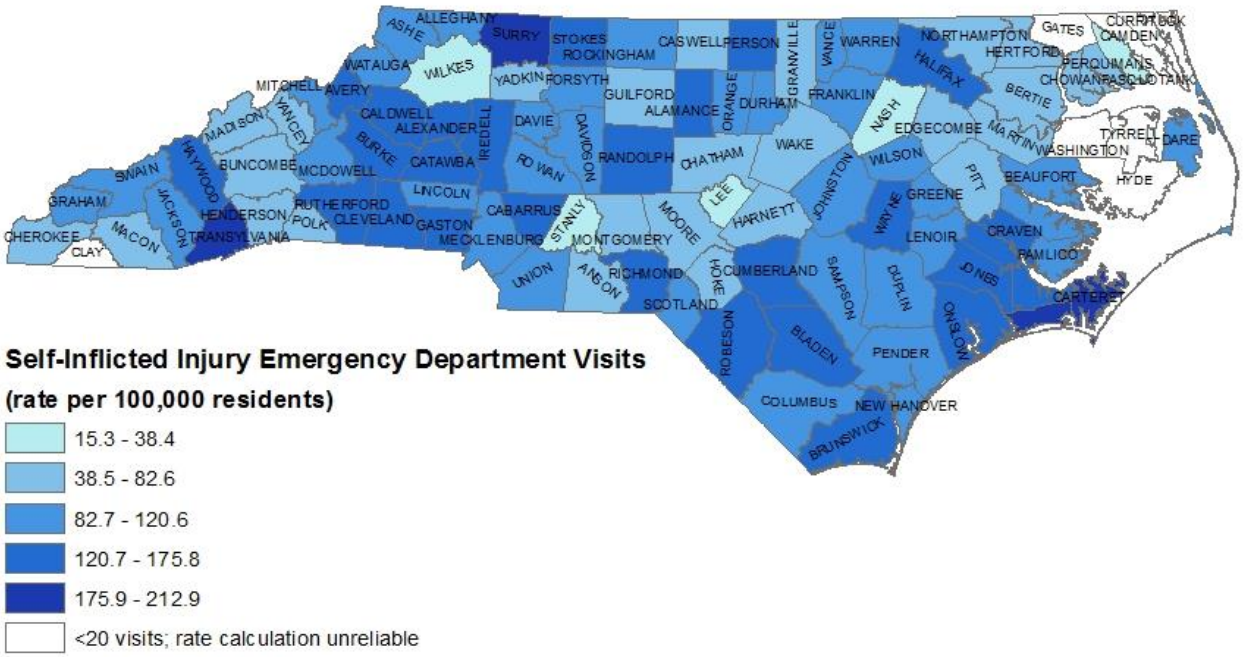


Table 16: Self-Inflicted Injury ED Visits for Age 10 or Older by North Carolina County of Residence (2009-2012)								
County	**Number**	**Rate**	**County**	**Number**	**Rate**	**County**	**Number**	**Rate**
Alamance	756	124.2	Franklin	214	87.9	Pamlico	57	110.0
Alexander	**260**	**175.8**	**Gaston**	**1,173**	**141.3**	Pasquotank	25	15.3
Alleghany	44	99.8	Gates	8	*	Pender	190	89.5
Anson	78	74.3	Graham	37	107.7	Perquimans	25	47.0
Ashe	113	105.3	Granville	181	76.1	**Person**	**214**	**137.1**
Avery	91	128.3	Greene	101	118.8	Pitt	530	79.0
Beaufort	210	110.9	Guilford	1,056	53.7	Polk	37	46.1
Bertie	50	60.9	**Halifax**	**360**	**165.6**	**Randolph**	**825**	**145.1**
Bladen	**208**	**151.4**	Harnett	255	54.0	Richmond	227	122.1
Brunswick	579	132.5	**Haywood**	**396**	**169.3**	**Robeson**	**822**	**153.7**
Buncombe	736	77.0	Henderson	310	72.7	Rockingham	321	86.3
Burke	**616**	**170.2**	Hertford	49	50.6	Rowan	613	110.4
Cabarrus	886	123.7	Hoke	119	62.0	**Rutherford**	**398**	**149.6**
Caldwell	**535**	**163.5**	Hyde	14	*	Sampson	249	97.7
Camden	7	*	**Iredell**	**912**	**142.2**	Scotland	167	115.6
Carteret	**566**	**212.9**	Jackson	165	104.5	Stanly	61	25.3
Caswell	64	68.6	Johnston	683	99.7	Stokes	243	129.5
Catawba	**920**	**147.9**	Jones	51	125.9	**Surry**	**554**	**188.8**
Chatham	125	48.4	Lee	91	38.4	Swain	67	120.6
Cherokee	84	77.8	Lenoir	256	109.2	**Transylvania**	**253**	**196.2**
Chowan	46	77.7	Lincoln	376	120.3	Tyrrell	11	*
Clay	17	*	McDowell	83	61.4	Union	710	87.2
Cleveland	**665**	**169.5**	Macon	48	58.0	Vance	150	83.8
Columbus	269	118.2	Madison	57	59.4	Wake	2,613	71.0
Craven	**577**	**140.2**	Martin	160	89.3	Warren	72	88.0
Cumberland	1,740	135.6	Mecklenburg	3,360	89.7	Washington	11	*
Currituck	19	*	Mitchell	58	93.5	Watauga	214	107.1
Dare	136	99.2	Montgomery	60	54.1	**Wayne**	**769**	**158.8**
Davidson	779	120.3	Moore	240	67.6	Wilkes	68	24.8
Davie	139	83.9	Nash	108	28.2	Wilson	315	97.6
Duplin	197	85.2	New Hanover	925	113.8	Yadkin	126	82.6
Durham	951	87.2	Northampton	66	77.1	Yancey	47	65.6
Edgecombe	106	48.1	**Onslow**	**1,049**	**147.0**			
Forsyth	1,580	111.0	Orange	451	84.1			

Crude rate per 100,000 population in the N.C. county

Top 20 counties with the highest self-inflicted injury emergency visit rates are shown in bold.

Suicide Method

Table 17: Method of Suicide for Age 10 or Older in North Carolina by Gender (2009-2011)						
	Male		Female		TOTAL	
Method	Number	Percent	Number	Percent	Number	Percent
Firearm	1,776	64.7	322	40.6	2,098	59.3
Hanging, strangulation, suffocation	569	20.7	139	17.5	708	20.0
Poisoning	307	11.2	303	38.2	610	17.3
Sharp Instrument	36	1.3	8	1.0	44	1.2
Fall	19	0.7	10	1.3	29	0.8
Other transport vehicle	12	0.4	1	0.1	13	0.4
Fire or Burns	9	0.3	2	0.2	11	0.3
Motor Vehicle	7	0.3	3	0.4	10	0.3
Drowning	5	0.2	5	0.6	10	0.3
Missing/Unknown	3	0.1	0	0.0	3	0.09
TOTAL	**2,743**	**100**	**793**	**100**	**3,536**	**100**

Table 18: Type of Firearm for Suicide Firearm Deaths for Age 10 or Older in North Carolina by Gender (2009-2011)						
	Male		Female		TOTAL	
Firearm Type	Number	Percent	Number	Percent	Number	Percent
Handgun	1,202	67.7	275	85.4	1,477	70.4
Shotgun	356	20.0	25	7.8	381	18.2
Rifle	201	11.3	18	5.6	219	10.4
Other	2	0.1	0	0.0	2	0.1
Unknown	15	0.8	4	1.2	19	1.0
TOTAL	**1,776**	**100**	**322**	**100**	**2,078**	**100**

Table 19: Type of Poison for Suicide Poisoning Deaths for Age 10 or Older in North Carolina by Gender (2009-2011)						
	Male		Female		TOTAL	
Poison Type	Number	Percent	Number	Percent	Number	Percent
Pharmaceutical - Prescription	180	58.6	245	80.6	425	69.7
Carbon Monoxide or Other Gas	72	23.4	21	6.9	93	15.2
Pharmaceutical - Over-the-Counter	30	9.8	18	5.9	48	7.9
Other (e.g., Rat Poison, Insecticide, Lye)	12	3.9	9	3.0	21	3.4
Street / Recreational Drugs	5	1.6	5	1.7	10	1.6
Alcohol	6	1.9	2	0.7	8	1.3
Pharmaceutical - Unknown	0	0.0	1	0.3	1	0.2
Unknown	2	0.6	2	0.7	4	0.6
TOTAL	**307**	**100**	**303**	**100**	**610**	**100**

Self-Inflicted Injury Type

Table 20: Type of Self-Inflicted Injury Hospitalizations for Age 10 or Older in North Carolina by Gender (2009-2011)						
	Male		Female		TOTAL	
Self-Inflicted Injury Type	Number	Percent	Number	Percent	Number	Percent
Poisoning	5,971	74.0	9,934	85.0	15,905	80.5
Cut/Pierce	1,107	13.7	1,088	9.3	2,195	11.1
Unspecified	232	2.9	365	3.1	597	3.0
Firearm	255	3.2	69	0.6	324	1.6
Other Specified/not classified	201	2.5	96	0.8	297	1.5
Suffocation	133	1.6	46	0.4	179	0.9
Other Specified/classified	65	0.8	21	0.2	86	0.4
Fire/Burn	41	0.5	38	0.3	79	0.4
Fall	35	0.4	22	0.2	57	0.3
Motor Vehicle Transport	22	0.3	8	0.1	30	0.1
Natural/Environmental	2	0.02	3	0.03	5	0.03
TOTAL	**8,064**	**100**	**11,690**	**100**	**19,754**	**100**

Table 21: Type of Self-Inflicted Injury ED Visits for Age 10 or Older in North Carolina by Gender (2009-2012)						
	Male		Female		TOTAL	
Self-Inflicted Injury Type	Number	Percent	Number	Percent	Number	Percent
Poisoning	9,896	60.3	16,546	74.6	26,433	68.5
Cut/Pierce	4,114	25.1	4,551	20.5	8,666	22.4
Other Specified/Not Classified	1,229	7.5	520	2.3	1,749	4.5
Unspecified	287	1.7	269	1.2	556	1.4
Firearm	324	2.0	88	0.4	414	1.1
Suffocation	298	1.8	91	0.4	389	1.0
Other Specified/Classified	112	0.9	33	0.1	145	0.4
Fire/Burn	68	0.4	40	0.2	108	0.3
Fall	54	0.3	34	0.1	88	0.2
Motor Vehicle Transport	28	0.2	10	0.05	38	0.1
Natural/Environmental	6	0.04	1	0.0	7	0.02
Drowning	1	0.01	0	0.0	1	0.0
Other Land Transport	0	0.0	1	0.0	1	0.0
TOTAL	**16,417**	**100**	**22,184**	**100**	**38,605**	**100**

Suicide Circumstances

Table 22: Circumstances of Suicide Victims for Age 10 or Older in North Carolina (2009-2011)						
Circumstance**	**Male**		**Female**		**TOTAL**	
Mental Health	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Current depressed mood	1,068	42.2	314	41.9	1,382	42.1
Current mental health problem	884	35.0	448	59.7	1,332	40.6
Current treatment for mental illness	822	32.5	423	56.4	1,305	39.8
Ever treated for mental illness	892	35.3	449	59.9	1,341	40.9
Substance Abuse						
Alcohol problem	398	15.7	66	8.8	464	14.1
Other substance problem	307	12.1	128	17.1	435	13.3
Interpersonal						
Intimate partner problem	744	29.4	162	21.6	906	27.6
Other relationship problem	240	9.5	64	8.5	304	9.3
Recent suicide of friend/family (past 5 years)	30	1.2	4	0.5	34	1.0
Other death of friend/family	116	4.6	39	5.2	155	4.7
Perpetrator of interpersonal violence in past	230	9.1	11	1.5	241	7.3
Victim of interpersonal violence in past month	10	0.4	13	1.7	23	0.7
Life Stressor						
Crisis within two weeks	876	34.6	183	24.4	1,059	32.3
Physical health problem	509	20.1	158	21.1	667	20.3
Job problem	287	11.3	52	6.9	639	19.5
School problem	14	0.5	6	0.8	20	0.6
Financial problem	210	8.3	40	5.3	250	7.6
Recent criminal-related legal problem	269	10.6	29	3.9	298	9.1
Other legal problems	71	2.8	18	2.4	89	2.7
Suicide Event						
Left a suicide note	728	28.8	262	34.9	990	30.2
Disclosed intent to complete suicide	703	27.8	202	26.9	905	27.6
History of suicide attempts	323	12.8	216	28.8	539	16.4

** Circumstances were available for 92.2 percent (2,529/2,743) of males, 94.6 percent (750/793) of females and 92.7 percent (3,279/3,536) of all suicide victims. The percentage of circumstances for suicide victims is based on the number of cases reporting circumstances in North Carolina over 2009-2011.

NOTE: Each victim may have more than one circumstance. Accordingly, the total number of circumstances may exceed the total number of suicides.

Table 23: Current Mental Health Problem at the Time of Suicide for Age 10 or Older in North Carolina (2009-2011)						
	Male		Female		TOTAL	
Current Mental Health Problem **	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Depression / Dysthymia	701	79.3	379	84.6	1,080	81.1
Bipolar Disorder	76	8.6	45	10.0	121	9.1
Schizophrenia	20	2.3	3	0.7	23	1.7
Anxiety Disorder	13	1.5	9	2.0	22	1.7
Post-Traumatic Stress Disorder	10	1.1	0	0.0	10	0.7
Attention Deficit Disorder (ADD) or Hyper-Reactivity Disorder	7	0.8	1	0.2	8	0.6
Obsessive-Compulsive Disorder	1	0.1	0	0.0	1	0.1
Other	20	2.3	2	0.4	22	1.6
Unknown / Missing	36	4.1	9	2.0	45	3.4
Total	**884**	**100**	**448**	**100**	**1,332**	**100**

** For 884 males, 448 females and 1,332 total suicide victims with a current mental health problem
NOTE: Victims may have more than one current mental health problem

Toxicology Testing

Table 24: Toxicology Testing and Results Associated with Suicides for Ages10 or Older in North Carolina (2009-2011)						
	Male		Female		TOTAL	
Alcohol	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Tested with results	2,391	87.2	712	89.8	3,103	87.8
Alcohol present in those tested	764	33.6	166	23.3	930	30.0
Antidepressant						
Tested with results	177	6.5	207	26.1	384	10.9
Antidepressant present in those tested	116	65.5	150	72.5	266	69.3
Amphetamines						
Tested with results	114	4.2	140	17.7	254	7.2
Amphetamines present in those tested	6	5.2	5	3.6	11	4.3
Cocaine						
Tested with results	232	8.5	252	31.8	484	13.7
Cocaine present in those tested	21	9.1	14	5.6	35	7.2
Marijuana						
Tested with results	111	4.1	137	17.3	248	7.0
Marijuana present in those tested	1	0.9	0	0.0	1	0.4
Opiates						
Tested with results	231	8.4	254	32.0	485	13.7
Opiates present in those tested	128	55.4	150	59.1	278	57.3
Other Drugs						
Tested with results	278	10.1	266	33.5	544	15.4
Other drugs present in those tested	251	90.3	251	94.4	502	92.3

Table 25: Alcohol Toxicology Testing and Results Associated with Suicides for Age 10 or Older in North Carolina by Age Group and Race (2009-2011)				
	Alcohol tested with results		Alcohol present in those tested	
Age group (years)	**Number**	**Percent**	**Number**	**Percent**
10-14	21	95.5	0	0.0
15-19	134	90.5	21	15.7
20-24	220	87.3	87	39.5
25-34	483	89.8	176	36.4
35-44	589	89.0	220	37.4
45-54	708	87.2	242	34.2
55-64	471	87.4	133	28.2
65-74	276	85.4	37	13.4
75-84	141	82.5	11	7.8
85 +	60	86.9	3	0.1
Race	**Number**	**Percent**	**Number**	**Percent**
American Indian	41	91.1	13	31.7
Asian / Pacific Islander	26	83.9	4	15.4
Black	254	86.7	69	27.2
Other / Unspecified	5	71.4	3	60.0
White	2,777	87.9	841	30.3

Suicidal Injury Location

Table 26: Suicidal Injury Location Age 10 or Older in North Carolina (2009-2011)		
	Number	**Percent**
House, Apartment	2,917	82.5
Natural Area (e.g., field, river, beaches, woods)	121	3.4
Motor Vehicle (excluding school bus and public transportation)	88	2.5
Street/road, sidewalk, alley	78	2.2
Hotel/Motel	54	1.5
Jail, prison, detention facility	40	1.1
Parking lot/public parking garage	38	1.1
Other commercial establishment (i.e. grocery store, retail outlet, laundromat)	25	0.7
Highway, freeway	20	0.6
Park, playground, public use area	19	0.5
Synagogue, church, temple	15	0.4
Farm	13	0.4
Hospital or medical facility	12	0.3
Other Specified *	43	1.2
Other Not Specified	38	1.1
Unknown	15	0.4
TOTAL	**3,536**	**100**

* Other Specified with less than 0.3 percent of suicidal injuries by location type included:
Office building; industrial or construction area, sports or athletic area; college or university; abandoned house, building or warehouse; supervised residential facility; bar or nightclub; public transportation; service station; ATM, bank, credit union location; and unspecified school.

YOUTH AND YOUNG ADULT (AGES 10 TO 24) SUICIDE

Suicidal behavior in youth and young adults (ages 10 to 24) is a significant concern because this age group has the highest rates of self-inflicted injury requiring hospitalization or a visit to an ED. This section presents statistics for ages 10 to 24 on completed suicides and suicide attempts based on hospitalizations and ED visits for self-inflicted injuries in North Carolina.

KEY FINDINGS:

Youth and Young Adult Suicide and Self-Inflicted Injuries over Time

During 2009 to 2011 in N.C., 422 suicides (7.2 per 100,000) and 5,167 self-inflicted injury hospitalizations (88.4 per 100,000) were reported for those ages 10 to 24 (Table 27). In addition, 13,331 ED visits (170.1 per 100,000) for self-inflicted injury occurred among youth and young adults in N.C. from 2009 to 2012. Thus, youth and young adults had substantially higher rates of suicide attempts compared to the completed suicide rate. Crude (Table 27) and age-adjusted rates (Figure 17) were comparable and remained relatively constant over time.

Highlight:

Over half (**56%**) of suicides among youth and young adults were completed using firearms.

Demographics of Youth and Young Adult Suicide and Self-Inflicted Injury Victims

Demographic characteristics for youth and young adult suicide victims in N.C. for 2009 to 2011 are shown by year in Table 28 and for the aggregate three-year period in Table 29. The majority of N.C. suicide victims ages 10 to 24 were male (82.5%), white (81.0%), and non-Hispanic (93.6%). For the 10 to 24 age group, males were 4.4 times more likely to die from suicide than females (11.6 vs. 2.6 per 100,000, respectively). Whites comprised the largest proportion of youth and young adult suicide victims with a suicide rate of 8.5 per 100,000. Non-Hispanics and Hispanics had similar suicide rates in ages 10 to 24 (7.5 vs. 4.5 per 100,000, respectively). Young adults ages 20 to 24 years had the highest percentage (59.7) and rate (12.5 per 100,000) of suicides.

Highlight:

From 2009 to 2011, males between the ages of 15 and 19 had a crude suicide rate **4.9 times greater** than females of the same age.

Females between the ages of 10 and 14 were **2.7 times more likely** to be hospitalized for a self-inflicted injury than males of the same age.

Contrary to suicide trends, self-inflicted injury hospitalizations (Table 30 and Table 31) and self-inflicted injury ED visits (Table 32 and Table 33) in N.C. were more common in females than males for ages 10 to 24. In this age group, females as compared to males were 1.7 times more likely to be hospitalized (112.7 vs. 65.4 per 100,000, respectively) and 1.5 times more likely to visit an ED (205.5 vs. 136.4 per 100,000, respectively) for self-inflicted injury. The self-inflicted injury hospitalization rate was highest for ages 15 to 19 (116.7 per 100,000) and ages 20 to 24 (116.1 per 100,000). The self-inflicted injury ED visit rate was highest for ages 15 to 19 (233.8 per 100,000).

Across all youth and young adult age groups, males had a higher suicide rate than females (Table 34); whereas, females had a higher self-inflicted injury hospitalization rate (Table 35) and ED visit rate (Table 36) than males. For both genders, ages 20 to 24 had the highest suicide rate per 100,000 (20.2 for males and 4.4 for females). Moreover, ages 20 to 24 had the highest self-inflicted injury hospitalization rate (98.3 per 100,000) and ED visit rate (193.9 per 100,000) among males. Conversely for females, ages 15 to 19 had the highest self-inflicted injury hospitalization rate (156.7 per 100,000) and ED visit rate (295.7 per 100,000).

For youth and young adults, whites comprised 80.2 percent of male suicide victims with a suicide rate of 13.4 per 100,000 and 85.1 percent of female suicide victims with a suicide rate of 3.2 per 100,000 (Table 37). Black males accounted for 16.1 percent of male youth and young adult suicide victims with a suicide rate of 7.1 per 100,000. Black females accounted for 8.1% of female youth and young adult suicide victims, but represented too few cases to support the calculate of a rate. American Indians accounted for less than 2 percent of male youth and young adult suicide victims. Similarly, American Indian females accounted for about 5 percent of female youth and young adult suicide victims.

Suicide Method for Youth and Young Adults

The leading methods of suicide in youth and young adults from 2009 to 2011 were firearm (55.9%), hanging, strangulation, or suffocation (33.6%), and poisoning (6.4%) (Table 38). Firearm was the most common suicide method for males (61.8%) and hanging, strangulation, or suffocation the most common method for females (50.0%) among youth and young adults.

Self-Inflicted Injury Type for Youth and Young Adults

In N.C. from 2009 to 2011, the most common self-inflicted injuries requiring hospitalization in ages 10 to 24 were poisoning injuries (73.3%) and cut or pierce injuries (14.5%) (Table 39). Similarly, poisoning injuries (60.0%) and cut or pierce injuries (28.3%) were the leading types of self-inflicted injuries treated in EDs in youth and young adults (Table 40).

Suicide Circumstances for Youth and Young Adults

Circumstances surrounding youth and young adult suicides in N.C. for 2009 to 2011 were available in NC-VDRS for 87.2 percent of victims (Table 41). The most common circumstance for 47.3 percent of victims ages 10 to 24 was a crisis within the past two weeks. Mental health circumstances were also common in youth and young adults with 32.3 percent having a depressed mood, 31.5 percent having a current mental health problem, and 32.1 percent having ever been treated for mental illness. At the time of suicide, the most common current mental health problems for ages 10 to 24 were depression or dysthymia (66.4%), bipolar disorder (13.8%), and attention deficit disorder (6.0%) (Table 42).

Other common suicide circumstances in ages 10 to 24 were an intimate partner problem (38.6%), other relationship problem (17.1%), substance abuse problem excluding alcohol (16.3%), and recent criminal-related legal problem (10.6%). Of suicide victims ages 10 to 24, 26.4 percent left a suicide note, 26.6 percent disclosed intent to complete suicide, and 18.7 percent had a history of suicide attempts.

Suicidal Behavior from the North Carolina Youth Risk Behavior Survey

The Youth Risk Behavior Survey was conducted in 2009 and 2011 under the Healthy Schools Initiative by the N.C. Department of Public Instruction and the N.C. Division of Public Health to assess risk behaviors in N.C. high school students (Table 43). Depending upon the survey year, 27.4 to 28.3 percent of high school students felt so sad or hopeless almost every day for two weeks that they had stopped doing some usual activities during the past 12 months, 13.2 to 14.3 percent of high school students had seriously considered attempting suicide during the past 12 months, and 10.1 to 13.5 percent of high school students had made a plan about how they would attempt suicide during the past 12 months. The 2009 survey also found that 9.9% of students had actually attempted suicide one or more times during the past 12 months.

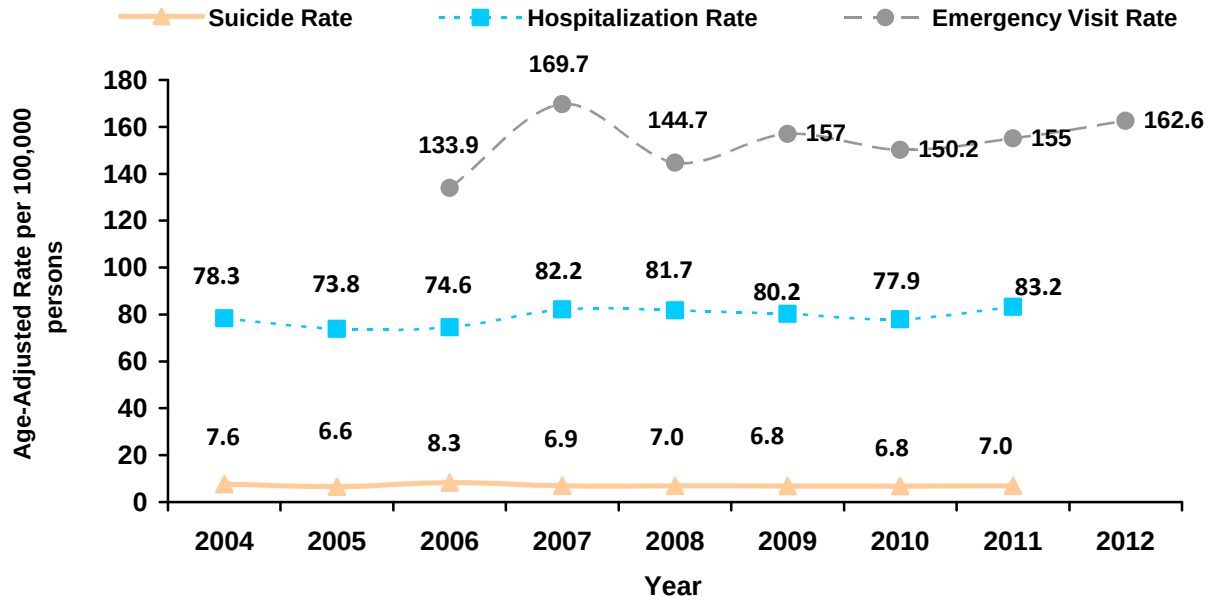
Youth and Young Adult Suicide and Self-Inflicted Injuries Over Time

Table 27: Youth and Young Adult (Ages 10-24) Suicides, Self-Inflicted Injury Hospitalizations and Self-Inflicted Injury ED Visits in North Carolina by Year (2004-2012)

	Suicides			Hospitalizations			Emergency Department Visits		
Year	**Number**	**Rate**	**95% CI**	**Number**	**Rate**	**95% CI**	**Number**	**Rate**	**95% CI**
2004	137	7.8	6.5 - 9.1	1,387	79.0	74.9 - 83.2	NA*	NA*	NA*
2005	121	6.8	5.6 - 8.1	1,324	74.8	70.8 - 78.9	NA*	NA*	NA*
2006	155	8.6	7.3 - 10.0	1,368	76.1	72.0 - 80.1	2,444 ‡	135.9 ‡	130.5 - 141.3 ‡
2007	131	7.2	6.0 - 8.4	1,532	84.0	79.8 - 88.2	3,157	173.2	167.1 - 179.2
2008	135	7.3	6.1 - 8.5	1,556	84.1	79.9 - 88.2	2,735	147.8	142.2 - 153.3
2009	137	7.1	6.0 - 8.4	1,708	89.2	85.0 - 93.5	3,296	172.2	166.3 - 178.1
2010	139	7.1	5.9 - 8.3	1,683	86.2	82.1 - 90.3	3,216	164.7	159.0 - 170.4
2011	146	7.4	6.2 - 8.6	1,776	89.9	85.8 - 94.1	3,316	167.9	162.2 - 173.7
2012	NA*	NA*	NA*	NA*	NA*	NA*	3,503	175.6	169.8 - 181.4
TOTAL	**1,101**	**7.3**	**6.9 – 7.8**	**12,334**	**82.2**	**80.7 – 83.6**	**21,667**	**161.4**	**159.2 - 163.5**

Crude rate per 100,000 N.C. population ages 10-24
* Data from the NC-VDRS and hospital not available for 2012; ED visit data not available for 2004-2005
‡ Only 79 percent of emergency departments reporting in 2006
95% CI = 95 Percent Confidence Interval for Rate

Figure 17: Age-Adjusted Rate of Youth and Young Adult (Ages 10-24) Suicides, Self-Inflicted Injury Hospitalizations and Self-Inflicted Injury ED Visits in North Carolina Over Time (2004-2012)



Demographics of Youth and Young Adult Suicide and Self-Inflicted Injury Victims

Table 28: Demographics of Youth and Young Adult (Ages 10-24) Suicide Victims in North Carolina by Year (2009-2011)						
	2009		2010		2011	
Gender	**Number**	**Rate**	**Number**	**Rate**	**Number**	**Rate**
Male	109	**11.0**	117	**11.7**	122	**12.0**
Female	28	**3.0**	22	**2.3**	24	**2.5**
Race						
American Indian	3	*	3	*	4	*
Asian/Pacific Islander	1	*	1	*	3	*
Black	18	*	20	**3.8**	24	**4.5**
Other/Unspecified	1	*	0	*	2	*
White	114	**8.5**	115	**8.6**	113	**8.4**
Hispanic Ethnicity						
Hispanic	9	*	8	*	10	*
Non-Hispanic	128	**7.3**	131	**7.5**	136	**7.7**
Age Group (Years)						
10-14	7	*	4	*	11	*
15-19	60	**9.3**	45	**6.8**	43	**6.6**
20-24	70	**10.5**	90	**13.6**	92	**13.6**
TOTAL	**137**	**7.1**	**139**	**7.1**	**146**	**7.4**

Gender, race, Hispanic ethnicity or age-specific crude rate per 100,000 N.C. population ages 10-24
* The number of deaths was too small to support calculation of a rate.
95% CI = 95 Percent Confidence Interval for Rate

Table 29: Demographics of Youth and Young Adult (Ages 10-24) Suicide Victims in North Carolina (2009-2011)				
Gender	**Number**	**Percent**	**Rate**	**95% CI**
Male	348	82.5	**11.6**	10.4 - 12.8
Female	74	17.5	**2.6**	2.0 - 3.2
Race				
American Indian	10	2.4	*	*
Asian/Pacific Islander	5	1.2	*	*
Black	62	14.7	**4.0**	3.0 - 5.0
Other/Unspecified	3	0.7	*	*
White	342	81.0	**8.5**	7.6 – 9.4
Hispanic				
Hispanic	27	6.4	**4.5**	2.8 - 6.3
Non-Hispanic	395	93.6	**7.5**	6.8 - 8.3
Age Group (Years)				
10-14	22	5.2	**1.2**	0.7 - 1.7
15-19	148	35.1	**7.6**	6.3 - 8.8
20-24	252	59.7	**12.5**	11.0 - 14.1
TOTAL	**422**	**100**	**7.2**	**6.5 - 7.9**

Table 30: Demographics of Youth and Young Adult (Ages 10-24) Self-Inflicted Injury Hospitalizations in North Carolina by Year (2009-2011)						
	2009		2010		2011	
Gender	**Number**	**Rate**	**Number**	**Rate**	**Number**	**Rate**
Male	630	**68.3**	659	**66.0**	674	**66.8**
Female	1,078	**116.9**	1,024	**107.3**	1,102	**114.1**
Age Group (Years)						
10-14	169	**28.1**	161	**25.5**	221	**34.4**
15-19	787	**121.9**	726	**110.1**	773	**118.3**
20-24	752	**112.6**	796	**120.3**	782	**115.3**
TOTAL	**1,708**	**89.2**	**1,683**	**86.2**	**1,776**	**89.9**

Gender or age-specific crude rate per 100,000 N.C. population ages 10-24

Table 31: Demographics of Youth and Young Adult (Ages 10-24) Self-Inflicted Injury Hospitalizations in North Carolina (2009-2011)				
Gender	**Number**	**Percent**	**Rate**	**95% CI**
Male	1,963	38.0	**65.4**	62.6 - 68.3
Female	3,204	62.0	**112.7**	108.8 - 116.6
Age Group (Years)				
10-14	551	10.7	**29.4**	26.9 - 31.8
15-19	2,286	44.2	**116.7**	111.9 - 121.5
20-24	2,330	45.1	**116.1**	111.3 - 120.8
TOTAL	**5,167**	**100**	**88.4**	**86.0 - 90.9**

Gender or age-specific crude rate per 100,000 N.C. population ages 10-24
95% CI = 95 Percent Confidence Interval for Rate

Table 32: Demographics of Youth and Young Adult (Ages 10-24) Self-Inflicted Injury ED Visits in North Carolina by Year (2009-2012)								
	2009		2010		2011		2012	
Gender	**Number**	**Rate**	**Number**	**Rate**	**Number**	**Rate**	**Number**	**Rate**
Male	1,280	**129.0**	1,387	**139.0**	1,401	**138.4**	1,421	**138.8**
Female	2,015	**218.5**	1,829	**191.6**	1,915	**198.4**	2,081	**213.9**
Age Group (Years)								
10-14	329	**54.7**	328	**52.0**	411	**64.0**	472	**72.8**
15-19	1,609	**249.3**	1,456	**220.7**	1,448	**221.5**	1,589	**244.2**
20-24	1,358	**203.4**	1,432	**216.5**	1,457	**214.8**	1,442	**206.8**
TOTAL	**3,296**	**172.2**	**3,216**	**164.7**	**3,316**	**167.9**	**3,503**	**175.6**

Rate is gender or age-specific crude rate per 100,000 N.C. population ages 10-24

Table 33: Demographics of Youth and Young Adult (Ages 10-24) Self-Inflicted Injury ED Visits in North Carolina (2009-2012)				
Gender	**Number**	**Percent**	**Rate**	**95% CI**
Male	5,489	58.8	**136.4**	132.8 - 140.0
Female	7,840	41.2	**205.5**	200.9 - 210.1
Age Group (Years)				
10-14	1,540	11.6	**61.0**	57.9 - 64.1
15-19	6,102	45.8	**233.8**	228.0 - 239.7
20-24	5,689	42.8	**210.3**	204.9 - 215.8
TOTAL	**13,331**	**100**	**170.1**	**167.2 - 173.0**

Gender or age-specific crude rate per 100,000 N.C. population ages 10-24
95% CI = 95 Percent Confidence Interval for Rate

Age and Gender

Table 34: Youth and Young Adult (Ages 10-24) Suicides in North Carolina by Age and Gender (2009-2011)						
	Male			**Female**		
Age (Years)	**Number**	**Percent**	**Rate**	**Number**	**Percent**	**Rate**
10-14	15	4.3	*	7	9.5	*
15-19	124	34.6	**12.3**	24	32.4	**2.5**
20-24	209	60.1	**20.2**	43	58.1	**4.4**
TOTAL	**348**	**100**	**11.6**	**74**	**100**	**2.6**

Gender and age-specific crude rate per 100,000 N.C. population ages 10-24

Table 35: Youth and Young Adult (Ages 10-24) Self-Inflicted Injury Hospitalizations in North Carolina by Age and Gender (2009-2011)						
	Male			**Female**		
Age (Years)	**Number**	**Percent**	**Rate**	**Number**	**Percent**	**Rate**
10-14	154	7.8	**16.0**	397	12.4	**43.4**
15-19	793	40.4	**78.8**	1,493	46.6	**156.7**
20-24	1,016	51.8	**98.3**	1,314	41.0	**134.9**
TOTAL	**1,963**	**100**	**65.4**	**3,204**	**100**	**112.7**

Gender and age-specific crude rate per 100,000 N.C. population ages 10-24

Table 36: Youth and Young Adult (Ages 10-24) Self-Inflicted Injury ED Visits in North Carolina by Age and Gender (2009-2012)						
	Male			**Female**		
Age (Years)	**Number**	**Percent**	**Rate**	**Number**	**Percent**	**Rate**
10-14	443	8.1	**34.3**	1,096	14.0	**88.9**
15-19	2,347	42.8	**175.1**	3,754	47.9	**295.7**
20-24	2,699	49.2	**193.9**	2,990	38.1	**227.8**
TOTAL	**5,489**	**100**	**136.4**	**7,840**	**100**	**205.5**

Gender and age-specific crude rate per 100,000 N.C. population ages 10-24

Race and Gender

Table 37: Youth and Young Adult (Ages 10-24) Suicides in North Carolina by Race and Gender (2009-2011)						
	Male			Female		
Race	Number	Percent	Rate	Number	Percent	Rate
American Indian	6	1.7	*	4	5.4	*
Asian/Pacific Islander	4	1.1	*	1	1.3	*
Black	56	16.1	**7.1**	6	8.1	*
Other / Unspecified	3	0.9	*	0	0.0	*
White	279	80.2	**13.4**	63	85.1	**3.2**
TOTAL	**348**	**100**	**11.6**	**74**	**100**	**2.6**

Gender and race-specific crude rate per 100,000 N.C. population ages 10-24
* The number of deaths was too small to support calculation of a rate.

Suicide Method for Youth and Young Adults

Table 38: Method of Youth and Young Adult (Ages 10-24) Suicides in North Carolina by Gender (2009-2011)						
	Male		Female		TOTAL	
Method	Number	Percent	Number	Percent	Number	Percent
Firearm	215	61.8	21	28.3	236	55.9
Hanging, Strangulation, Suffocation	105	30.2	37	50.0	142	33.6
Poisoning	16	4.6	11	14.9	27	6.4
Fall	4	1.1	2	2.7	6	1.4
Sharp Instrument	4	1.1	2	2.7	6	1.4
Motor Vehicle	1	0.3	1	1.3	2	0.5
Drowning	2	0.6	0	0.0	2	0.5
Fire/Burn	1	0.3	0	0.0	1	0.2
TOTAL	**348**	**100**	**74**	**100**	**422**	**100**

Self-Inflicted Injury Type for Youth and Young Adults

Table 39: Type of Youth and Young Adult (Ages 10-24) Self-Inflicted Injury Hospitalizations in North Carolina by Gender (2009-2011)						
	Male		Female		TOTAL	
Self-Inflicted Injury Type	Number	Percent	Number	Percent	Number	Percent
Poisoning	1,324	67.4	2,465	76.9	3,789	73.3
Cut/Pierce	325	16.6	423	13.2	748	14.5
Unspecified	126	6.4	247	7.7	373	7.2
Other Specified / Not Classified	53	2.7	32	1.0	85	1.6
Suffocation	44	2.2	15	0.5	59	1.1
Firearm	54	2.7	4	0.1	58	1.1
Fire/Burn	11	0.6	7	0.2	18	0.3
Fall	9	0.5	5	0.2	14	0.3
Other Specified / Classified	10	0.5	4	0.1	14	0.3
Motor Vehicle Transport	6	0.3	2	0.06	8	0.1
Natural / Environmental	1	0.05	0	0.0	1	0.02
TOTAL	**1,963**	**100**	**3,204**	**100**	**5,167**	**100**

Table 40: Type of Youth and Young Adult (Ages 10-24) Self-Inflicted Injury ED Visits in North Carolina by Gender (2009-2012)						
	Male		Female		TOTAL	
Self-Inflicted Injury Type	Number	Percent	Number	Percent	Number	Percent
Poisoning	2,803	51.1	5,199	66.3	8,003	60.0
Cut/Pierce	1,615	29.4	2,159	27.5	3,775	28.3
Other Specified / Not Classified	653	11.9	248	3.2	901	6.8
Unspecified	138	2.5	150	2.0	288	2.2
Suffocation	121	2.2	44	0.6	165	1.2
Firearm	81	1.5	6	0.9	87	0.6
Other Specified / Classified	32	0.6	9	0.1	41	0.3
Fire/Burn	24	0.4	12	0.1	36	0.3
Fall	13	0.2	9	0.1	22	0.2
Motor Vehicle Transport	9	0.2	3	0.04	12	0.1
Transport, Other	0	0.0	1	0.01	1	0.01
TOTAL	**5,489**	**100**	**7,840**	**100**	**13,331**	**100**

Suicide Circumstances for Youth and Young Adults

Table 41: Circumstances of Youth and Young Adult (Ages 10-24) Suicide Victims in North Carolina (2009-2011)						
Circumstance**	Male		Female		TOTAL	
Mental Health	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Current depressed mood	98	32.4	21	31.8	119	32.3
Current mental health problem	84	27.8	32	48.5	116	31.5
Current treatment for mental illness	73	24.2	28	42.4	101	27.4
Ever treated for mental illness	85	28.1	33	50.0	118	32.1
Substance Abuse						
Alcohol problem	23	7.6	2	3.0	25	6.8
Other substance problem	46	15.2	14	21.2	60	16.3
Interpersonal						
Intimate partner problem	118	39.1	34	36.4	142	38.6
Other relationship problem	53	17.6	10	15.1	63	17.1
Recent suicide of friend/family (past 5 years)	5	1.7	1	1.5	6	1.6
Other death of friend/family	8	2.6	1	1.5	9	2.4
Perpetrator of interpersonal violence in past	31	10.3	1	1.5	32	8.7
Victim of interpersonal violence in past month	2	0.7	4	6.1	6	1.6
Life Stressor						
Crisis within two weeks	141	46.7	33	50.0	174	47.3
Physical health problem	4	1.3	3	4.5	7	1.9
Job problem	24	7.9	1	1.5	25	6.8
School problem	11	3.6	5	7.6	16	4.3
Financial problem	6	2.0	0	0.0	6	1.6
Recent criminal or legal problem	38	12.6	1	1.5	39	10.6
Other legal problems	3	1.0	0	0.0	3	0.8
Suicide Event						
Left a suicide note	80	26.5	17	25.8	97	26.4
Disclosed intent to complete suicide	80	26.5	18	27.3	98	26.6
History of suicide attempts	47	15.6	22	33.3	69	18.7

** Circumstances were available for 86.8 percent (302/348) of males, 89.2 percent (66/74) of females and 87.2 percent (368/422) of all youth and young adult (ages 10-24) suicide victims

NOTE: Each victim may have more than one circumstance. Accordingly, the total number of circumstances may exceed the total number of suicides.

Table 42: Current Mental Health Problem at the Time of Youth and Young Adult Suicide (Ages 10-24) in North Carolina (2009-2011)						
	Male		Female		TOTAL	
Current Mental Health Problem **	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Depression/Dysthymia	54	64.3	23	71.9	77	66.4
Bipolar Disorder	9	10.7	7	21.9	16	13.8
Unknown	8	9.5	1	3.1	9	7.8
Attention Deficit Disorder (ADD) or Hyper-Reactivity Disorder	6	7.1	1	3.1	7	6.0
Other	3	3.6	0	0.0	3	3.0
Post-traumatic stress disorder (PTSD)	2	2.4	0	0.0	2	1.7
Schizophrenia	2	2.4	0	0.0	2	1.7
Total	**84**	**100**	**32**	**100**	**116**	**100**

** For 116 males, 32 females and 84 total youth and young adult (ages 10-24) suicide victims with a current mental health problem

NOTE: Victims may have more than one current mental health problem

Suicidal Behavior from the North Carolina Youth Risk Behavior Survey

Table 43: Suicidal Behavior from the Youth Risk Behavior Survey* for North Carolina High School Students (2009 and 2011)			
	2009 Weighted Percent	**2011 Weighted Percent**	**Significant Change from 2009-2011?**
Students who felt so sad or hopeless almost every day for two weeks or more in a row that they stopped doing some usual activities during the past 12 months	27.4	28.3	No
Students who seriously considered attempting suicide during the past 12 months	13.2	14.3	No
Students who made a plan about how they would attempt suicide during the past 12 months	10.1	13.5	Yes
Students who actually attempted suicide one or more times during the past 12 months	9.9	**	

* Data Source: Healthy Schools, N.C. Department of Public Instruction and N.C. Division of Public Health
** Question not available for this survey year

Older Adult (Ages 65 or older) Suicide

Older adult men age 65 or older are at risk for suicidal behavior, as evidenced by the highest suicide rate by age and gender in North Carolina between 2009 and 2011. This section provides statistics for older adults (age 65 or older) on completed suicides and suicide attempts based on hospitalizations and ED visits for self-inflicted injuries in North Carolina.

Noticeable Numbers:

Between 2009 and 2011, **480** older adult males died by suicide.

Most of these suicides (86%) were completed using a **firearm**.

Fifty-eight percent of older adult suicide decedents with reported circumstances reported having a **physical health problem.**

Key Findings:

Older Adult Suicide and Self-Inflicted Injuries over Time

Among older adults in N.C., a total of 563 (15.2 per 100,000) died from suicide and 690 (18.6 per 100,000) were hospitalized for self-inflicted injuries from 2009 to 2011 (Table 44). A total of 917 older adults (18.1 per 100,000) visited an ED for self-inflicted injuries in N.C. between 2009 and 2012. Accordingly, the rates of suicides and suicide attempts resulting in a self-inflicted injury hospitalization or ED visit in older adults were similar and persistent over time (Figure 18).

Demographics of Older Adult Suicide and Self-Inflicted Injury Victims

Demographic characteristics for older adult suicide victims in N.C. for 2009 to 2011 are shown by year in Table 45 and for the aggregate three-year period in Table 46. Most older adult suicide victims were male (85.3%), white (95.4%), and non-Hispanic (99.6%). Older adult males were 7.8 times more likely to die from suicide than females (30.6 vs. 3.9 per 100,000, respectively). The suicide rate among adults age 65 or older was highest in whites (17.6 per 100,000) followed by blacks (3.6 per 100,000). The older adult suicide rates for Asians and Pacific Islanders and American Indians were not calculated because of the small number of cases in these demographic groups which makes rates unreliable. The suicide rate was comparable across older adult age groups, ranging from 14.5 per 100,000 for ages 75 to 84 to 15.5 per 100,000 for ages 65 to 74.

Older adult males and females had similar rates of self-inflicted injury hospitalizations (Table 47 and Table 48) and ED visits (Table 49 and Table 50) in N.C. The self-inflicted injury rate per 100,000 for hospitalizations was 18.1 for males and 19.3 for females and for ED visits was 18.4 for males and 17.9 for females. The youngest age group of 65 to 74 as compared to the oldest age group of 85 or older was 1.7 times more likely to experience a self-inflicted injury hospitalization (22.8 vs. 13.3 per 100,000) and 1.6 times more likely to have a self-inflicted injury ED visit (21.4 vs. 13.6 per 100,000).

Compared to women, men had considerably higher suicide rates across all older adult age groups (Table 51) and similar self-inflicted injury hospitalization rates (Table 52) and ED visit rates (Table 53). The suicide rate per 100,000 increased with older age for men as follows: 28.1 in ages 65 to 74, 31.5 in ages 75 to 84, and 45.0 in ages 85 or older. On the other hand, women ages 65 to 74 years had the highest suicide rate (4.9 per 100,000) among older adult women. Self-inflicted injury hospitalization rates were also highest in the 65 to 74 age group in males (17.6 per 100,000) and females (24.7 per 100,000). For self-inflicted injury ED visits, the rate per 100,000 decreased with older age for females. For males, self-inflicted injury ED visits were highest among the 85 years and older age group (23.7 per 100,000). Among older adults, whites accounted for 95.4 percent of male suicide victims with a suicide rate of 15.0 per 100,000 and 95.2 percent of female suicide victims with a suicide rate of 2.6 per 100,000 (Table 54).

Suicide Method for Older Adults

The leading methods of suicide for those age 65 or older in N.C. were firearm (85.8%), poisoning (8.0%), and hanging, strangulation, or suffocation (4.8%) (Table 55). Most (91.2%) suicides in older adult males involved a firearm; firearm (54.2%) and poisoning (33.7%) were both common methods for older adult females.

Self-Inflicted Injury Type for Older Adults

Poisoning injuries (77.7%), cut or pierce injuries (9.3%), and firearm injuries (7.3%) were the most common self-inflicted injury-related hospitalizations in those age 65 or older in N.C. (Table 56). Additionally, poisoning injuries (72.9%), cut or pierce injuries (10.6%), and firearm injuries (6.9%) were the leading self-inflicted injuries treated in EDs for older adults (Table 57).

Suicide Circumstances for Older Adults

Circumstances surrounding older adult suicides in N.C. for 2009 to 2011 were available in NC-VDRS for 91.7 percent of victims (Table 58). The most common suicide circumstance in 58.0 percent of older adult victims was a physical health problem. Mental health circumstances were also common in older adults with 46.9 percent having a current depressed mood, 36.6 percent having a current mental health problem, and 36.8 percent having ever been treated for mental illness. At the time of suicide, 34.7 percent of older adult suicide victims were currently being treated for mental illness, and the most common current mental health problems were depression or dysthymia (84.7%), bipolar disorder (2.7%), and anxiety disorder (3.7%) (Table 59).

A crisis within two weeks was reported in 20.9 percent of older adult suicide victims. Other less common suicide circumstances in suicide victims age 65 or older included: death of a friend or family (8.7%); intimate partner problem (8.9%); and alcohol problem (7.8%). Of suicide victims age 65 or older, 29.8 percent left a suicide note, 30.6 percent disclosed intent to complete suicide, and 7.8 percent had a history of suicide attempts.

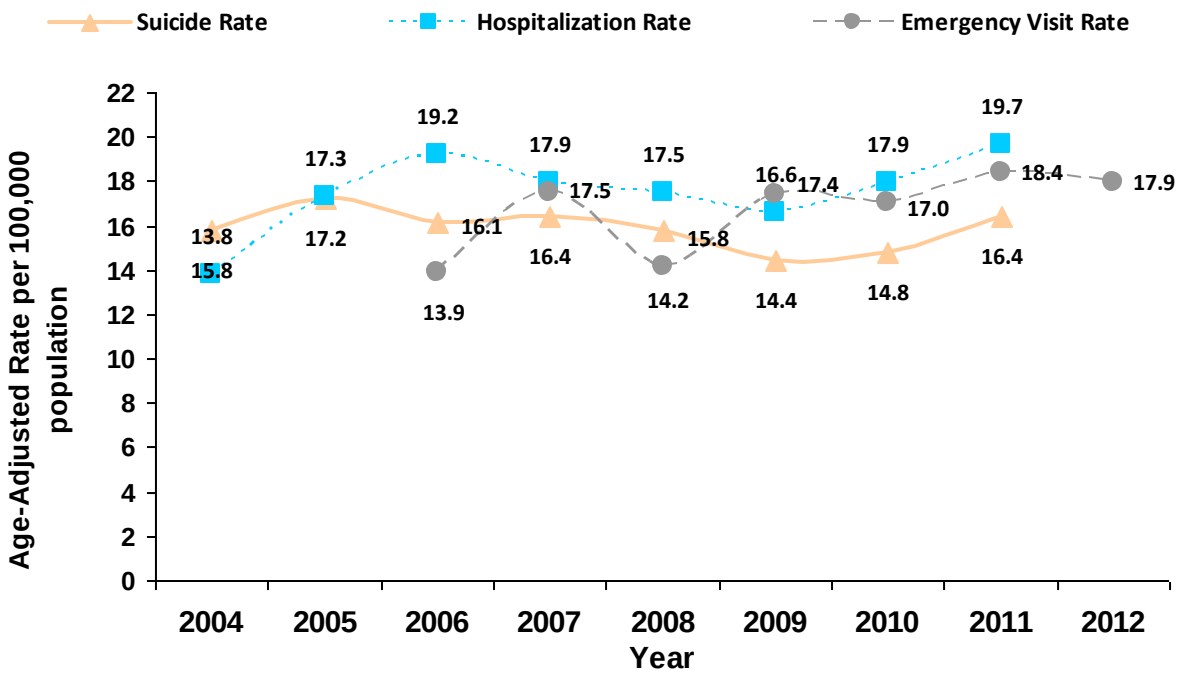
Older Adult Suicide and Self-Inflicted Injuries Over Time

Table 44: Older Adult (Age 65 or Older) Suicides, Self-Inflicted Injury Hospitalizations and Self-Inflicted Injury ED Visits in North Carolina by Year (2004-2012)

	Suicides			Hospitalizations			Emergency Department Visits		
Year	**Number**	**Rate**	**95% CI**	**Number**	**Rate**	**95% CI**	**Number**	**Rate**	**95% CI**
2004	163	**15.8**	13.4 - 18.2	143	**13.9**	11.6 - 16.1	NA*	NA*	NA*
2005	181	**17.2**	14.7 - 19.7	182	**17.3**	14.8 - 19.8	NA*	NA*	NA*
2006	173	**16.1**	13.7 - 18.5	207	**19.2**	16.6 - 21.9	150 ‡	**13.9 ‡**	11.7 - 16.2 ‡
2007	180	**16.3**	13.9 - 18.7	199	**18.0**	15.5 - 20.5	195	**17.7**	15.2 - 20.2
2008	178	**15.6**	13.3 - 17.9	201	**17.6**	15.2 - 20.1	163	**14.3**	12.1 - 16.5
2009	172	**14.4**	12.3 – 16.6	202	**16.9**	14.6 – 19.3	210	**17.6**	15.2 – 20.0
2010	180	**14.6**	12.5 – 16.7	231	**18.7**	16.3 – 21.1	217	**17.6**	15.2 – 20.0
2011	211	**16.5**	14.3 – 18.7	257	**20.1**	17.6 – 22.6	241	**18.8**	16.5 – 21.2
2012	NA*	NA*	NA*	NA*	NA*	NA*	249	**18.5**	16.2 – 17.8
TOTAL	**1,438**	**15.7**	**14.9 – 16.5**	**1,622**	**17.7**	**16.8 – 18.6**	**1,425**	**16.9**	**16.0 – 17.8**

Crude rate per 100,000 N.C. population ages 65+
*Data for NC-VDRS and hospital not available for 2012; ED visit data not available for 2004-2005
‡ Only 79 percent of EDs reporting in 2006
95% CI = 95 Percent Confidence Interval for Rate

Figure 18: Age-Adjusted Rate of Older Adult (Age 65 or Older) Suicides, Self-Inflicted Injury Hospitalizations and Self-inflicted Injury ED Visits in North Carolina Over Time (2004-2012)



Demographics of Older Adult Suicide and Self-Inflicted Injury Victims

Table 45: Demographics of Older Adult (Age 65 or Older) Suicide Victims in North Carolina by Year (2009-2011)						
	2009		2010		2011	
Gender	**Number**	**Rate**	**Number**	**Rate**	**Number**	**Rate**
Male	148	**29.7**	158	**30.2**	174	**31.8**
Female	24	**3.5**	22	**3.1**	37	**5.1**
Race						
American Indian	2	*	0	**0.0**	1	*
Asian/Pacific Islander	0	**0.0**	0	**0.0**	1	*
Black	9	*	1	*	11	*
Other/Unspecified	0	**0.0**	0	**0.0**	1	*
White	161	**16.4**	179	**17.6**	197	**18.8**
Hispanic Ethnicity						
Hispanic	0	**0.0**	2	*	0	**0.0**
Non-Hispanic	172	**14.7**	178	**14.6**	211	**16.8**
Age Group (Years)						
65-74	96	**14.7**	99	**14.2**	128	**17.6**
75-84	56	**14.4**	58	**14.9**	57	**14.3**
85 +	20	**13.4**	23	**15.6**	26	**16.9**
TOTAL	**172**	**14.4**	**180**	**14.6**	**211**	**16.5**

Gender, race, Hispanic ethnicity or age-specific crude rate per 100,000 N.C. population ages 65+
* The number of deaths was zero or too small to support calculation of a rate.

Table 46: Demographics of Older Adult (Age 65 or Older) Suicide Victims in North Carolina (2009-2011)				
Gender	**Number**	**Percent**	**Rate**	**95% CI**
Male	480	85.3	**30.6**	27.9 – 33.3
Female	83	14.7	**3.9**	3.1 – 4.7
Race				
American Indian	3	0.5	*	*
Asian /Pacific Islander	1	0.2	*	*
Black	21	3.7	**3.6**	2.1 – 5.1
Other/Unspecified	1	0.2	*	*
White	537	95.4	**17.6**	16.1 – 19.1
Hispanic				
Hispanic	2	0.4	*	*
Non-Hispanic	561	99.6	**15.4**	14.1 – 16.6
Age Group (Years)				
65-74	323	57.4	15.5	13.8 – 17.2
75-84	171	30.4	14.5	12.4 – 16.7
85 +	69	12.3	15.3	11.7 – 18.9
TOTAL	**563**	**100**	**15.2**	**13.9 – 16.5**

Gender, race, Hispanic ethnicity or age-specific crude rate per 100,000 N.C. population ages 65+
95% CI = 95 Percent Confidence Interval for Rate * The number of deaths was too small to support calculation of a rate.

Table 47: Demographics of Older Adult (Age 65 or Older) Self-Inflicted Injury Hospitalizations in North Carolina by Year (2009-2011)						
	2009		2010		2011	
Gender	**Number**	**Rate**	**Number**	**Rate**	**Number**	**Rate**
Male	77	**15.4**	113	**21.6**	113	**20.7**
Female	125	**18.0**	118	**16.6**	144	**19.7**
Age Group (Years)						
65-74	139	**21.3**	163	**23.4**	171	**23.5**
75-84	48	**12.3**	45	**11.6**	64	**16.1**
85 +	15	**10.1**	23	**15.6**	22	**14.3**
TOTAL	**202**	**16.9**	**231**	**18.7**	**257**	**20.1**

Gender or age-specific crude rate per 100,000 N.C. population ages 65+

Table 48: Demographics of Older Adult (Age 65 or Older) Self-Inflicted Injury Hospitalizations in North Carolina (2009-2011)				
Gender	**Number**	**Percent**	**Rate**	**95% CI**
Male	303	43.9	**18.1**	16.3 – 19.9
Female	387	56.1	**19.3**	17.1 – 21.5
Age Group (Years)				
65-74	473	68.6	**22.8**	20.7 – 24.8
75-84	157	22.8	**13.3**	11.3 – 15.4
85 +	60	8.7	**13.3**	10.0 – 16.7
TOTAL	**690**	**100**	**18.6**	**17.2 – 20.0**

Gender or age-specific crude rate per 100,000 N.C. population ages 65+
95% CI = 95 Percent Confidence Interval for Rate

Table 49: Demographics of Older Adult (Ages 65 or Older) Self-Inflicted Injury ED Visits in North Carolina by Year (2009-2012)								
	2009		2010		2011		2012	
Gender	**Number**	**Rate**	**Number**	**Rate**	**Number**	**Rate**	**Number**	**Rate**
Male	87	**17.4**	97	**18.5**	114	**20.9**	97	**16.7**
Female	123	**17.7**	119	**16.8**	126	**17.2**	152	**19.8**
Age Group (Years)								
65-74	136	**20.8**	153	**21.9**	161	**22.2**	**163**	**20.8**
75-84	56	**14.4**	48	**12.3**	56	**14.1**	**61**	**15.0**
85 +	18	**12.1**	16	**10.9**	24	**15.6**	**25**	**15.6**
TOTAL	**210**	**17.6**	**217**	**17.6**	**241**	**18.8**	**249**	**18.5**

Gender or age-specific crude rate per 100,000 N.C. population ages 65+

Table 50: Demographics of Older Adult (Age 65 or Older) Self-Inflicted Injury ED Visits in North Carolina (2009-2012)				
Gender	**Number**	**Percent**	**Rate**	**95% CI**
Male	395	43.1	**18.4**	16.6 – 20.2
Female	520	56.7	**17.9**	16.4 -19.4
Age Group (Years)				
65-74	613	66.9	**21.4**	19.7 – 23.1
75-84	221	24.1	**14.9**	12.1 – 15.8
85 +	83	9.1	**13.6**	10.7 – 16.5
TOTAL	**917**	**100**	**18.1**	**17.0 – 19.3**

Gender or age-specific crude rate per 100,000 N.C. population ages 65+
95% CI = 95 Percent Confidence Interval for Rate

Age and Gender

Table 51: Older Adult (Age 65 or Older) Suicides in North Carolina by Age and Gender (2009-2011)						
	Male			**Female**		
Age (Years)	**Number**	**Percent**	**Rate**	**Number**	**Percent**	**Rate**
65-74	268	55.8	**28.1**	55	66.3	**4.9**
75-84	151	31.5	**31.5**	20	24.1	**2.9**
85 +	61	12.7	**45.0**	8	9.6	**2.5**
TOTAL	**480**	**100**	**30.6**	**83**	**100**	**3.9**

Gender and age-specific crude rate per 100,000 N.C. population ages 65+

Table 52: Older Adult (Age 65 or Older) Self-Inflicted Injury Hospitalizations in North Carolina by Age and Gender (2009-2011)						
	Male			**Female**		
Age (Years)	**Number**	**Percent**	**Rate**	**Number**	**Percent**	**Rate**
65-74	195	64.4	**17.6**	278	71.8	**24.7**
75-84	74	24.4	**11.9**	83	21.5	**11.9**
85 +	34	11.2	**16.6**	26	6.7	**8.6**
TOTAL	**303**	**100**	**17.1**	**387**	**100**	**18.1**

Gender or age-specific crude rate per 100,000 N.C. population ages 65+

Table 53: Older Adult (Age 65 or Older) Self-Inflicted Injury ED Visits in North Carolina by Age and Gender (2009-2012)						
	Male			Female		
Age (Years)	Number	Percent	Rate	Number	Percent	Rate
65-74	258	65.3	**19.6**	355	68.3	**23.0**
75-84	93	23.5	**14.4**	128	24.6	**13.7**
85 +	44	11.1	**23.7**	37	7.1	**8.7**
TOTAL	**395**	**100**	**18.4**	**520**	**100**	**17.9**

Gender or age-specific crude rate per 100,000 N.C. population ages 65+

Race and Gender

Table 54: Older Adult (Age 65 or Older) Suicides in North Carolina by Race and Gender (2009-2011)						
	Male			Female		
Race	Number	Percent	Rate	Number	Percent	Rate
American Indian	0	0.0	*	3	3.6	*
Asian/Pacific Islander	1	0.2	*	0	0.0	**0.0**
Black	20	4.2	**3.4**	1	1.2	*
White	458	95.4	**15.0**	79	95.2	**2.6**
TOTAL	**480**	**100**	**30.6**	**83**	**100**	**3.9**

Gender or age-specific crude rate per 100,000 N.C. population ages 65+
* The number of deaths was too small to support calculation of a rate.

Suicide Method for Older Adults

Table 55: Method of Older Adult (Age 65 or Older) Suicides in North Carolina by Gender (2009-2011)						
	Male		Female		TOTAL	
Method	Number	Percent	Number	Percent	Number	Percent
Firearm	438	91.2	45	54.2	483	85.8
Poisoning	17	3.5	28	33.7	45	8.0
Hanging, Strangulation, Suffocation	19	4.0	8	9.6	27	4.8
Sharp Instrument	2	0.4	1	1.2	3	0.5
Fall	2	0.4	0	0.0	2	0.4
Fire / Burn	1	0.2	1	1.2	2	0.4
Other/ Unknown/ Missing	1	0.2	0	0.0	1	0.2
TOTAL	**480**	**100**	**83**	**100**	**563**	**100**

Self-Inflicted Injury Type for Older Adults

Table 56: Type of Older Adult (Age 65 or Older) Self-Inflicted Injury Hospitalizations in North Carolina by Gender (2009-2011)						
	Male		Female		TOTAL	
Self-Inflicted Injury Type	Number	Percent	Number	Percent	Number	Percent
Poisoning	192	63.4	344	88.9	536	77.7
Cut / Pierce	38	12.5	26	6.7	64	9.3
Firearm	42	13.9	8	2.1	50	7.3
Other Specified / Not Classified	17	5.6	4	1.0	21	3.0
Unspecified	1	0.6	4	1.0	5	0.7
Other Specified / Classified	7	2.3	0	0.0	7	1.0
Drowning	0	0.0	0	0.0	0	0.0
Fall	2	0.7	0	0.0	2	0.3
Fire/Burn	1	0.3	0	0.0	1	0.1
Suffocation	3	1.0	0	0.0	3	0.4
Motor Vehicle Transport	0	0	1	0.3	1	0.1
Natural / Environmental	0	0	0	0.0	0	0.0
TOTAL	**303**	**100**	**387**	**100**	**690**	**100**

Table 57: Type of Older Adult (Age 65 or Older) Self-Inflicted Injury ED Visits by Gender in North Carolina (2009-2012)						
	Male		Female		Total	
Self-Inflicted Injury Type	Number	Percent	Number	Percent	Number	Percent
Poisoning	235	59.5	433	83.3	668	72.9
Cut / Pierce	54	13.7	43	8.3	97	10.6
Firearm	51	12.9	10	1.9	63	6.9
Other Specified / Not Classified	25	6.3	23	4.4	48	5.2
Unspecified	7	1.8	2	0.4	9	1.0
Other Specified / Classified	14	3.5	2	0.4	16	1.7
Suffocation	3	0.8	4	0.8	7	0.8
Fall	2	0.5	2	0.4	4	0.4
Fire/Burn	3	0.8	0	0.0	3	0.3
Drowning	0	0.0	0	0.0	0	0.0
Motor Vehicle Transport	0	0.0	0	0.0	0	0.0
Natural/Environmental	1	0.3	1	0.2	2	0.2
TOTAL	**395**	**100**	**520**	**100**	**917***	**100**

*Missing gender for 2 ED visits

Suicide Circumstances for Older Adults

Table 58: Circumstances of Older Adult (Age 65 or Older) Suicide Victims in North Carolina (2009-2011)						
Circumstance	**Male**		**Female**		**TOTAL**	
Mental Health	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Current depressed mood	210	48.1	32	40.5	242	46.9
Current mental health problem	144	33.0	45	57.0	189	36.6
Current treatment for mental illness	135	30.9	44	55.7	179	34.7
Ever treated for mental illness	145	33.2	45	57.0	190	36.8
Substance Abuse						
Alcohol problem	36	8.2	4	5.1	40	7.8
Other substance problem	2	0.5	3	3.8	5	1.0
Interpersonal						
Intimate partner problem	43	9.8	3	3.8	46	8.9
Other relationship problem	18	4.1	2	2.5	20	3.9
Recent suicide of friend/family (past 5 years)	1	0.2	1	1.3	2	0.4
Other death of friend/family	42	9.6	3	3.8	45	8.7
Perpetrator of interpersonal violence in past	20	4.9	1	1.3	21	4.1
Victim of interpersonal violence in past month	0	0.0	0	0.0	0	0.0
Life Stressor						
Crisis within two weeks	100	22.9	8	10.1	108	20.9
Physical health problem	259	59.3	40	50.6	299	58.0
Job problem	10	2.3	0	0.0	10	1.9
School problem	0	0.0	0	0.0	0	0.0
Financial problem	19	4.4	6	7.6	25	4.8
Recent criminal or legal problem	13	3.0	1	1.3	14	2.7
Other legal problems	4	0.9	0	0.0	4	0.8
Suicide Event						
Left a suicide note	122	27.9	32	40.5	154	29.8
Disclosed intent to complete suicide	138	31.6	20	25.3	158	30.6
History of suicide attempts	20	4.6	20	25.3	40	7.8

** Circumstances were available for 91.0 percent (437/480) of males, 95.2 percent (79/83) of females and 91.7 percent (516/563) of all older adult (ages 65 or older) suicide victims

NOTE: Each victim may have more than one circumstance. Accordingly, the total number of circumstances may exceed the total number of suicides.

Table 59: Current Mental Health Problem at the Time of Older Adult (Age 65 or Older) Suicide in North Carolina (2009-2011)						
	Male		Female		Total	
Current Mental Health Problem **	Number	Percent	Number	Percent	Number	Percent
Depression/ Dysthymia	121	84.0	39	86.7	160	84.7
Bipolar Disorder	2	1.4	3	6.7	5	2.7
Anxiety Disorder	5	3.5	2	4.4	7	3.7
Schizophrenia	2	1.4	0	0.0	2	1.1
Post-Traumatic Stress Disorder	0	0.0	0	0.0	0	0.0
Attention Deficit Disorder (ADD) or Hyper-Reactivity Disorder	0	0.0	0	0.0	0	0.0
Eating Disorder	0	0.0	0	0.0	0	0.0
Obsessive-Compulsive Disorder	1	0.7	0	0.0	1	0.5
Other	11	7.6	1	2.2	12	6.4
Unknown	2	1.4	0	0.0	2	1.2

** For 144 males,45 females and 189 total older adult (ages 65+) suicide victims with a current mental health problem

NOTE: Victims may have more than one current mental health problem

VETERAN SUICIDE

Military veterans are prone to suicidal behavior, as demonstrated by a veteran suicide rate 1.5 times the overall suicide rate in N.C. during 2009 to 2011. This section provides suicide statistics for veterans, defined in NC-VDRS as anyone who has ever served in the military, age 18 or older in N.C., unless otherwise specified. Note that for many demographic subgroups (females, American Indians, Asians, Hispanics, and veterans under the age of 20) there were small numbers of N.C. veterans and veteran suicides for 2009 to 2011. Rates for these groups had to be suppressed in many cases and could not be compared to other rates. In addition, data stratified by veteran status were not available for self-inflicted injury hospitalizations and ED visits. Data regarding veteran populations stratified by race were not available for 2009; rates by race were only calculated for 2010 and 2011.

KEY FINDINGS:

Veteran Suicide over Time

From 2009 to 2011, 505 N.C. veterans (22.0 per 100,000) died from suicide (Table 60). The age-adjusted veteran suicide rate for age 20 or older was slightly higher than the crude rate each year between 2004 and 2011 and was skewed higher from 2008 to 2011 because of the small number of N.C. veterans relative to the number of suicides in the 20 to 24 age group (Figure 19).

Demographics of Veteran Suicide Victims

Demographic characteristics for veteran suicide victims in N.C. during 2009 to 2011 are shown by year in Table 61 and for the aggregate three-year period in Table 62. Most veteran suicide victims in N.C. for 2009 to 2011 were male (96.3%), white (90.5%), non-Hispanic (98.8%), and between ages 35 and 84 (74.0%). Females had 19 suicides over the three-year period. Whites had a high suicide rate among veterans for 2010 (23.2 per 100,000) and 2011 (25.6 per 100,000). From 2010 to 2011, American Indian and Asian veterans both had fewer than 10 deaths; similarly, there were only 6 deaths among Hispanic veterans. Veterans ages 20 to 24 had the highest suicide rate (120.5 per 100,000); however, this rate should be interpreted with caution because of the small number of N.C. veterans in this age group. The next highest suicide rates by age group among veterans was for those age 85 or older (31.3 per 100,000) and ages 25 to 34 (31.0 per 100,000).

Highlight:

The most common current mental health problem for veterans at the time of their death was **depression or dysthymia** (79%).

Males represented a larger proportion of suicides than females across all age groups. Male suicide rates were similar to rates for all veterans since the vast majority of veteran suicide victims were male (Table 63). For female veterans, ages 25 to 34 had the highest percentage (31.6) of suicides among women. Whites accounted for 89.7 percent of male and 100.0 percent of female veteran suicide victims, while blacks comprised 9.3 percent of male veteran suicide victims from 2010 to 2011 (Table 64). The veteran suicide rate by race and gender in 2010 to 2011 was highest for white males (25.6 per 100,000).

Suicide Method for Veterans

Among N.C. veteran suicide victims from 2009 to 2011, the most common suicide methods were firearm (75.0%), hanging, strangulation, or suffocation (12.1%), and poisoning (10.3%) (Table 65). Firearm was the leading suicide method for veteran males (76.1%) and veteran females (47.4%). Poisoning was more common in women (31.6%) than men (9.5%).

Suicide Circumstances for Veterans

Circumstances surrounding veteran suicides in N.C. for 2009 to 2011 were available in NC-VDRS for 89.5 percent of victims (Table 66). Mental health circumstances were the most common in veteran suicides with 41.6 percent having a depressed mood, 36.9 percent having a history of treatment for mental illness, and 36.5 percent having a current mental health problem. At the time of suicide, 33.4 percent of veteran suicide victims were currently receiving treatment for mental illness. The most common current mental health problems for veterans were depression or dysthymia (78.8%), post-traumatic stress disorder (6.1%), and bipolar disorder (6.1%) (Table 67).

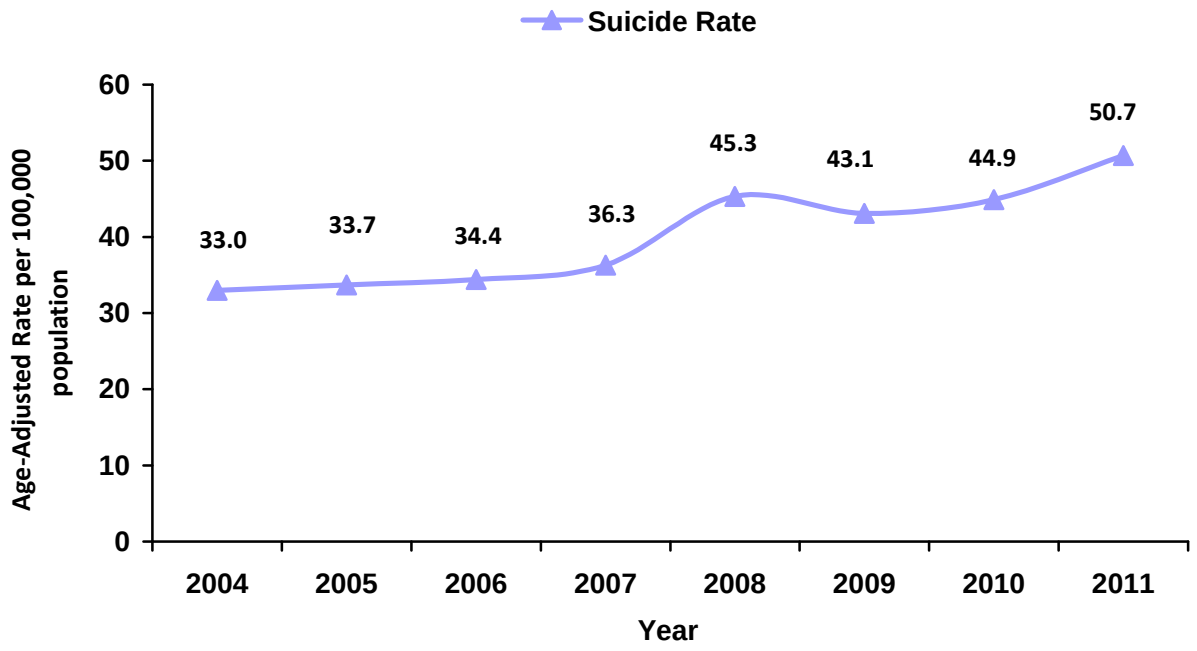
A crisis within two weeks was reported for 27.2 percent of veteran suicide victims. Other common suicide circumstances for veterans were problems with physical health (31.1%), an intimate partner problem, (22.3%), and an alcohol problem (10.8%). Among veteran victims of suicide, 31.1 percent left a suicide note, 24.8 percent disclosed intent to complete suicide, and 8.2 percent had a history of suicide attempts.

Veteran Suicide Over Time

Table 60: Veteran Suicides in North Carolina by Year (2004-2011)			
Year	**Number**	**Rate**	**95% CI**
2004	214	**27.5**	23.8 - 31.2
2005	239	**30.8**	26.9 - 34.7
2006	224	**28.9**	25.2 - 32.7
2007	225	**29.1**	25.3 - 32.9
2008	246	**31.9**	27.9 - 35.8
2009	182	**23.6**	20.2 - 27.1
2010	153	**20.0**	16.8 – 23.1
2011	170	**22.4**	19.0 - 25.7
TOTAL	**1,653**	**26.8**	**25.5 - 28.1**

Rate is crude rate per 100,000 N.C. veteran population 95% CI = 95 Percent Confidence Interval for Rate

Figure 19: Age-Adjusted Rate of Veteran Suicides in North Carolina Over Time for Veterans Ages 18 or Older (2004-2011)



Demographics of Veteran Suicide Victims

Table 61: Demographics of Veteran Suicide Victims in North Carolina by Year (2009-2011)						
	2009		2010		2011	
Gender	**Number**	**Rate**	**Number**	**Rate**	**Number**	**Rate**
Male	175	**24.9**	148	**21.3**	163	**23.6**
Female	7	*	5	*	7	*
Race						
American Indian	2	*	2	*	1	*
Asian/Pacific Islander	0	*	0	*	0	*
Black	14	*	12	*	17	*
White	166	**	139	**23.2**	152	**25.6**
Hispanic Ethnicity						
Hispanic	1	*	2	*	3	*
Non-Hispanic	181	**	151	**19.9**	167	**22.2**
Age Group (Years) §						
< 20	1	*	1	*	1	*
20-24	10	*	16	*	11	*
25-34	16	*	17	*	24	**39.3**
35-44	27	**27.4**	21	**22.1**	21	**22.9**
45-54	31	**21.7**	18	*	17	*
55-64	32	**17.1**	28	**15.2**	24	**13.9**
65-74	29	**22.1**	21	**15.6**	33	**22.4**
75-84	26	**25.1**	21	**20.8**	24	**24.6**
85 +	10	*	10	*	15	*
TOTAL	**182**	**23.6**	**153**	**20.0**	**170**	**22.4**

Gender, race, Hispanic ethnicity or age-specific crude rate per 100,000 N.C. veteran population.
* The number of deaths was too small to support calculation of a rate.
** Veteran populations by race and Hispanic ethnicity were not available for 2009.

Table 62: Demographics of Veteran Suicide Victims in North Carolina (2009-2011)				
Gender	**Number**	**Percent**	**Rate**	**95% CI**
Male	486	96.3	**23.3**	21.2 - 25.3
Female	19	3.7	*	*
Race				
American Indian	5	0.9	*	*
Asian/Pacific Islander	0	8.5	*	*
Black	43	0.0	**	**
White	457	90.5	**	**
Hispanic				
Hispanic	6	1.2	*	*
Non-Hispanic	499	98.8	**	**
Age Group (Years) §				
< 20	3	0.6	*	*
20-24	37	7.3	**120.5**	81.7 - 159.3
25-34	57	11.3	**31.0**	23.0 - 39.1
35-44	69	13.7	**24.2**	18.5 - 29.9
45-54	66	13.1	**15.5**	11.7 - 19.2
55-64	84	16.6	**15.5**	12.2 - 18.8
65-74	83	16.4	**20.1**	15.8 - 24.4
75-84	71	14.1	**23.5**	18.1 - 29.0
85 +	35	6.9	**31.3**	20.9 - 41.7
TOTAL	**505**	**100**	**22.0**	**20.1 - 23.9**

Gender, race, Hispanic ethnicity or age-specific crude rate per 100,000 N.C. veteran population
95% CI = 95 Percent Confidence Interval for Rate * The number of deaths was too small to support calculation of a rate.
** Veteran populations by race and Hispanic ethnicity were not available for 2009. See Table 64 2010-2011 rates by race.

Age and Gender

Table 63: Veteran Suicides in North Carolina by Age and Gender (2009-2011)						
	Male			**Female**		
Age (Years) §	**Number**	**Percent**	**Rate**	**Number**	**Percent**	**Rate**
< 20	3	0.6	*	0	0.0	*
20-24	35	7.2	**136.0**	2	10.5	*
25-34	51	10.5	**34.2**	6	31.6	*
35-44	65	13.4	**27.3**	4	21.1	*
45-54	62	12.8	**17.0**	4	21.1	*
55-64	82	16.9	**16.1**	2	10.5	*
65-74	82	16.9	**20.4**	1	5.3	*
75-84	71	14.6	**24.1**	0	0.0	*
85 +	35	7.2	**33.4**	0	0.0	*
TOTAL	**486**	**100**	**23.3**	**19**	**100**	*

Gender and age-specific crude rate per 100,000 N.C. veteran population in specified category
* The number of deaths was too small to support calculation of a rate.

Race and Gender

Table 64: Veteran Suicides in North Carolina by Race and Gender (2010-2011)						
	Male			Female		
Race	Number	Percent	Rate	Number	Percent	Rate
American Indian	3	1.0	*	0	0.0	*
Asian / Pacific Islander	0	0.0	*	0	0.0	*
Black	29	9.3	**11.5**	0	0.0	*
White	279	89.7	**25.6**	12	100.0	*
TOTAL	**311**	**100**	**22.6**	**12**	**100**	*

Gender and race-specific crude rate per 100,000 N.C. veteran population
* The number of deaths was too small to support calculation of a rate.
NOTE: Veteran populations by race and Hispanic ethnicity were not available for 2009.

Suicide Method for Veterans

Table 65: Method of Veteran Suicides in North Carolina by Gender (2009-2011)						
	Male		Female		TOTAL	
Method	Number	Percent	Number	Percent	Number	Percent
Firearm	370	76.1	9	47.4	379	75.0
Hanging, Strangulation, Suffocation	58	11.9	3	15.8	61	12.1
Poisoning	46	9.5	6	31.6	52	10.3
Sharp Instrument	5	1.0	1	5.3	6	1.2
Fall	4	0.8	0	0.0	4	0.8
Fire / Burn	1	0.2	0	0.0	1	0.2
Other Transport Vehicle	1	0.2	0	0.0	1	0.2
Unknown	1	0.2	0	0.0	1	0.2
TOTAL	**486**	**100**	**19**	**100**	**505**	**100**

Suicide Circumstances for Veterans

Table 66: Circumstances of Veteran Suicide Victims in North Carolina (2009-2011)						
Circumstance**	Male		Female		TOTAL	
Mental Health	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Current depressed mood	179	41.1	9	52.9	188	41.6
Current mental health problem	158	36.3	7	41.2	165	36.5
Current treatment for mental illness	143	32.9	8	47.1	151	33.4
Ever treated for mental illness	159	36.6	8	47.1	167	36.9
Substance Abuse						
Alcohol problem	47	10.8	2	11.8	49	10.8
Other substance problem	26	6.0	3	17.6	29	6.4
Interpersonal						
Intimate partner problem	96	22.1	5	29.4	101	22.3
Other relationship problem	30	6.9	4	23.5	34	7.5
Recent suicide of friend/family (past 5 years)	3	0.7	0	0.0	3	0.7
Other death of friend/family	28	6.4	0	0.0	28	6.2
Perpetrator of interpersonal violence in past	34	7.8	0	0.0	34	7.5
Victim of interpersonal violence in past month	1	0.2	1	5.9	2	0.4
Life Stressor						
Crisis within two weeks	118	27.1	5	29.4	123	27.2
Physical health problem	138	31.7	3	17.6	141	31.1
Job problem	42	9.7	2	11.8	44	9.7
School problem	2	0.5	0	0.0	2	0.4
Financial problem	30	6.9	0	0.0	30	6.6
Recent criminal or legal problem	26	6.0	1	5.9	27	6.0
Other legal problems	9	2.1	0	0.0	9	2.0
Suicide Event						
Left a suicide note	137	31.5	4	23.5	141	31.1
Disclosed intent to complete suicide	106	24.4	6	35.3	112	24.8
History of suicide attempts	33	7.6	4	23.5	37	8.2

** Circumstances were available for 89.5 percent (435/486) of males, 89.5 percent (17/19) of females and 89.5 percent (452/505) of all suicide victims

NOTE: Each victim may have more than one circumstance. Accordingly, the total number of circumstances may exceed the total number of suicides.

Table 67: Current Mental Health Problem at the Time of Veteran Suicide in North Carolina (2009-2011)						
	Male		Female		TOTAL	
Current Mental Health Problem**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Depression/Dysthymia	124	78.5	6	85.7	130	78.8
Bipolar Disorder	9	5.7	1	14.3	10	6.1
Post-Traumatic Stress Disorder	10	6.3	0	0.0	10	6.1
Unknown	7	4.4	0	0.0	7	4.2
Other	6	3.8	0	0.0	6	3.6
Anxiety	2	1.3	0	0.0	2	1.2
Total	**158**	**100**	**7**	**100**	**165**	**100**

** For 158 males, 7 females and 165 total veteran suicide victims with a current mental health problem

NOTE: Victims may have more than one current mental health problem

Suicide Prevention Recommendations

1. **Promote awareness that suicide is a public health problem that is preventable.**

   Suicide is a major public health problem in North Carolina. Increasing awareness about suicide and the fact that it is preventable is the first step in mobilizing support for prevention initiatives. Increasing awareness of suicide may also influence beliefs and behaviors including decreasing the stigma associated with suicide and life-threatening behavior.

2. **Develop and implement community-based suicide prevention programs.**

   Suicide risk factors cut across multiple disciplines – psychological, biological and social, suggesting that successful prevention efforts must reflect collaborative efforts across a broad spectrum of agencies, institutions, schools and community-based organizations. Collaborative support for suicide prevention may lead to additional funding and involvement of organizations that might not otherwise be interested in suicide prevention. Sustainable resources at the state, regional and local levels must be combined to form the comprehensive network required to prevent suicide.

3. **Promote efforts to reduce access to lethal means and methods of self-harm.**

   Evidence indicates that limiting access to lethal means of self-harm may be an effective strategy to prevent self-harm in certain individuals. This prevention approach is based on emerging evidence that a small but significant number of suicides are impulsive, especially in suicides among youth. Education on restriction of access to lethal means is seen as one of the most economical strategies for prevention of youth suicide. Education can be provided by many professionals, including law enforcement and healthcare providers, and should focus on parents and other adults who can control access to firearms, drugs, and other lethal means.

4. **Implement training for recognition of at-risk behavior and delivery of effective treatment.**

   Despite the increased recognition that suicide is a public health problem, studies indicate that many health professionals are not adequately trained to provide proper assessment, treatment or referrals. Key gatekeepers (adults that are regularly in contact with people at risk for suicide) need to be trained in order to be able to recognize factors that may indicate thoughts of suicide. Gatekeepers may include teachers and other school personnel, clergy, police officers, primary healthcare providers, mental healthcare providers, correctional personnel and emergency healthcare professionals. Identifying individuals at risk and engaging them in early and aggressive treatments is effective in reducing the personal and situational factors associated with suicidal behaviors. Another way to prevent suicide is to promote and support the presence of protective factors such as skills in problem solving, conflict resolution and non-violent handling of disputes.

5. Improve community linkages and individual's access to mental health and substance abuse services.

Suicidal behavior is strongly associated with mental illness and/or substance abuse in all age groups. While both of these conditions can be successfully treated, many report that embarrassment, fear and stigma are the main reasons they do not get help for their problems. The stigma of mental illness and substance abuse has resulted in separate health systems for physical and mental healthcare. Consequently, prevention and treatment services for mental illness and substance abuse are much less available than services for physical illnesses. Services to prevent suicide must be available when and where people need them. In addition, providers need to know where to refer patients accordingly.

6. Improve and expand surveillance systems.

Establishing a system of ongoing surveillance of suicide and suicide attempts will aid in understanding risk factors and circumstances surrounding suicide. This, in turn, will enable the development of effective prevention and intervention strategies. Existing and developing data sources can be expanded to monitor, assess, analyze and report suicides and suicide attempts in a more effective and timely fashion. It is recommended that:

- The surveillance of suicide and its associated risk factors be included in the North Carolina Violent Death Reporting System and annual reports.
- The North Carolina Hospital Emergency Surveillance System uses its data to provide estimates of suicide attempts.
- A reporting system be created that identifies all individuals who receive emergency department treatment/evaluation for self-inflicted injuries.
- Suicide surveillance data be analyzed, interpreted and distributed to inform researchers and program and policy development makers.

GLOSSARY

Age-Adjusted Rate: calculated based on the number of suicides, hospitalizations or emergency visits during the specified time period per 100,000 N.C. residents and standardized to the 2000 U.S. population with adjustment for the population distribution by age. Refer to Appendix B for method.

Crude Rate: calculated based on the number of suicides, hospitalizations or emergency visits during the specified time period per 100,000 N.C. residents. Refer to Appendix B for method.

Demographic-Specific Rate: calculated based on the number of suicides, hospitalizations or emergency visits in the demographic category (e.g., age, gender, race, Hispanic ethnicity and/or N.C. county) during the specified time per 100,000 N.C. residents in the demographic category. Refer to Appendix B for method.

North Carolina Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT): a state system that receives data on at least a daily basis from hospital emergency departments statewide to provide early event detection and timely public health surveillance to public health officials and hospital users.

North Carolina Violent Death Reporting System (NC-VDRS): a statewide surveillance system that collects detailed information on violent deaths including suicides that occur in North Carolina.

North Carolina Youth Risk Behavior Survey (YRBS): a statewide survey of N.C. middle school and high school students that helps assess behaviors in youth that impact their health now and in the future.

Older Adults: subgroup of ages including adults 65 or older.

Poison: any substance that is harmful to the body when ingested (eaten), inhaled, injected, or absorbed through the skin. Any substance can be poisonous if too much is taken.

Self-Inflicted Injury ED Visit: a visit to an ED for injury categorized as self-inflicted in intent. All ED visits analyzed in this report were based on N.C. hospital ED visits for self-inflicted injuries of N.C. residents.

Self-Inflicted Injury Hospitalization: a hospitalization for injury categorized as self-inflicted in intent. Hospitalizations represent the number of hospital discharges (when a patient leaves a hospital following admission) with multiple discharges per patient possible. All hospitalizations analyzed in this report were based on North Carolina hospital discharges for self-inflicted injuries of N.C. residents.

Suicide: a death resulting from the intentional use of force against oneself. Suicides were classified only for persons ages 10 or older. All suicide victims analyzed in this report were classified as N.C. residents at the time of death and the death occurred in North Carolina.

Veterans: subgroup classified in NC-VDRS as anyone who has ever served in the military.

Web-based Injury Statistics Query and Reporting System (WISQARS): a query and reporting system of national and state injury statistics available on the world wide web and provided by the Centers for Disease Control and Prevention, National Center for Injury Prevention and Control.

Years of Potential Life Lost (YPLL): a measure of the years of potential life lost because of premature death before the age of 65 years.

Youth and Young Adults: subgroup of ages between 10 and 24.

APPENDICES

Appendix A: Data Sources

Comparison of U.S. and N.C. Suicide Data

The Web-based Injury Statistics Query and Reporting System (WISQARS) from the Centers for Disease Control and Prevention (CDC), National Center for Injury Prevention and Control provided the comparative U.S. and N.C. suicide rates for the years 1999 to 2010 and the number and rate of years of potential life lost from suicide and other common causes of death for the years 2008 to 2010. Age-adjusted rates based on the 2000 U.S. Standard Population were reported unless otherwise noted. WISQARS reports were retrieved October 25, 2013 from: http://www.cdc.gov/injury/wisqars/fatal.html.

North Carolina Suicide Data 2009-2011

The North Carolina Violent Death Reporting System (NC-VDRS) provided suicide data for the years 2009 to 2011 for this report. NC-VDRS is a CDC-funded statewide surveillance system that collects detailed information on violent deaths including suicides that occur in North Carolina. NC-VDRS is a relational database that compiles information on the victims and circumstances surrounding each death. The collection of this information has created a better understanding of the circumstances surrounding violent deaths in North Carolina. The goal of the 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.

NC-VDRS is a multi-source system that gathers information from death certificates obtained from the N.C. State Center for Health Statistics; medical examiner reports obtained from the N.C. Office of the Chief Medical Examiner; and law enforcement reports obtained from more than 200 local law enforcement agencies across the state and the N.C. State Bureau of Investigation. Suicide is defined as a death resulting from the intentional use of force against oneself. A preponderance of evidence should indicate that the use of force was intentional. In most cases, the sources provide a unanimous categorization for the manner of death as suicide. In cases where a discrepancy occurs, the abstractor assigns a manner of death for which there is a preponderance of evidence from all sources. This classification must agree with at least one of the primary data sources listed above. Suicides must also correspond with the International Classification of Disease codes, version 10 (ICD-10), X60-X84 for deaths less than one year after self-inflicted injury or Y87.0 for deaths occurring 1 year or more after self-inflicted injury.

Suicides are classified only for persons age 10 or older. NC-VDRS captures data on all suicides that occur in the state. This report is based on resident suicides, defined as those in which the victim was a N.C. resident at the time of death, and the death occurred in North Carolina. All victims included in the analyses were classified as N.C. residents at the time of death.

North Carolina Hospital Discharge Data 2009-2011

The N.C. State Center for Health Statistics provided data for every N.C. hospital discharge for self-inflicted injury of N.C. residents in 2009 to 2011. A hospital discharge occurs after a patient leaves a hospital following admission. These data do not represent number of patients, but number of discharges (multiple discharges per patient are possible). Cause of injury was assigned with International Classification, 9th Revision; Clinical Modification (ICD-9-CM) External Causes of Injury codes (E Codes). Injuries were classified into manner and mechanism using CDC's standard injury matrix framework. Self-inflicted injuries were categorized as self-inflicted intent by any mechanism (e.g., firearm, poisoning) based on E-codes: E950-E959.

North Carolina Emergency Department Visit Data 2009-2012

The N.C. Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT) provided emergency department data for self-inflicted injury of North Carolina residents during 2006 to 2008. NC DETECT is a state system that receives data on at least a daily basis from hospital EDs statewide to provide early event detection and timely public health surveillance to public health officials and hospital users. Of the 123 EDs open 24 hours/7 days per week in North Carolina, NC DETECT was receiving data daily from 79 percent in 2006 and up to 99 percent in 2013. In addition, four VA facilities now report into NC DETECT. Therefore, data for these years are not representative of all EDs in the state, although the majority of EDs were reporting. The ED data and hospital discharge data are not mutually exclusive. Cause of injury was assigned by hospital coders using International Classification, 9th Revision; Clinical Modification (ICD-9-CM) External Causes of Injury codes (E-codes). Injuries were then classified into manner and mechanism using the CDC's standard injury matrix framework. Self-inflicted injuries were categorized as self-inflicted intent by any mechanism (e.g., firearm, poisoning) based on E-codes: E950-E959.

North Carolina Youth Risk Behavior Survey 2009 and 2011

Under the Healthy Schools Initiative, the N.C. Department of Public Instruction and the N.C. Division of Public Health provided survey data for 2009 and 2011 from the Youth Risk Behavior Survey (YRBS) of North Carolina high school students. The N.C. YRBS is a statewide survey that helps assess behaviors in youth that impact their health now and in the future. Reports on suicide ideation and attempts were retrieved October 2013 from: http://www.nchealthyschools.org/data/yrbs

North Carolina Population Estimates 2009-2012

The N.C. State Center for Health Statistics (SCHS) provided N.C. population data for the years 2009 to 2012 to calculate rates. SCHS obtained the population data from the CDC National Center for Health Statistics bridged population file.

Veteran Population Estimates 2009-2011

The U.S. Department of Veteran Affairs provided N.C. veteran population data for the years 2009 to 2011 to calculate rates using the VetPop2011 estimate. An updated data file was retrieved October 25, 2013 from: http://www1.va.gov/VETDATA/Veteran_Population.asp

Appendix B: Methods and Technical Notes

To determine the burden of suicide and self-inflicted injury in North Carolina, the following methodological approaches were undertaken:

- comparative analysis of suicide rates over time in N.C. and the U.S.;
- analysis of suicides and self-inflicted injury hospitalizations and emergency department visits in North Carolina;
- analysis of years of potential life lost from suicide in N.C. and the U.S. and as compared to other commons causes of death;
- description of hospitalization charges for self-inflicted injuries in North Carolina; and
- summary of survey responses on suicide ideation by N.C. high school students.

Comparative Analysis of Suicide Rate

Suicide rates in N.C. compared to the U.S. were calculated directly using the CDC's WISQARS. The system calculates age-adjusted suicide rates per 100,000 population from 1999 to 2010 with standardization to the total U.S. population data in 2000, provided by the U.S. Census Bureau and the National Center for Health Statistics.

Suicide and Self-Inflicted Injury Calculations

Suicides in N.C. were analyzed using the NC-VDRS files for 2009 to 2011. Hospitalizations for self-inflicted injuries in North Carolina were analyzed based on the N.C. Hospitalization files for 2009 to 2011. ED visits for self-inflicted injuries in North Carolina were analyzed based on NC DETECT for 2009 to 2012. For hospitalizations and emergency visits, duplicate records or records with a primary diagnosis other than injury were excluded. Self-inflicted injuries were identified by E-codes using CDC's injury matrix standard definitions.

Analyses were for N.C. residents age 10 and older and for the sub-groups of youth and young adults (ages 10 to 24 years), veterans (age 18 and older), and older adults (age 65 and older). Analyses included: 1) number of suicides, hospitalizations or emergency visits; 2) percent of total suicides, hospitalizations or emergency visits by specific demographic characteristics; and 3) rate of suicides, hospitalizations or emergency visits by demographic characteristics, where possible. Demographic characteristics for suicides were age, gender, race, Hispanic/non-Hispanic, marital status, years of completed education and North Carolina county. Because race and Hispanic/non-Hispanic ethnicity were separate demographic characteristics, race categories included both Hispanics and non-Hispanics. Demographic characteristics for self-inflicted injury data were limited to age, gender and N.C. county.

Crude rates were calculated as the number of suicides, hospitalizations or emergency visits during the specified time period per 100,000 N.C. residents. For example, crude suicide rate = [number of suicides x 100,000]/ N.C. population. Demographic-specific rates were calculated as the number of suicides, hospitalizations or emergency visits in the demographic category during the specified time per 100,000 N.C. residents in the demographic category. For example, age-specific suicide rate = [number of suicides in specified age group x 100,000]/ N.C. population in specified age group.

N.C. veteran suicide rates were calculated using the VetPoP file from the U.S. Department of Veteran Affairs. All other rates were calculated using bridged N.C. population data from the National Center for Health Statistics. Yearly and aggregate rates were evaluated. Denominators for aggregate rate calculations were the population estimates over the specified time (e.g., 2009 to 2011 for suicides and hospitalizations; 2009 to 2012 for ED visits.)

Age-adjusted rates per 100,000 persons were standardized to the 2000 U.S. population, as described in Klein and Schoenborn (2001). For each age group, an age-adjustment weight was calculated based on the number of persons in the age group in the U.S. standard population divided by the total number of persons in the U.S. standard population for all ages of interest. The age-adjusted weight for each age group was multiplied by the age-specific rate for that age group in the N.C. population. Then, the adjusted rate for each age group was summed to calculate the overall adjusted age-adjusted rate for all ages of interest.

Years of Potential Life Lost

Years of potential life lost from suicide in North Carolina from 2008 to 2010 compared to the U.S. and to other causes of death were calculated directly using the CDC's WISQARS. The system calculates years of potential life lost as a measure of premature death before the age of 65 by subtracting each deceased person's age at death from 65 and adding the number of years lost for all deceased people in that category. Calculations included the number of years of potential life lost and the age-adjusted rate of years of potential life lost per 100,000 persons with standardization to the U.S. population in 2000. This measure using age 65 is a conservative estimate since life expectancy was greater than 65 years for white and black males and females in the U.S. in 2006 (Arias, 2010).

Hospital Charges Calculations

Hospital charge estimates were computed by summing the charges across all cases for self-inflicted injury. It is important to note that hospital charges reflect only a part of the cost of injuries. Physician charges, emergency vehicle services, out-patient drug charges, medical equipment and time lost from work were not included in this report. All charges were reported in that year's dollars and were not adjusted for inflation. Hospital charges also reflect contracts that hospitals have with insurance companies.

Data Use Caveat

Findings in the report are based on rigorous data collection and analysis. However, counts that are small (less than 50) must be interpreted with caution, particularly when they are used in the calculation of suicide rates. Small numbers, even if they are not used in the calculation of rates, have substantial variation over time (i.e., a large standard error). This report presents rates for cases where there are at least 20 deaths, hospitalizations or emergency visits; however, rates for counts less than 50 should be interpreted with extreme caution when making comparisons or assessing trends over time. An asterisk (*) in the rate cell indicates the number of deaths was too small to support the calculation of a rate. A good way of determining significance of rates is to use the 95 percent confidence interval (95% CI) provided. The wider the confidence interval (i.e., the greater the difference between the lower and upper bounds of the confidence interval), the less accurate the rate is, and therefore, more caution should be used when interpreting the data.

Appendix C: Suicide Prevention Resources

Suicide Prevention Resource Center (SPRC)
Education Development Center, Inc.
55 Chapel Street
Newton, MA 02458-1060
Phone: 877-GET-SPRC (877-438-7772)
Fax: 617-969-9186
TTY: 617-964-5448
Email: info@sprc.org
Web: www.sprc.org

North Carolina State Government Suicide Prevention Resource
Jane Ann Miller, MPH, Violence Prevention Program Consultant
North Carolina Department of Health and Human Services
1915 Mail Service Center
Raleigh, NC 27699
Phone: 919-707-5430
Email: Jane.Miller@dhhs.nc.gov

National Center for Injury Prevention and Control (NCIPC)
Centers for Disease Control and Prevention
Mailstop F63
4770 Buford Highway NE
Atlanta, GA 30341-3717
Phone: 800-CDC-INFO/(800-232-4636)
TTY: (888) 232-6348 24 Hours/Every Day
Email: cdcinfo@cdc.gov
Web: www.cdc.gov/injury

N.C. Injury and Violence Prevention Branch
Chronic Disease and Injury, North Carolina Division of Public Health
North Carolina Department of Health and Human Services
1915 Mail Service Center
Raleigh, NC 27699-1915
Phone: (919) 707-5425
Fax: (919) 870-4803
Email: beinjuryfreenc@ncmail.net
Web: www.communityhealth.dhhs.state.nc.us/injury

REFERENCES

Arias, E. "United States Life Tables, 2006." *National Vital Statistics Reports; Vol. 58, No. 21.* Hyattsville, MD: National Center for Health Statistics, 2010. 2008.

Centers for Disease Control and Prevention, National Centers for Injury Prevention and Control. "*Understanding Suicide Fact Sheet: 2012."* Centers for Disease Control and Prevention, National Centers for Injury Prevention and Control, 2010. http://www.cdc.gov/violenceprevention/pdf/Suicide-FactSheet-a.pdf. 22 October 2013.

"Web-based Injury Statistics Query and Reporting System (WISQARS)". *Injury Prevention & Control: Data & Statistics.* U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, 2013. http://www.cdc.gov/injury/wisqars. 25 October 2013.

Klein, R.J. and Schoenborn, C.A. "Age adjustment using the 2000 projected U.S. population." *Healthy People 2010: Statistical Notes, No. 20*. Hyattsville, MD: National Center for Health Statistics, 2001. 2008.

North Carolina Department of Health and Human Services, North Carolina State Center for Health Statistics. "Leading causes of death by age group North Carolina residents, 2008." *Vital Statistics, 2008; Vol. 2.* North Carolina Department of Health and Human Services, North Carolina State Center for Health Statistics, 2008. http://www.schs.state.nc.us/SCHS/deaths/lcd/2008/pdf/TblsA-F.pdf. 16 October 2010.

Schmid, D. "Suicide in North Carolina: Deaths, hospitalizations and youth survey results." *North Carolina Public Health SCHS Studies: A Special Report Series by the State Center for Health Statistics; No. 140.* North Carolina Department of Health and Human Services, North Carolina State Center for Health Statistics, 2004. http://www.schs.state.nc.us/SCHS/pdf/SCHS140.pdf. 5 September 2010.

Shen, X. and Millet, L. "Suicide in Oregon: Trends and Risk Factors." Oregon Health Authority, 2012. Portland, Oregon.

Wisconsin Department of Health Services, Injury Research Center at the Medical College of Wisconsin, Mental Health America of Wisconsin, and Wisconsin Suicide Prevention Initiative. "The burden of suicide in Wisconsin*".* Wisconsin Department of Health Services, Injury Research Center at the Medical College of Wisconsin, Mental Health America of Wisconsin, and Wisconsin Suicide Prevention Initiative, 2008. http://www.mhawisconsin.org/Uploads/prevention/bosfinal9.5.pdf. 22 August 2010.