



Published in final edited form as:

Am J Orthopsychiatry. 2007 January ; 77(1): 124–130. doi:10.1037/0002-9432.77.1.124.

Racial Differences in the Characteristics of Firearm Suicide Decedents in the United States

Sean Joe, MSW, PhD,

School of Social Work, University of Michigan, Ann Arbor, Michigan

Steven C. Marcus, PhD, and

Policy and Practice, University of Pennsylvania, Philadelphia, Pennsylvania

Mark S. Kaplan, PH

School of Community, Portland State University, Portland, Oregon.

Abstract

Focusing on the reported growing use of firearms to complete suicide among African Americans, this article analyzes the 1993 National Mortality Followback Survey to examine the association of firearm suicide with race, education, geographic region, access to a firearm, depressive symptoms, and mental health service utilization on decedents aged 15 years and older. After controlling for demographic, socioeconomic, and clinical variables, the analysis indicates that African American men were twice as likely as White men to use a firearm to complete suicide. The findings suggest the importance for clinicians to screen for the presence of firearms in depressed African Americans and to reduce their access to firearms. In addition, clinicians, social workers, and public health professionals should consider racial differences in correlates of firearm suicide when designing prevention and intervention initiatives.

Keywords

black suicide; firearms; risk factors; mortality

Descriptive epidemiological studies have documented the alarming rise in suicide among young African Americans, giving the U.S. Surgeon General reason to declare it an emerging public health problem (Centers for Disease Control & Prevention, 1998; Joe & Kaplan, 2001; U.S. Public Health Service, 2000). From 1980 to 1995, the suicide rate increased 114% for 10- to 19-year-old African Americans (Institute of Medicine, 2002), stemming, in part, from the growing use of firearms among males (Joe & Kaplan, 2002). A recent method-specific analysis of suicide completion among younger African American men found that, between the years 1979 and 1997, the rate of firearm-related suicides increased 133% in the 15- to 19-year-old age group and 24% in the group aged 20 to 24 (Joe & Kaplan, 2002). In the same study, for White men aged 15 to 19, the rate of firearm suicide increased 7%, and the rate for White males aged 20 to 24 did not change.

Firearm-related injuries disproportionately affect African Americans (Arias, Anderson, Kung, Murphy, & Kochanek, 2003; Miniño, Arias, Kochanek, Murphy, & Smith, 2002). In 2002, firearm-related injury claimed the lives of 30,242 Americans (10.4 per 100,000 population),

with suicide and homicide accounting for 57% and 39% of all firearm injury deaths, respectively (Kochanek, Murphy, Anderson, & Scott, 2004). Remarkably, the rate of firearm deaths for African American men aged 15 to 19 years was approximately four times the national average for all non-Black males the same age. Although public health researchers have studied firearm-related homicides among African Americans, the empirical literature on correlates of firearm suicide in this population remains incomplete, limiting efforts to design targeted preventive interventions.

To our knowledge, only three studies have focused on racial differences in correlates of firearm suicide. All reported African Americans to be at greater risk than Whites for a suicide involving a firearm, even after controlling for sociodemographic and geographic factors (Kaplan, Adamek, & Johnson, 1994; Kaplan & Geling, 1999; Sorenson & Berk, 1999). However, these studies were restricted by the amount of clinical and behavioral data available on the decedents. Other than basic sociodemographic factors, these researchers were limited in the information available to compare factors associated with firearm suicide between Whites and African Americans, who are most at risk for firearm-related suicide completion.

Fortunately, the 1993 National Mortality Followback Survey (NMFS), the most recent and largest nationally representative survey of decedents' next of kin, contains a wide range of sociodemographic, social, behavioral, and clinical factors associated with firearm-related suicide completion. This study is based on secondary analyses of the NMFS data set that compare four race-gender groups completing suicide. The ultimate goal of this research is to gain a deeper understanding of race and gender-specific suicide predictors, an understanding that is essential for developing and implementing culturally appropriate suicide prevention interventions (Institute of Medicine, 2002).

Method

Sample

The 1993 NMFS (released for public use in 1997) includes extensive data on a sample of 22,958 death certificates (10% of all U.S. deaths) from the 1993 Current Mortality Sample (CMS) for decedents 15 years of age or older in the United States (excluding South Dakota). The 1993 NMFS was conducted by the National Center for Health Statistics, Centers for Disease Control and Prevention (CDC, 2005). African American suicide decedents and decedents under age 35 were oversampled. NMFS data are derived from the death certificate, informant questionnaires (obtained from interviews with next of kin), and medical examiner/coroner records. The data set includes extensive information regarding cause of death, demographic factors, health status, lifestyle, problem behaviors, health and mental health care utilization, and other factors prior to death that may affect when and how death occurred, including information on the decedents' ownership and access to firearms (National Center for Health Statistics, 1998).

The sample used for our analyses included all cases for which suicide (International Classification of Disease [ICD] codes E950.0–E958.9) was listed as the cause of death. In our analyses, we compared firearm suicides (ICD codes E955.0-.4) to nonfirearm suicides by race group.

Predictor Variables

Sociodemographic and clinical risk factor variables were constructed based on previous findings in the literature. Age, race, gender, geographic region, and urbanicity of residence were obtained from death certificate data. The variables *rurality* (less than 100,000 population or nonmetropolitan area) and *region* (Northeast, Midwest, South, West) were created to assess the decedent's geographic status.

The next-of-kin interview data was used to derive the other predictors used in the analyses. Dichotomous variables were constructed to assess *educational status* (education beyond high school vs. high school or less) and *income status* (*low/not low*). Low-income status was determined by whether the decedents or the family received money from any public assistance, public welfare, food stamp program, or supplemental food programs, or whether at the time of death the family's total wealth was less than \$24,000.

Two variables were constructed as proxies for the presence of mental disorders or symptoms. To assess *mental health care utilization*, the respondents were asked whether the deceased had visited a mental health professional about any problems during the last year of life. To assess use of *antidepressant medication*, respondents were asked whether the decedent used antidepressants at any time during the last year of life. *Religiosity* was collapsed into two categories: those who never participated in church activities and those who participated once a month or more during the past year. To assess *firearm ownership/access*, proxy respondents were asked whether there had been any firearms kept in or around the decedent's home during the last year of life.

Data Analytic Approach

A χ^2 analysis was first used to compare the distribution of the sociodemographic and clinical factors for those individuals with a firearm-related suicide versus those using a different method of suicide. These comparisons were then repeated separately for Whites and Blacks.

Multiple logistic regression analyses were then used to examine the overall impact of the sociodemographic and clinical predictors (independent variables) on suicide by firearm (dependent variable). Separate models were then run among Whites and African Americans. It was not possible to conduct a separate analysis for the "other" racial group because of the extremely small sample size.

All analyses were conducted using the SAS callable SUDAAN software package to accommodate stratification and sampling weights and to produce nationally representative estimates. All statistics are presented at the .05 significance level to be consistent with previous studies using the NMFS (Castle, Duberstein, Meldrum, Conner, & Conwell, 2004; Kung, Liu, & Juon, 1998; Kung, Pearson, & Liu, 2003; Willis, Coombs, Drentea, & Cockerham, 2003); however, the results would be essentially unchanged if we tested at the more conservative .01 level to account for multiple comparisons. All numbers reported in the tables are actual numbers of study participants, whereas all reported percentages and odds ratios are weighted to provide nationally representative estimates. The multivariate models are sufficiently powered using the 10 events per parameter rule (Hosmer Jr. & Lemeshow, 2000), particularly given the impact of NMFS design weights to produce nationally representative estimates and error terms.

Results

Substantially more African Americans (57%; unweighted $n = 93$) and Whites (62%; unweighted $n = 871$) used a firearm to complete suicide ($\chi^2 = 19.9$; $df = 2$; $p < .001$), which differs significantly from the rate for the race group "others" (21%; unweighted $n = 13$). As seen in Table 1, several characteristics differentiated decedents who used a firearm from those who did not. According to the proxy respondents, those who used a firearm were less likely to have used antidepressant medication and mental health services in their last year of life. Those who did not use mental health services or antidepressant medication accounted for a high proportion of firearm suicides, 84% and 78%, respectively. Surprisingly, we found no significant differences in age, economic class, or religiosity between those who did or did not use a firearm to complete suicide.

We conducted similar analyses of these correlates separately among African Americans and Whites. Among African American suicide completers, those who were more likely to use a firearm were male, did not use antidepressant medication or mental health services, had a firearm in home, and lived in the South. There appears to be an inverse relationship between age and firearm use among African Americans. Most African American decedents (61%) who used a firearm to complete suicide were in the 18- to 34-year-old age group compared with only 28% of Whites in the same age group.

Among Whites, the use of firearms was statistically significantly associated with gender, education, nonuse of antidepressant medication, mental health services, firearm in the home, residency, and geographic region. Whites who had more than a high school education, who did not use antidepressant medication or mental health services, who had a firearm in the home, or who lived in urban (65.6%) and Southern geographic areas were more likely to use a firearm to complete suicide than other Whites.

Table 2 shows the results from the multivariate logistic regression analyses overall and stratified by race. In the overall model, after controlling for demographic, socioeconomic, and clinical variables, African American men were twice as likely as White men to use a firearm to complete suicide. African American and White women were seven and two times less likely, respectively, to use a firearm than White men. We found that having a firearm at home and less education were predictive of firearm use among suicide decedents. Decedents from the South and West were about three and two times as likely to use firearms, respectively. Finally, those who were low income and attended church had significantly lower odds of completing suicide with a firearm.

In the stratified multivariate model, Whites were more likely to use a firearm if they were male, had less than a high school education, had a firearm in the home, and lived in the South. Whites with low income were less likely to use a firearm to complete suicide. Only two correlates, gender and a gun in the home, were statistically significant in the model for African Americans. We found that African Americans who were male and kept a firearm in the home were more likely to use a firearm to complete suicide. The results for African Americans, although significant, must be interpreted with caution because of the small sample sizes.

Discussion

Self-directed violence involving firearms is a major public health problem threatening many Americans. Although more is known about correlates of suicide in general, few studies have examined the important racial variations in the correlates of firearm-related suicides (Joe & Kaplan, 2001; Kaplan & Geling, 1999; Sorenson & Berk, 1999). The findings of this study update and advance empirical research on racial differences in vulnerability factors associated with firearm-related suicide using a large, nationally representative sample.

In the model using the full sample, we found that among suicide completers the odds for using a firearm to complete suicide was highest for African American males, even after controlling for numerous clinical, geographic, and sociodemographic vulnerability factors associated with suicide. This finding supports previous risk factor studies (Kaplan et al., 1994; Sorenson & Berk, 1999) and epidemiological research that illustrated a growing use of firearms to complete suicide among African Americans, particularly the younger age groups (Joe & Kaplan, 2002). Consistent with prior analysis of nonmethod specific suicidal behavior (Garlow, Purselle, & Heninger, 2005), the race-specific analyses reveal African Americans are more likely to die at younger ages of firearm-related suicide. We also confirmed previous research showing that having a gun in the home substantially increases the risk that a suicide will be completed with a firearm rather than by other means (Beautrais, Joyce, & Mulder, 1996; Brent

& Bridge, 2003; Brent et al., 1991; Wintemute, Parham, Beaumont, Wright, & Drake, 1999). Despite long-standing racial differences in U.S. firearm-related suicide rates, there are few studies on racial differences among suicide completers (Joe & Kaplan, 2001). It is noteworthy that for Whites, the study findings are consistent with previous research indicating that high-risk firearm suicides were characterized by those who were male, had less than a high school education, had a firearm in the home, and lived in the South (Kaplan & Geling, 1999; Kung et al., 1998; Sorenson & Berk, 1999). For African Americans, however, being male and having a firearm in the home were the only factors associated with whether a firearm is the method used to complete suicide. There are interesting albeit nonsignificant results found for African Americans.

Mental health is considered one of the most important risk factors for suicide (Brent et al., 1993; Rich, Young, & Fowler, 1986). Kung and colleagues (Kung et al., 1998) used a race-specific analysis of the risk factors associated with suicide and found that use of mental health services was the only factor associated with African Americans' suicide risk after controlling for age, gender, and education. Although previous studies have shown that suicide is related to mental health factors (Brent, Baugher, Bridge, Chen, & Chiappetta, 1999; Willis et al., 2003), this relationship is not supported by the race-specific model in our study. Despite the fact that the relationships between the clinical variables and suicide are not statistically significant, the results illustrate that mental health service or antidepressant use appears to lower the chances of firearm-related suicide.

It is possible that clinical variables were not important determinants of firearm suicide among African Americans because of the pervasive social stigma associated with suicide and psychiatric illness, which is also a significant barrier to their participation in psychiatric treatment (Early, 1992; Gibbs, 1997). An alternative hypothesis is that firearms may be chosen over less lethal means, particularly when the suicide is impulsive. Impulsive younger individuals or more determined older men who are suicidal may be less likely to seek mental health treatment and, therefore, would not be on antidepressant medication and would not have been known to be in treatment, which might account for the lack of a relationship between the clinical variables and firearm-related suicide.

The finding also might potentially differ from previous research because, unfortunately, we have information only on the receipt of mental health services and not on mental health status, thus we have no way of differentiating between the impact of disease as it was measured in other studies and the impact of treatment as measured in ours. Another explanation for the difference might be that previous research was focused on the association of mental health status on suicidal behavior or suicide completion, whereas ours includes only those completing suicide.

One increasingly popular yet controversial explanation for the recent increase in African Americans' historically low suicidal behavior is the status-integration hypothesis, which posits a positive relationship between socioeconomic status and suicide risk (Henry & Short, 1954; Lester, 1993; Maris, 1969; Prudhomme, 1938). In their analysis of African American suicide across U.S. metropolitan areas, Burr and colleagues (Burr, Hartman, & Matteson, 1999) found that the risk for suicide was higher among African Americans living in areas of high occupational and economic inequality between Whites and African Americans. Our multivariate results found no relationship between socioeconomic status, measured by income, and firearm suicide among African Americans. The discrepancy might be because of our crude measure of income, our focus on effects among suicide completers, or our focus specifically on firearm suicides. Increasingly, researchers are giving more attention to the possibility that there are protective factors guarding against suicide that may be unique to specific groups. However, in contrast to previous assumptions and findings regarding religiosity and African

American suicidality (Early & Akers, 1993; Joe, 2003; Willis et al., 2003), we found no evidence that church attendance was associated with firearms as a suicide method for this population. This lack of evidence may result from the single measure of religiosity available in the NMFS. There currently is no single index or scale that is regarded as the gold standard and that adequately represents the construct of religiosity. Studies of a three-dimensional model of religious involvement among African American adults (Chatters, Levin, & Taylor, 1992; Levin, Chatters, & Taylor, 1995; Lincoln & Chatters, 2003) indicate that it provides a good fit to the data, is preferable to other alternative models, and is convergently valid.

Implications for Future Research and Service Delivery

Before this study, relatively little was known about the race-specific correlates of firearm-related suicide, in particular for African Americans. The higher risk of firearm suicide among African American males, young adults, and those who have a firearm in the home should be addressed in future research and considered by clinicians when screening, intervening, and treating African Americans. Physicians and mental health professionals should be skilled in talking with African American clients, particularly younger adults, about the risk for suicide, providing interventions for those at imminent risk for suicidal behavior, and referring clients for expert assessment and treatment. Future research with a larger sample size should also explore how African American firearm-related suicidal behavior is associated with multiple measures of socioeconomic status and the use, timing, duration, and adequacy of treatment for mental disorders.

Although the failure to support the status integration hypothesis or religion-suicide nexus might result from the model being underpowered, these nonsignificant findings are illustrative of the a-theoretical nature of suicide research. Although there is an abundance of empirical studies on suicidal behavior, suicidal behavior research is not adequately inspired by theory (Joiner, 2005). Suicide research is more often guided by hypotheses regarding risk or protective factors than by theoretical frameworks. The findings suggest that more theory development with regard to intersections of ethnicity/race and gender seem warranted. For instance, how might the values, norms, and roles of African American men contribute to risk of suicide in general and by firearms in particular? It may be that research looking at male role expectations rather than just “male” as a global gender category would yield significant results. Future research must continue to examine racial differences in the correlates of firearm suicide. There is also a need for more research to better distinguish the precipitant associated with a gun in the home. However, future suicide science must be grounded in robust theoretical frameworks that provide testable hypotheses. This would provide a richer investigative context in which to parse the effects that culture, ethnicity, and social class have on suicide risk. More important, it would provide a common framework for examining population-specific and potentially modifiable risk factors that could be targeted in suicide interventions for a diversity of populations.

Limitations

The NMFS findings must be considered in the context of several important limitations. Although the NMFS oversampled African Americans and the data is the largest sample of its kind, the results reported here are limited by the fact the small sample still may bias the effect size or prevent us from identifying statistically significant findings. This bias is probably responsible for the failure of some of the relationships to attain conventional levels of statistical significance. The remaining limitations to the study have been discussed in previous studies using the NMFS data (Castle et al., 2004; Kung et al., 1998). In particular, a second limitation pertains to the measures used in the study, as we relied on next of kin reporting decedent habits and all other information except for what was on the death certificate. Proxy reporting may introduce retrospective bias, particularly for information about substance use, mental health problems, and firearm presence in the home. These analyses may underestimate the proportion

of decedents with ready access to a firearm in the home, and this underestimation was probably higher among decedents whose suicide was not firearm-related (Shenassa, Rogers, Spalding, & Roberts, 2004).

Based on empirical data, Kung and colleagues (2003) argue against the presence of a significant bias in this direction. Proxy response was investigated and found to be reliable across diverse samples, despite the potential for bias (Kung et al., 1998). Previous research also demonstrated that compared to Whites, African American suicides were more likely to be underestimated in official mortality data because of greater misclassification (Phillips & Ruth, 1993). Finally, we did not have a control group as a comparison to study exposure variables. Although studies examining the impact on exposure history for deceased controls are rare (Kung et al., 2003), a case-control model would provide a more direct and appropriate unbiased risk estimation for firearm suicide. Despite these limitations, the psychological autopsy method of the NMFS 1993 has been used to study risk factors for completed suicide for more than three decades and has shown high compliance and consistency of results across a wide range of diverse and geographic samples (Brent et al., 1988; Castle et al., 2004; Kung et al., 1998; Willis et al., 2003). This study clearly highlights important similarities and differences in the factors related to firearm use in suicide completers that warrant further investigation with a larger sample of African American suicide decedents.

Conclusions

When designing suicide prevention interventions, clinicians, social workers, and public health professionals should give particular attention to the finding that African American males have the greatest likelihood to use a firearm to complete suicide. Therefore, priority should be given to identifying African American suicidal males and developing strategies for limiting their access to firearms. For example, clinicians should regularly screen suicidal African Americans of all income and educational levels about their access to firearms in the home. Among Whites, suicide prevention strategies should target low-income males living in the South, particularly those with a gun in the home. Future research is need with larger samples of African Americans that is grounded in robust theoretical frameworks.

References

- Arias, E.; Anderson, RN.; Kung, H-C.; Murphy, SL.; Kochanek, KD. Deaths: Final data for 2001. Hyattsville, MD: National Center for Health Statistics; 2003. National Vital Statistics Reports No. 52 [3]
- Beautrais A, Joyce P, Mulder R. Access to firearms and the risk of suicide: A case control study. *Australian and New Zealand Journal of Psychiatry* 1996;30:741–748. [PubMed: 9034462]
- Brent DA, Baugher M, Bridge J, Chen T, Chiappetta L. Age- and sex-related risk factors for adolescent suicide. *Journal of the American Academy of Child and Adolescent Psychiatry* 1999;38:1497–1505. [PubMed: 10596249]
- Brent DA, Bridge J. Firearms availability and suicide. *American Behavioral Scientist* 2003;46:1192–1210.
- Brent DA, Perper JA, Allman CJ, Mortiz GM, Wartella ME, Zelenak JP. The presence and accessibility of firearms in the homes of adolescent suicide: A case-control study. *Journal of the American Medical Association* 1991;266:2989–2995. [PubMed: 1820470]
- Brent DA, Perper JA, Goldstein CE, Kolko DJ, Allman MJ, Allman CJ, et al. Risk factors for adolescent suicide. *Archives of General Psychiatry* 1988;45:581–588.
- Brent DA, Perper JA, Moritz G, Allman C, Friend A, Roth C, et al. Psychiatric risk factors for adolescent suicide: A case-control study. *Journal of the American Academy of Child and Adolescent Psychiatry* 1993;32:521–529. [PubMed: 8496115]
- Burr JA, Hartman JT, Matteson DW. Black suicide in U.S. metropolitan areas: An examination of the Racial Inequality and Social Integration-Regulation hypotheses. *Social Forces* 1999;77:1049–1081.

- Castle K, Duberstein PR, Meldrum S, Conner KR, Conwell Y. Risk factors for suicide in blacks and whites: An analysis of data from the 1993 National Mortality Followback Survey. *American Journal of Psychiatry* 2004;161:452–458. [PubMed: 14992970]
- Centers for Disease Control and Prevention. Suicide among African-American youths—United States, 1980–1995; Morbidity and Mortality Weekly Report. 1998. p. 193-196.
- Centers for Disease Control and Prevention. National Mortality Followback Survey: Background information. 2005. Retrieved February 3, 2003, from <http://www.cdc.gov/nchswww/about/major/nmfs/nmfs.htm>
- Chatters LM, Levin JS, Taylor RJ. Antecedents and dimensions of religious involvement among older Black adults. *Journal of Gerontology: Social Sciences* 1992;47:S269–S278.
- Early, KE. Religion and suicide in the African-American community. Westport, CT: Greenwood Press; 1992.
- Early KE, Akers RL. “It’s a white thing”: An explanation of beliefs about suicide in the African-American community. *Deviant Behavior* 1993;14:227–296.
- Garlow SJ, Purselle D, Heninger M. Ethnic differences in patterns of suicide across the life cycle. *American Journal of Psychiatry* 2005;162:319–323. [PubMed: 15677597]
- Gibbs JT. African-American suicide: A cultural paradox. *Suicide and Life-Threatening Behavior* 1997;27:68–79. [PubMed: 9112725]
- Henry, AF.; Short, JF. Suicide and homicide. Glencoe, IL: Free Press; 1954.
- Hosmer, DW., Jr.; Lemeshow, S. Applied Survival Analysis: Regression modeling of time to event data. New York: Wiley; 2000.
- Institute of Medicine. Reducing Suicide: A National Imperative. Washington, DC: National Academy Press; 2002.
- Joe, S. Implications of focusing on black youth self-destructive behaviors instead of suicide when designing preventative interventions. In: Romer, D., editor. Reducing adolescent risk: Toward an integrated approach. Thousand Oaks, CA: Sage Publications; 2003. p. 325-332.
- Joe S, Kaplan MS. Suicide among African American men. *Suicide and Life-Threatening Behavior* 2001;31:106–121. [PubMed: 11326755]
- Joe S, Kaplan MS. Firearm-related suicide among young African-American males. *Psychiatric Services* 2002;53:332–334. [PubMed: 11875228]
- Joiner, T. Why people die by suicide. Cambridge, MA: Harvard University Press; 2005. What we know and don’t know about suicide; p. 16-46.
- Kaplan MS, Adamek ME, Johnson S. Trends in firearm suicide among older American males: 1979–1988. *The Gerontologist* 1994;34:59–65. [PubMed: 8150309]
- Kaplan MS, Geling O. Sociodemographic and geographic patterns of firearm suicide in the United States, 1989–1993. *Health and Place* 1999;5:179–185. [PubMed: 10670999]
- Kochanek, KD.; Murphy, SL.; Anderson, RN.; Scott, C. Deaths: Final data for 2002. National Statistics Reports. 2004. Retrieved July 25, 2006, from http://www.cdc.gov/nchs/data/nvsr/nvsr53/nvsr53_05.pdf
- Kung HC, Pearson JL, Liu X. Risk factors for male and female suicide decedents ages 15–64 in the United States: Results from the 1993 National Mortality Followback Survey. *Social Psychiatry and Psychiatric Epidemiology* 2003;38:419–426. [PubMed: 12910337]
- Kung H-C, Liu X, Juon HS. Risk factors for suicide in Caucasians and in African-American: A matched case-control study. *Social Psychiatry and Psychiatric Epidemiology* 1998;33:155–161. [PubMed: 9567665]
- Lester D. Economic status of African Americans and suicide rates. *Perceptual and Motor Skills* 1993;77:1150. [PubMed: 8170762]
- Levin JS, Chatters LM, Taylor RJ. Religious effects on health status and life satisfaction among Black Americans. *Journal of Gerontology: Social Sciences* 1995;50B:S154–S163.
- Lincoln, KD.; Chatters, LM. Keeping the faith: Religion, stress, and psychological well-being among African American women. In: Brown, DR.; Keith, VM., editors. In and out of our right minds: The mental health of African American women. New York: Columbia University Press; 2003.
- Maris, RW. Social forces in urban suicide. Homewood, IL: Dorsey; 1969.

- Miniño, AM.; Arias, E.; Kochanek, KD.; Murphy, SL.; Smith, BL. Deaths: Final data for 2000 (National Vital Statistics Reports, 50[15]). Hyattsville, MD: National Center for Health Statistics; 2002.
- National Center for Health Statistics. National Mortality Follow-back Survey. 1998. Retrieved August 7, 2004, from <http://www.cdc.gov/nchs/about/major/nmfs/nmfs.htm>
- Phillips DP, Ruth TE. Adequacy of official suicide statistics for scientific research and public policy. *Suicide and Life-Threatening Behavior* 1993;23:307–319. [PubMed: 8310465]
- Prudhomme C. The problem of suicide in the American Negro. *Psychoanalytic Review* 1938;25(187–204):372–391.
- Rich CL, Young D, Fowler RC. San Diego suicide study: I. Young vs. old subjects. *Archive of General Psychiatry* 1986;43:577–582.
- Shenassa ED, Rogers ML, Spalding KL, Roberts MB. Safer storage of firearms at home and risk of suicide: A study of protective factors in a nationally representative sample. *Journal of Epidemiology and Community Health* 2004;58:841–848. [PubMed: 15365110]
- Sorenson SB, Berk RA. Young guns: An empirical study of persons who use a firearm in a suicide or homicide. *Injury Prevention* 1999;5:280–283. [PubMed: 10628917]
- U.S. Public Health Service. The Surgeon General's call to action to prevent suicide, 1999. Washington, DC: U.S. Public Health Service; 2000.
- Willis LA, Coombs DW, Drentea P, Cockerham WC. Uncovering the mystery: Factors of African American suicide. *Suicide and Life-Threatening Behavior* 2003;33:412–429. [PubMed: 14695056]
- Wintemute GJ, Parham CA, Beaumont JJ, Wright M, Drake C. Mortality among recent purchasers of handguns. *New England Journal of Medicine* 1999;341:1583–1589. [PubMed: 10564689]

Table 1
Risk Characteristics of Firearm and Nonfirearm Suicide Decedents in the National Mortality Followback Survey, 1993

Variables	ALL (n = 1616) ^a		White (n = 1408) ^a		Black (n = 160) ^a	
	Firearm (n = 977)	Nonfirearm (n = 639)	Firearm (n = 871)	Nonfirearm (n = 537)	Firearm (n = 93)	Nonfirearm (n = 67)
	(%)	(%)	(%)	(%)	(%)	(%)
Age						
18-34	30.6	35.7	28.0	33.3	60.6	52.3
35-64	42.5	38.1	43.9	38.9	25.8	33.4
65+	26.9	26.2	28.1	27.8	13.6	14.3
Gender						
Male	86.9	65.1	86.7	64.3	96.4	76.6
Female	13.1	34.9	13.3	35.7	3.6	23.4
Race/ethnicity						
White	92.4	87.3	—	—	—	—
Black	6.7	7.7	—	—	—	—
Other	.88	5.0	—	—	—	—
Low income						
Yes	52.0	56.3	50.8	55.0	67.3	74.5
No	48.0	43.7	49.2	45.0	32.7	25.5
Education						
Less than high school	30.2	21.3	32.6	20.9	27.9	38.2
High school or higher	62.7	72.7	67.4	79.1	72.1	61.8
Use depression medication						
Yes	15.7	23.3	16.5	24.9	6.4	17.4
No	84.3	76.7	83.5	75.1	93.6	82.6
Use mental health services						
Yes	22.1	36.6	23.0	39.1	10.9	27.4
No	77.9	63.4	77.0	60.9	89.1	72.6
Firearm in home						
Yes	81.6	22.2	83.6	24.1	57.7	15.1

Variables	ALL (n = 1616) ^a		White (n = 1408) ^a		Black (n = 160) ^a	
	Firearm (n = 977)	Nonfirearm (n = 639)	Firearm (n = 871)	Nonfirearm (n = 537)	Firearm (n = 93)	Nonfirearm (n = 67)
	(%)	(%)	(%)	(%)	(%)	(%)
No	18.4	77.8	16.4	75.9	42.3	84.9
Church attendance	$(\chi^2 = 2.44, df = 1, p < .118)$					
Yes	36.1	57.7	34.8	40.3	54.5	55.8
No	63.9	42.3	65.2	59.7	45.5	44.2
Residency	$(\chi^2 = 20.23, df = 1, p < .001)$					
Rural	33.8	19.0	34.4	19.9	17.1	12.1
Urban	66.8	81.0	65.6	80.1	82.9	87.9
Geographic region	$(\chi^2 = 34.58, df = 3, p < .001)$					
Northeast	11.1	24.5	11.5	24.8	7.2	26.8
Midwest	20.3	23.4	20.6	24.6	21.4	15.4
South	45.7	26.8	44.7	25.6	64.3	48.3
West	22.6	25.3	23.2	25.0	7.1	9.5

Note. Valid weighted column proportions are shown.

^aCases were missing data on one or more variables.

Table 2
Likelihood of Using Firearms to Complete Suicide by Race in the United States, 1993^a

Variables	Odds ratio (95% CI)		
	All (N = 1351)	Whites (n = 1189)	Blacks (n = 126)
Age			
18–34	.88 (.60, 1.29)	.81 (.53, 1.21)	1.39 (.48, 3.97)
35–64	1.00	1.00	1.00
65+	.82 (.54, 1.25)	.82 (.53, 1.27)	.52 (.11, 2.55)
Gender			
Male	NA	2.08 (1.42, 3.05)	7.75 (1.42, 42.19)
Female	NA	1.00	1.00
Race × Gender			
White males	1.00	—	—
Black males	2.04 (1.16, 3.57)	—	—
Other males	.34 (.08, 1.54)	—	—
White females	.49 (.33, .71)	—	—
Black females	.15 (.03, .79)	—	—
Other females	.67 (.29, 1.55)	—	—
Low income			
No	1.00	1.00	1.00
Yes	.66 (.48, .91)	.64 (.45, .90)	.84 (.31, 2.25)
Education			
Less than high school	1.55 (1.11, 2.15)	1.73 (1.21, 2.46)	.38 (.12, 1.17)
High school or higher	1.00	1.00	1.00
Use depression medication			
No	1.00	1.00	1.00
Yes	.76 (.48, 1.20)	.75 (.46, 1.20)	.56 (.07, 4.69)
Use mental health services			
No	1.00	1.00	1.00
Yes	.73 (.48, 1.12)	.74 (.47, 1.17)	.51 (.15, 1.72)
Firearm in home			
No	1.00	1.00	1.00
Yes	18.31 (13.11, 25.56)	18.46 (12.99, 26.23)	20.83 (4.77, 90.93)
Church attendance			
No	1.00	1.00	1.00
Yes	.70 (.51, .96)	0.71 (.50, 1.00)	.72 (.27, 1.93)
Residency			
Urban	1.00	1.00	1.00
Rural	1.09 (.76, 1.57)	1.06 (.73, 1.55)	1.35 (.32, 5.59)
Geographic region			
Northeast	1.00	1.00	1.00
Midwest	1.53 (.90, 2.61)	1.39 (.79, 2.46)	5.03 (.76, 33.45)

Variables	Odds ratio (95% CI)		
	All (N = 1351)	Whites (n = 1189)	Blacks (n = 126)
South	2.69 (1.62, 4.48)	2.62 (1.51, 4.56)	4.01 (.61, 26.39)
West	1.69 (1.00, 2.85)	1.66 (.94, 2.93)	2.16 (.37, 12.68)

Note. CI = confidence interval; NA = not applicable. Adjusted odds ratio presented have been statistically adjusted for the other variables listed in the table.

^a Cases were missing data on one or more variables.