

Epidemiology of Suicidal Behaviors in Virginia

In 2002, the latest year for which data are available, there were 792 suicides in the Commonwealth, or about two suicides per day, for an age-adjusted rate of 10.8 suicides per 100,000 persons.ⁱ It was the eleventh leading cause of death among all Virginians and the third leading cause of death for youth. Twice as many died from suicide in Virginia as compared to homicides.^h In 2001, Virginia's suicide rate ranked 31st highest in the nation.ⁱ The national target is 5.0 suicides per 100,000 by the year 2010.^j

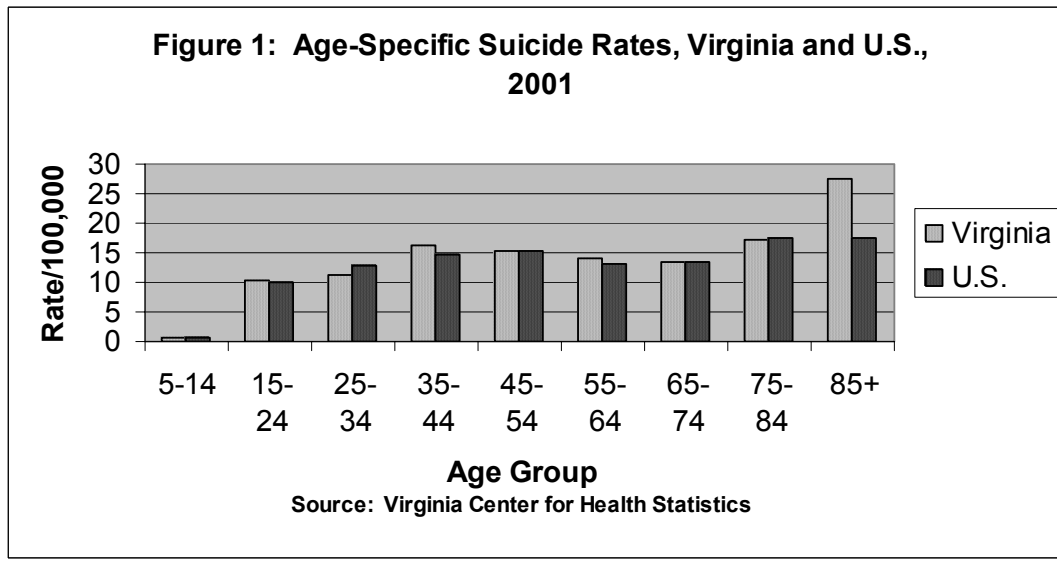
For every suicide, there are about 25 suicide attempts; thus there were about 19,800 suicide attempts in 2002 in Virginia. Suicide attempts are three times more common in women than in men. Also, each suicide intimately affects at least 6 other people.^k

In 2002, the 792 suicides can be broken down as follows:

- 617 (78%) were suicides by males
- 535 (68%) of the suicides were by 25 - 64 year olds
 - 341 (64%) of these suicides were by white males
- 490 (62%) were deaths by firearms
 - 422 (86%) of the suicides by firearms were by males

Comparisons with National Rates

Suicide rates for Virginia in 2001 were very similar to those for the U.S., with the exception of the elderly aged 85 and over (Figure 1). The 2000-2002 average for this age group in Virginia was 37% higher than the national rate for 2001.



ⁱ Age-adjusted rates are standardized to a common population age distribution, in this document, the Year 2000 U.S. population. This allows for comparison among populations in spite of differing age distributions.

Trends

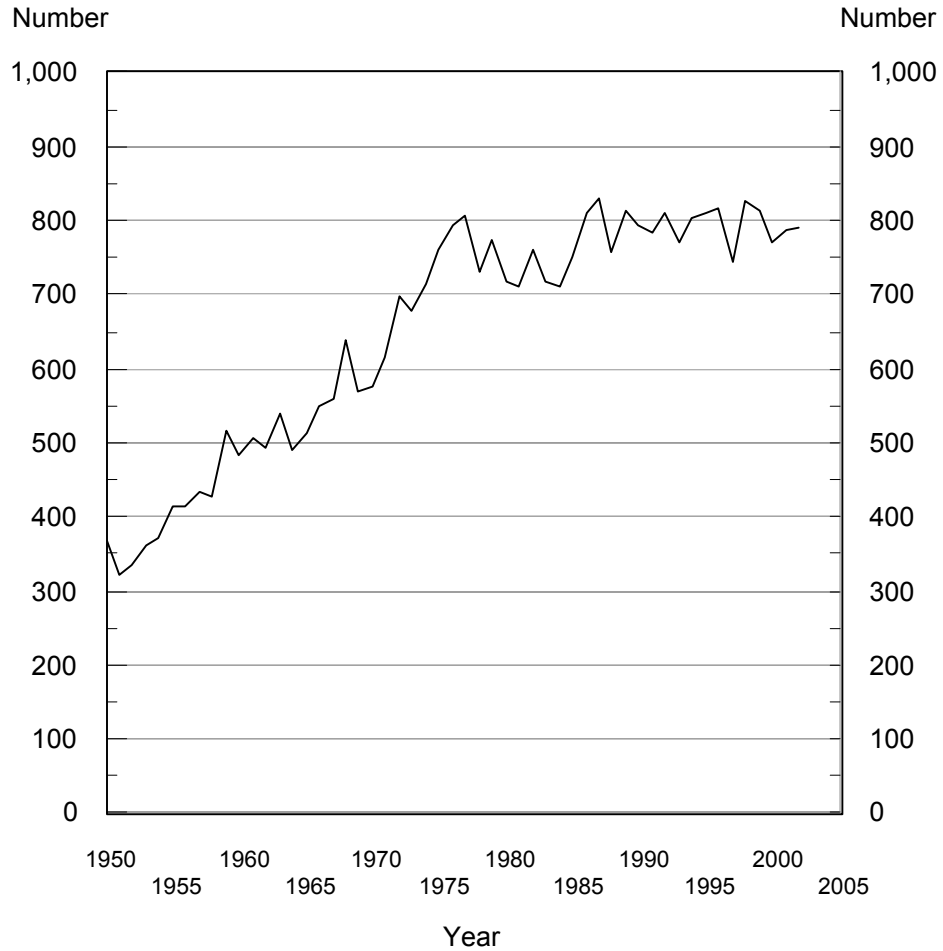
While the number of suicides in Virginia has risen by a third since 1970, it has stabilized since 1990 (Figure 2). Suicide death rates rose rapidly between 1950 and the mid-70s but have since declined by about 30% such that in 2002, the rate was similar to that of the mid-1950s (Figure 3). The suicide rate to 45-64 year olds has declined dramatically: since 1975, the rate has halved. Suicide rates for 20-44 year olds and 65-74 year olds have each declined since 1975 by 31%. The suicide rates of 15-19 year olds has remained relatively stable, however the rate for 2002 (5.8/100,000) is the lowest since 1975 – this rate will have to be monitored to see whether it indicates the beginning of a downward trend. The rate for the elderly ages 75 and over fluctuates greatly but both the rates for 75-84 year olds and for those 85 and over do not appear to have changed much during the past 28 years (Charts 1 to 10 in Appendix B)¹. Rates for white males and females have declined since 1975 but for non-white males and females show little change (Figure 4).

Geographic Distribution

Suicides occur in all areas of Virginia (Figure 5). The highest rates are in rural areas, primarily in the Southwest and West Piedmont areas. For the most recent four-year period (1999-2002), Figures 6 and 7 show the cities/counties and planning districts with at least 20 suicides over a four-year period and rates at least as high as the Virginia rate. In descending order, the counties of Buchanan, Scott, Russell, Wise, Lee, Dinwiddie, Pulaski, and Tazewell had suicide rates at least 1.75 times the state rate and accounted for 232 suicides (7% of total) over a 4-year period. Lenowisco (Planning District 1) and Cumberland Plateau (Planning District 2) had rates at least twice as high as the state rate and the rate of West Piedmont (Planning District 12) was at least 1.5 times the state rate. Mount Rogers (Planning District 3) and the Roanoke Area (Planning District 5) had rates that were 1.25 times higher. Outside of these Planning Districts, Dinwiddie, Louisa, Culpeper, Isle of Wight, Shenandoah and Warren counties had similarly high rates. Together, the suicides in these areas accounted for 25% (786 suicides) of the total during those four years (Appendix C). Fairfax County had the highest number of suicides, at 274 over a 4-year period, but with a rate well below the state rate (7.0/100,000).

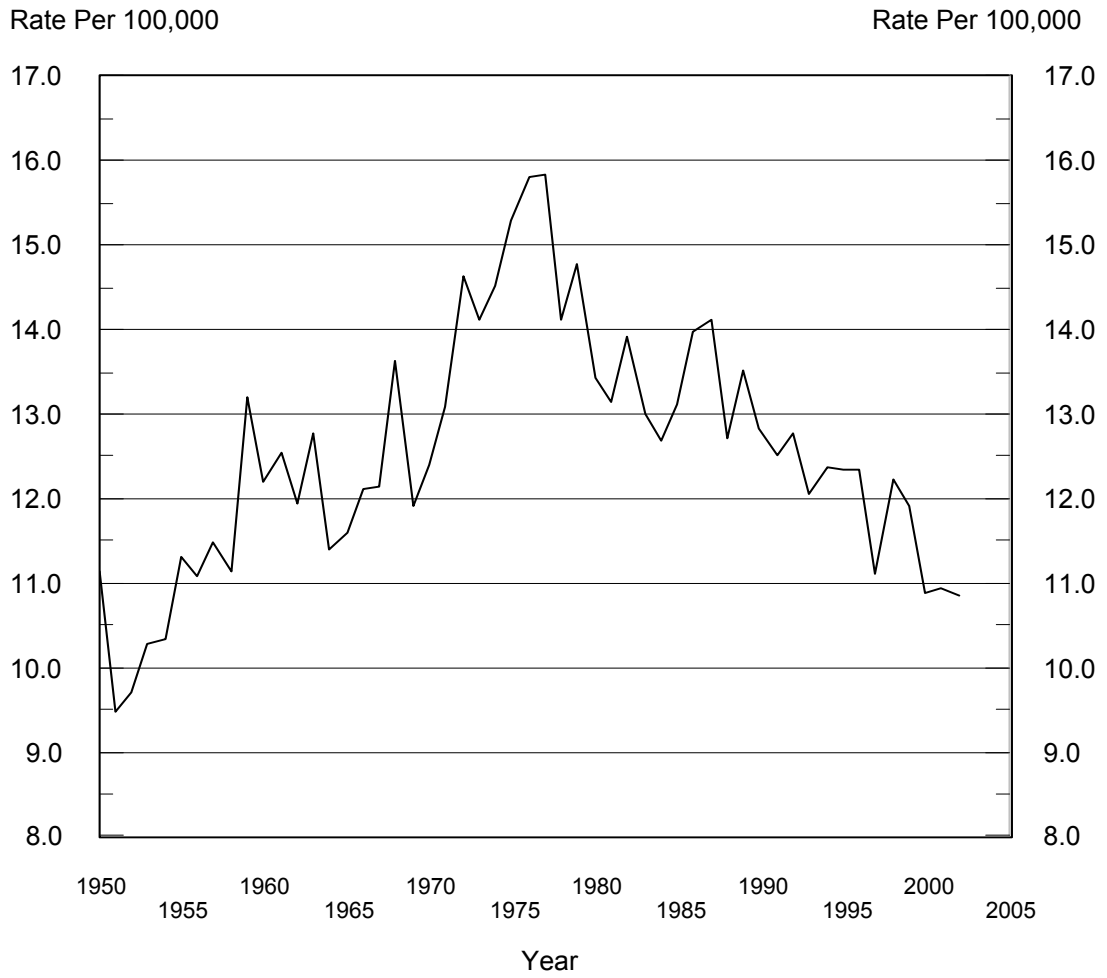
¹ Rates for ages 85 and over, 1975 – 2002: The straight-line descriptor of the rates has a slight positive slope: it rises from 18.9/100,000 in 1975 to 22.9/100,000 in 2002. However, it fails conventional probability tests as a descriptor, indicating no increase during those years.

Figure 2
Total Resident Deaths From Suicide
Virginia, 1950-2002



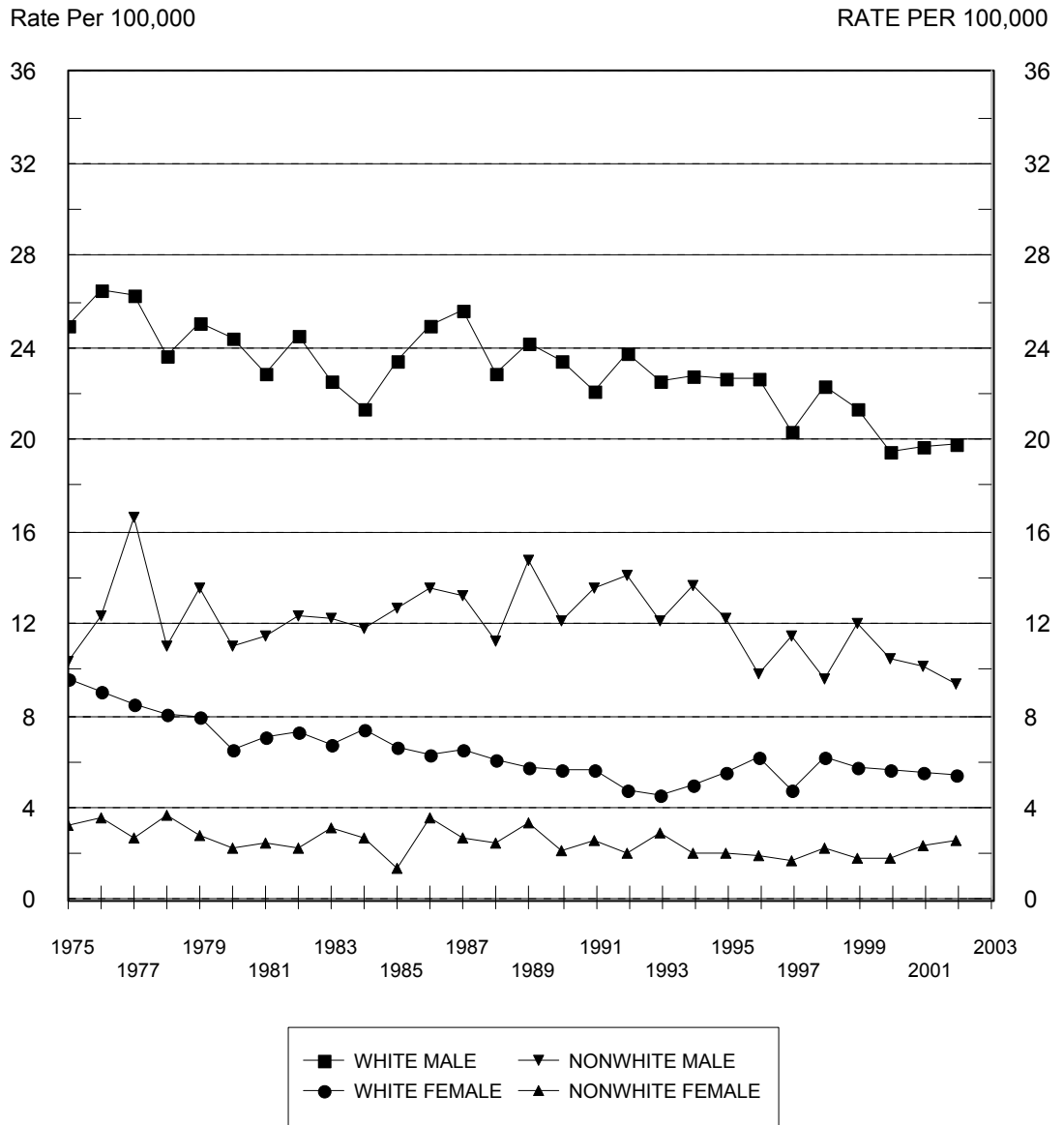
SOURCE: Virginia Center For Health Statistics

Figure 3
Total Resident Death Rates From Suicide
Virginia, 1950-2002



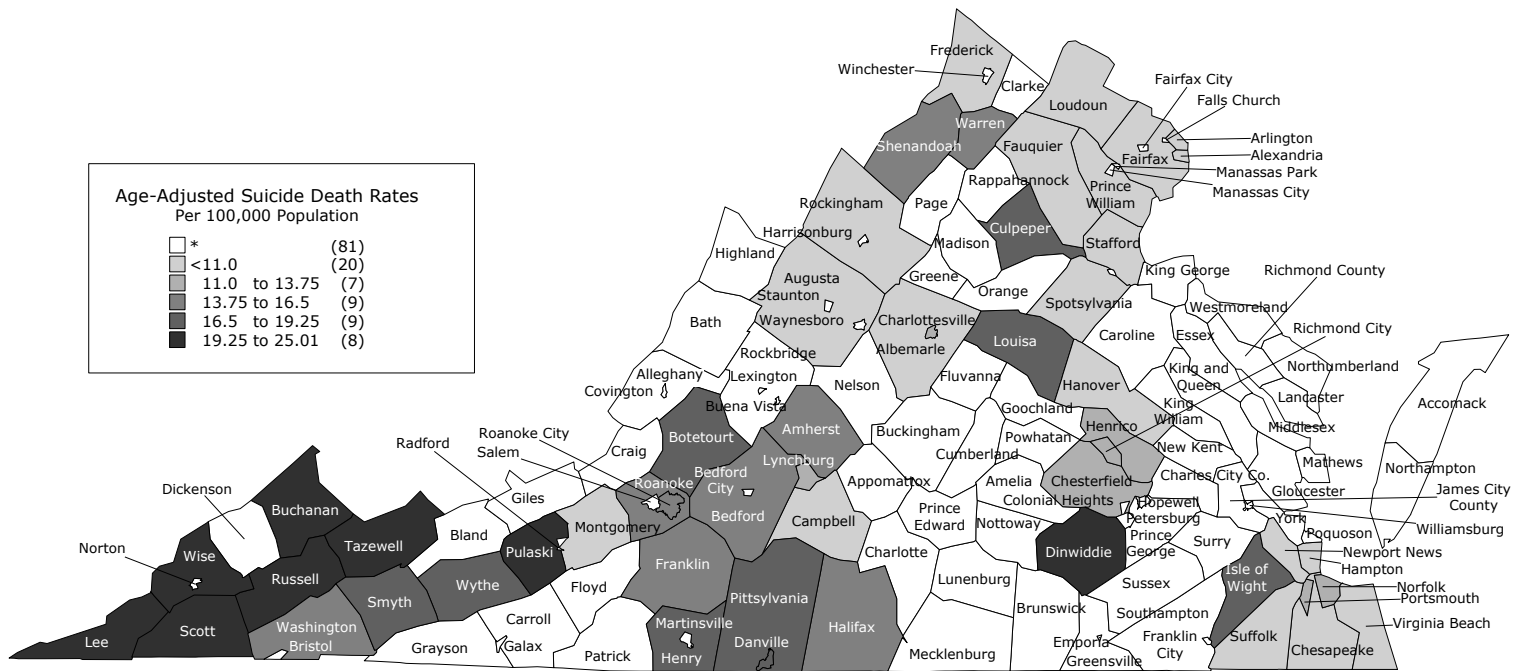
The Rates Are Per 100,000 Population of the U.S. Census and the VA State Data Center
SOURCE: Virginia Center For Health Statistics

Figure 4
Resident Suicide Death Rates By Race And Sex
Virginia, 1975-2002



SOURCE: Virginia Center For Health Statistics

Figure 6: Resident Age-Adjusted Suicide Death Rates Per 100,000 Population By City and County Virginia, 1999-2002

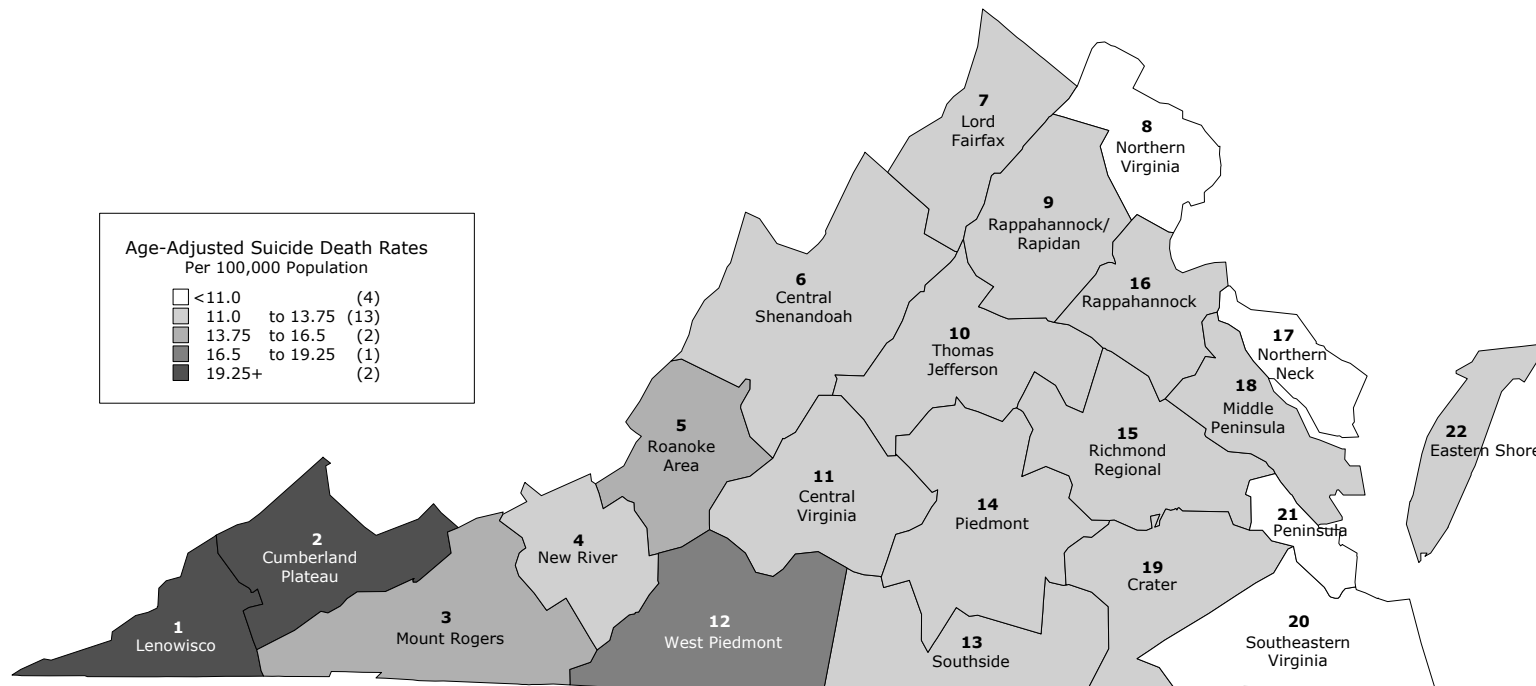


Source: Virginia Center for Health Statistics

* Number of cases too small (<20) to calculate reliable rate

Note: 11.0/100,000 is the age-adjusted rate for Virginia

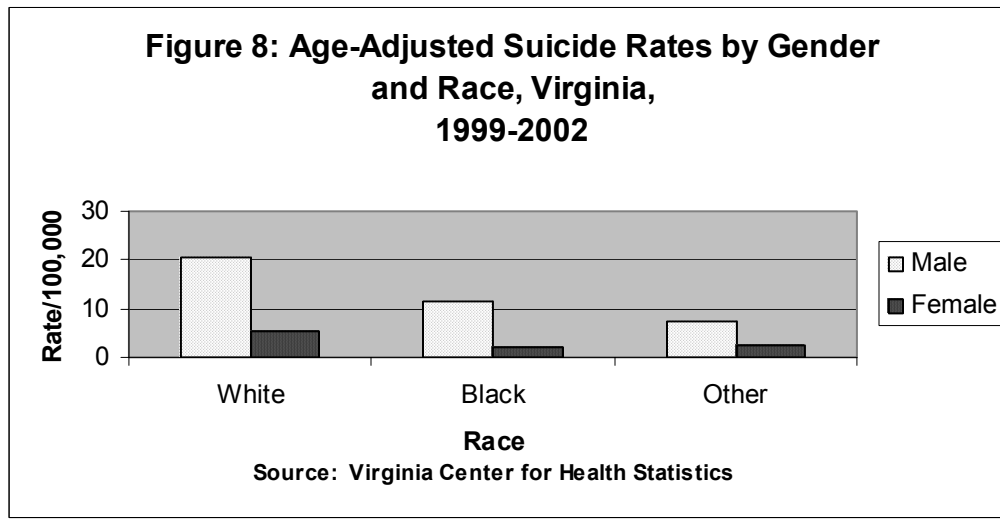
Figure 7: Resident Age-Adjusted Suicide Death Rates Per 100,000 Population By Planning District Virginia, 1999-2002



Source: Virginia Center for Health Statistics
 Note: 11.0/100,000 is the age-adjusted rate for Virginia

Gender and Race

In 1999-2002, males in Virginia had age-adjusted suicide rates that were four times higher than those of females (18.6 and 4.6 respectively). The rate for white males was highest, 20.7 as opposed to 11.4 for black males. Black females had the lowest rates, at 2.1 and the rate for white females was 5.4 (Figure 8).



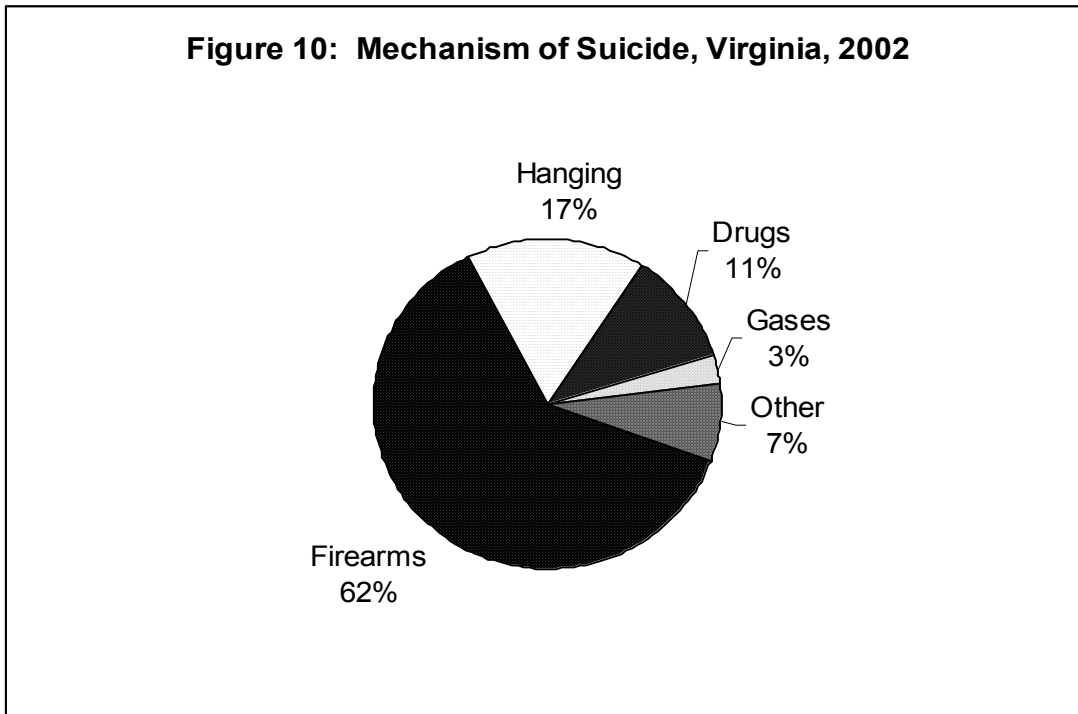
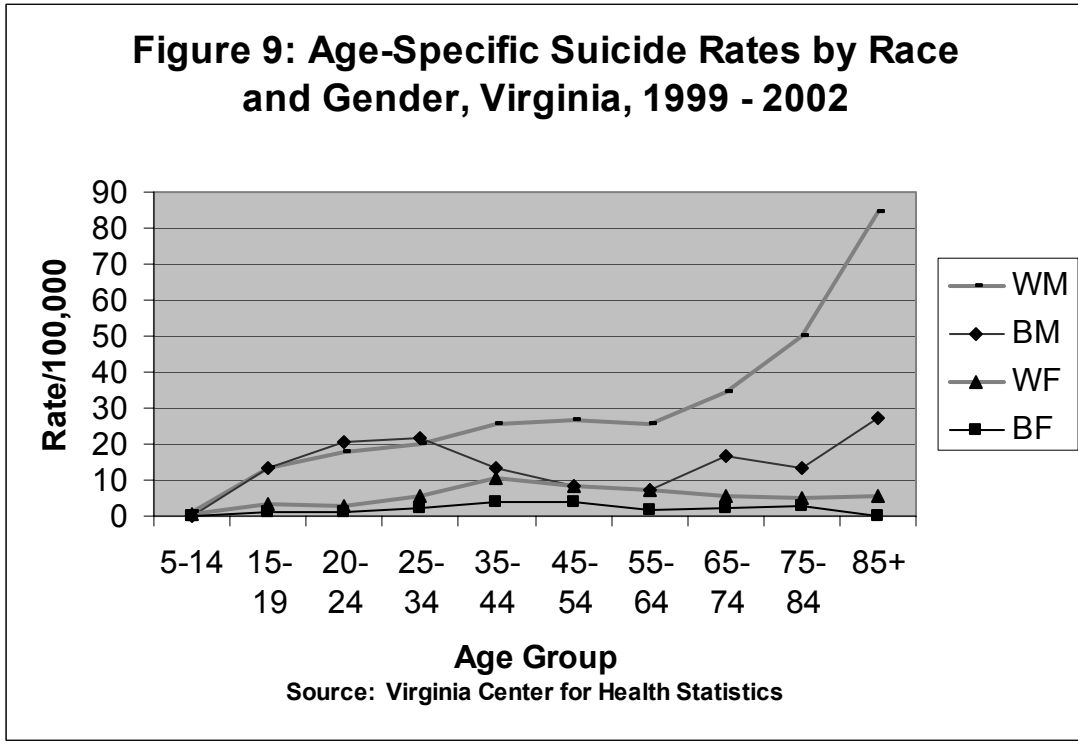
The pattern of suicide over the lifespan is strikingly different among the four major race/gender categories¹. Among white males, the suicide rates rise steadily through age fifty-four; thereafter they rise dramatically and peak for those ages 85 and over. By contrast, the suicide rate peaks twice for black males: between 20 and 34 years and then again among those ages 85 and over. Between the ages of 5 and 34, the rates for both white and black males are similar. The rates for females are relatively low throughout the lifespan but reach the highest point between the ages of 35 - 44 for white females and 35 - 54 for black females. The rates for black females are very low: the highest rate for any age group is 4.1/100,000 (Figure 9).

Mechanism of Suicide

In all age groups, firearms are the major means chosen by those completing suicide. Most recently, suffocation (mostly hanging) has become a more common means among 10-14 year olds nationally.¹ In Virginia, suffocation (mostly by hanging) is the second most common method, followed by drugs and gases (Figure 10).

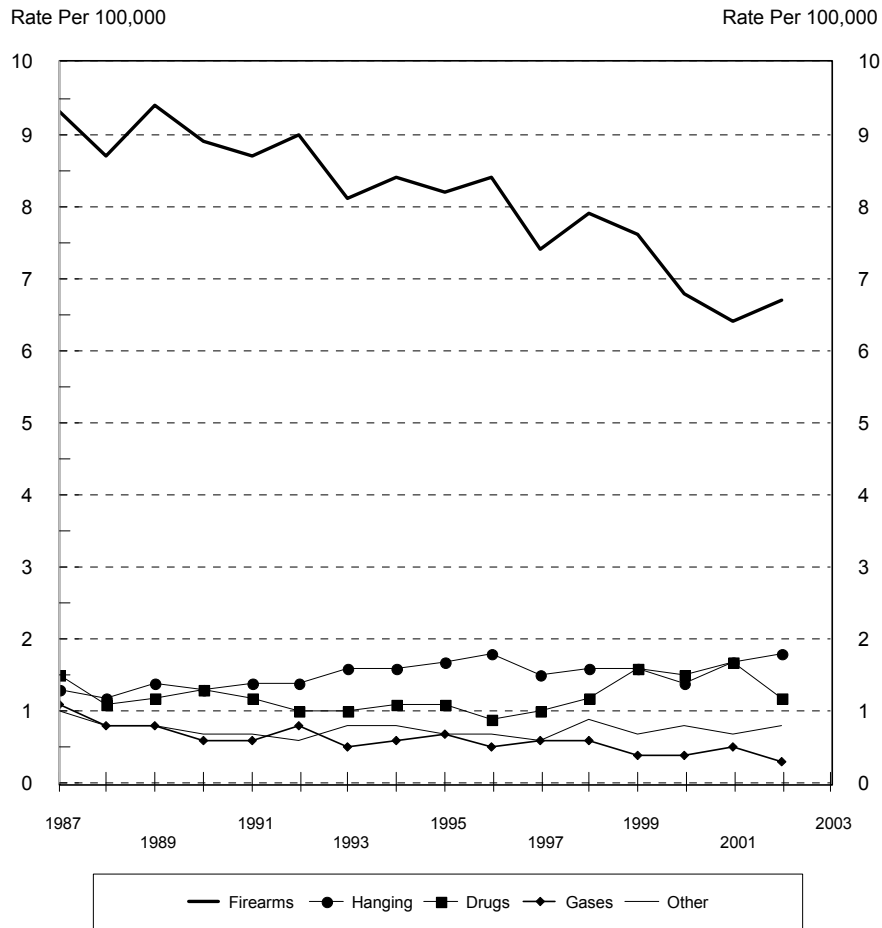
¹ Rates for other race categories are available, but the numbers are so small that they are not deemed reliable.

Since 1988, the suicide rate by firearms and gases has declined by 23% and 64% percent, respectively. The rate of suicide by suffocation, though, has risen during this same period. Suicide by drugs has fluctuated (Figure 11).



Source: Virginia Department of Health

Figure 11
Resident Suicide Death Rates By Method
Virginia, 1987-2002



SOURCE: Virginia Center For Health Statistics

Suicidal Behaviors

For the first time in 2003, the Virginia Department of Health, in collaboration with the Centers for Disease Control and Prevention, included questions on suicidal behavior in the annual Behavioral Risk Factor Surveillance System, a random telephone survey of adults ages 18 and older. Table 1 shows the percentage of respondents reporting various suicidal behaviors and the estimated number of adults in Virginia who would expect to exhibit these behaviors based on the reported percentages.

Table 1: Estimated Prevalence of Self-Reported Suicidal Behaviors, Among Adults Ages 18 and Over in Virginia, 2003

Suicidal Behavior	Frequency (%)	Estimated No. of Adults in Virginia with Behavior, 2003
Seriously considered attempting suicide	3.0	166,802
Serious plan to attempt suicide	1.4	77,841
Attempted suicide	0.5	27,800
Suicide attempt that required medical attention	0.2	11,120

Source: Behavioral Risk Factor Surveillance System, Virginia Department of Health, 2004

In addition, nearly 2% of the surveyed adults reported suffering from depression, anxiety, or an emotional problem that limited their activities. Of those women who had a baby in the past year, 12.7 percent said they had felt sad or blue before pregnancy, 30.4% reported this feeling during pregnancy, and 38% after pregnancy.^m

The Centers for Disease Control and Prevention conducts a national survey of youth in grades nine through twelve in public and private schools. This survey includes questions to determine risk behaviors, including questions about sadness, hopelessness, and suicidal thoughts and behaviors. Data specific to Virginia is unavailable from this study. Results from most questions are available since 1991 and indicateⁿ:

- Nearly 30% of youth have felt sad and hopeless for two weeks or more during the past year, such that they have stopped some usual activities. This feeling is higher among females (33%) than males (20%). Among Hispanic females, this percentage is particularly high – 45% in 2003.
- Overall, 17% of youth seriously considered attempting suicide in 2003, with a higher percentage among females (21%) than males (13%), although the rate for black females is lower (15%).
- Fewer youth seriously considered suicide in 2003 (17%) as compared to 1993 (24%). This finding is consistent among all females and white males. Among minority males there appears to be a decline, but it may not be significant.
- Close to 9% of youth attempted suicide during the past year. The percentage was over twice as high among females (11.5%) than males (5%) and was lowest among white male youth (4%) and highest among Hispanic females (15%).
- Three percent of youth reported attempting suicide in the past twelve months and required medical attention as a result. These attempts appear to be somewhat higher among minority youth.
- Although data for youth of other (neither white, black nor Hispanic) are available, the rates are based on small numbers and are generally not reliable.

Data on suicidal behaviors is also available from Virginia Poison Centers and from hospital discharge reports. In 2003, 5,705 (called suicidal poison exposures) were reported to Virginia Poison Centers, for an average of 16 calls per day. Two-thirds of the callers were female and one-fourth were children and youth under the age of twenty. Ninety-three percent of callers were exposed in their own residences. Among 6-19 year olds, the most common types of exposures among callers were to analgesics (37%), antidepressants (15%), sedatives/antipsychotics/hypnotics (10%), cough and cold preparations (6%), and antihistamines (5%). Among adults 20 years or older, the most common exposures were to sedatives/antipsychotics/hypnotics (22%), analgesics (22%), antidepressants (16%), alcohols (9%), and antihistamines (4%)^o.

Self-inflicted injuries resulted in 4,210 hospitalizations in Virginia in 2002 and accounted for 11.4% of all injury-related hospitalizations. Self-inflicted injuries accounted for 13.6% of the injury hospitalizations for females and 9% of the injury hospitalizations for males. When considering age, certain patterns of hospitalization occur. The 15-34 year age group experienced the highest percentage of all injury hospitalizations attributable to self-inflicted injuries (Appendix E). For example, 12.7% of all those hospitalized for injury in Virginia were 15-19 year olds who were hospitalized for self-inflicted injuries, while only 3.3% of all those hospitalized for injury were those 65 years of age and older who were hospitalized for self-inflicted injuries. Similar conclusions can be drawn when analyzing the proportion of injury hospitalizations within a particular age group that were attributable to injury. About a quarter of all injury hospitalizations experienced by those 15-44 were due to self-inflicted injury (Appendix E) in comparison to the elderly for whom self-inflicted injuries are an insignificant percentage (1%) of injury hospitalizations.

Risk and Protective Factorsⁱ

In the U.S., about 90 percent of people who completed suicide had a mental illness, including alcohol and/or substance use disorders and some had multiple diagnoses. About 50% of those who completed suicide were not in treatment. Those who were in treatment often were not adequately medicated, sufficiently followed after acute treatment, and/or did not adhere to treatment. However, over 95% of those with mental disorders never attempt or complete suicide. Among those who attempt suicide, 30-90% have a depressive disorder and up to two-thirds are intoxicated with alcohol. Therefore, in this country, the problem of suicide is inextricably linked to the issue of mental health and substance abuse.

About 28-30% of the US population has a mental or addictive disorder, but only about a third of those with mental illness receive treatment. In 1997, a national survey found that in children and adolescents ages 6 to 17 years with mental health problems severe enough to indicate a clinical need for mental health evaluation, 79% did not receive a mental health evaluation or treatment in the past year.^p Barriers to receiving treatment include

ⁱ Unless otherwise noted, the source of information for this section from Institute of Medicine. 2002. *Reducing Suicide: A National Imperative*. Washington, D.C.: National Academy Press.

stigma, limited insurance coverage, fragmentation of services, and low availability of services, especially in rural areas and communities with large minority populations.

Care to people with mental health problems is provided by mental health providers but also primary care practitioners and the clergy. Older adults, African Americans, and Hispanic Americans more often seek help for mental health issues, including suicide, from clergy rather than from mental health professionals. About half of people with depression and other mental disorders obtain mental health treatment in primary care settings. Nearly 75% of persons dying by suicide see a medical professional within their last year of life. About 40% of these people had contact with a primary care provider within a month of their death; 20% within a week before suicide. Among older people, 70% saw a health professional within a month of the suicide.

Researchers have identified patterns of high risk for suicide during certain periods of treatment, such as immediately after discharge from a hospital and early in treatment, before consistent drug and therapy treatments have been established.

Specific diagnoses associated with suicide attempts include:

- 30-90% with depressive disorder. As compared with the population as a whole, those with major depressive disorder have a 40 times higher risk of suicide.
- 30% with a personality disorder, in particular borderline personality (BPD) and antisocial personality disorders. Although BPD affects 2% of adults; 40-90% of people with BPD have attempted suicide.
- 25% with an alcohol abuse disorder. As compared to a psychiatrically healthy population, those with this disorder have 115 times greater risk of suicide.
- 20% with anxiety disorders, including post-traumatic stress disorder
- 5% with schizophrenia; they have 40 times greater risk of suicide than the population as a whole.
- 5% with bipolar disorder. This condition affects about 1.2% of the population but 25-50% of those with this disorder will attempt suicide at least once.
- Mood disordered individuals with impulsive aggression are at much greater risk for suicidal behavior than are those without this characteristic.

However, not all suicides or persons who attempt suicide have a mental health condition. A recent study found a significantly higher likelihood of suicide attempts, independent of effects of mental disorders, among people suffering from lung disease, ulcer, and AIDS with the number of physical illnesses related to an increased odds of suicide attempt.⁹

Specific protective and risk factors associated with suicide are presented in the charts below. Of particular note is the relationship between childhood trauma and suicidal behaviors. In a review of multiple studies, it was found that adults with a history of childhood physical and sexual abuse were 1.3 to 25 times more likely than adults without a past history to attempt suicide. Conversely, from 20-49 percent of child sexual abuse victims do not exhibit noticeable symptoms. The most common outcomes of sexual or physical abuse are depression and post-traumatic stress disorder but also include impaired social attachments, low self-esteem, substance abuse, and delinquent behavior. In

particular, childhood sexual abuse is a risk factor in about 9-20 percent of suicide attempts. This abuse is more likely when parents are depressed or substance abusers.

New biological research is showing a link between chronic stress, impulsivity, genetic inheritance and suicidal behaviors. Eventually, this research could help practitioners identify and follow patients who may be at most risk for suicidal behaviors. For example, irregularities of the hypothalamic-pituitary-adrenal axis, one of the body's primary stress response systems that becomes dysfunctional after trauma, such as abuse or chronic stress, are associated with suicide, independent of psychiatric diagnosis. Low levels of the neurotransmitter serotonin, associated with increased impulsive aggression, have been found in the brains and cerebrospinal fluid of serious suicide attempters and suicide victims.

Risk factors vary across the lifespan. For example, youth are more likely to exhibit irritability, acting out behaviors, and anger rather than exhibiting sad and depressed affect. Suicide victims under 30 are more likely to have problems with substance abuse, impulsive aggressive personality disorders, and precipitants such as interpersonal and legal problems than those over 30. Among the elderly, widowhood, serious medical illness, and social isolation are risk factors. In the U.S., the highest suicide rate is among bereaved elderly white men.

The Institute of Medicine, in its landmark report, Reducing Suicide: A National Imperative, summarizes risk factors for suicide succinctly:

Risk factors associated with suicide include serious mental illness, alcohol and drug abuse, childhood abuse, loss of a loved one, joblessness and loss of economic security, and other cultural and societal influences. Resiliency and coping skills, on the other hand, can reduce the risk of suicide. Social support, including close relationships, is a protective factor.^f

and

Converging evidence across disciplines indicates that suicide is related to stress: developmental and adult trauma; cumulative stressors, including multiple morbidities; acute and chronic social and cultural stressors; and capacity to cope with stress. Suicide can be considered an expected outcome of a significant subgroup of mentally ill patients who experience accumulative life stresses, just as cardiac infarction is an expected outcome of untreated high blood cholesterol.^g

Protective Factors

- Effective clinical care for mental, physical and substance use disorders.
- Easy access to a variety of clinical interventions and support for help-seeking.
- Restricted access to highly lethal means of suicide.
- Strong connections to family and community support.
- Support through ongoing medical and mental health care relationships.
- Skills in problem solving, conflict resolution and nonviolent handling of disputes.
- Cultural and religious beliefs, including those that discourage suicide and support self preservation.

Adapted from Risk and Protective Factors for Suicide, Suicide Prevention Resource Center, www.sprc.org

Risk Factors for Suicide

Biopsychosocial Risk Factors:

- Mental disorders, particularly mood disorders, especially depression, and schizophrenia, anxiety disorders and certain personality disorders.
- Alcohol and other substance use disorders.
- Hopelessness.
- Impulsive and/or aggressive tendencies.
- History of trauma or abuse, in particular sexual abuse.
- Some major physical illnesses.
- Previous suicide attempt.
- Family history of suicide.

Environmental Risk Factors:

- Job or financial loss; low socio-economic status.
- Relational or social loss, such as divorce or death.
- Easy access to lethal means.
- Local clusters of suicide that have a contagious influence.

Sociocultural Risk Factors:

- Lack of social support and sense of isolation.
- Stigma associated with help-seeking behavior.
- Barriers to accessing health care, especially mental health and substance abuse treatment.
- Certain cultural and religious beliefs (for instance, the belief that suicide is a noble resolution of a personal dilemma).
- Exposure to, including through the media, and influence of others who have died by suicide.

Adapted from USDHHS National Strategy for Suicide Prevention: Goals and Objectives for Action, 2001. Public Health Service, Rockville, MD.

High Risk Populations

High-risk populations are those that are known to have a higher than average suicide rate or rate of suicidal behaviors and risk factors. Based on the research, high-risk populations include:

For suicide

- Men
- Elderly men, in particular widowers
- Rural residents
- Unemployed youth who have dropped out of school
- Incarcerated populations – most often young white males arrested for non-violent offenses and intoxicated upon arrest, frequently within 24 hours of incarceration.
- Dentists, physicians, and nurses
- Mathematicians and scientists, artists and social workers
- Homosexual/bisexual males

Suicide Prevention Across the Life Span Plan for the Commonwealth

Note: Although police have been cited as having higher risk for suicide, studies have shown inconsistent results.

Suicidal thoughts or attempts

- Women
- Youth, in particular females, especially Hispanic females