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Cover Page Footnote

Research Associate, Harvard Injury Control Research Center, Harvard School of Public Health. The author would like to thank Matthew Miller, David Hemenway, and Steven Lippmann for their helpful comments on an earlier draft of this Essay.

COOK AND LUDWIG'S *PRINCIPLES FOR EFFECTIVE GUN POLICY*: AN EXTENSION TO SUICIDE PREVENTION

*Deborah Azrael**

INTRODUCTION

For each of the past twenty years in the United States, over 27,000 people have died from gun violence.¹ In 2001, for example, there were 11,348 gun homicides (65% of total homicides, excluding the terrorism-related homicides of September 11, 2001) and 16,869 firearm suicides (55% of total suicides), for a total of 28,217 intentional firearm injury deaths.² Guns rank second only to motor vehicles as an instrument of injury death in the United States, and intentional firearm injuries are the second leading cause of death among fifteen-to thirty-four-year olds.³ In *Principles for Effective Gun Policy*,⁴ Philip Cook and Jens Ludwig present a compelling case that reasonable gun control policies have the potential to reduce the lethality of crime and interpersonal violence in the United States. Beginning with an argument that guns are an appropriate target for regulation, they then offer empirical evidence that regulation can work, and identify promising regulatory strategies for reducing the toll of criminal gun use.⁵

* Research Associate, Harvard Injury Control Research Center, Harvard School of Public Health. The author would like to thank Matthew Miller, David Hemenway, and Steven Lippmann for their helpful comments on an earlier draft of this Essay.

1. See Nat'l Ctr. for Injury Prevention and Control, *Fatal Injuries: Leading Causes of Death Reports (1981-2001)*, at <http://webapp.cdc.gov/sasweb/ncipc/leadcaus.html> (last visited Oct. 14, 2004). In 1993, the total number of intentional firearm deaths was 37,511, the highest since 1981. In 2000, the total was 27,387. *See id.*

2. Intentional firearm injury as defined here excludes legal intervention deaths (executions and justifiable homicides committed by police officers). There are another 800 or so unintentional firearm deaths each year, a number that has fallen over the past two decades. *See id.*

3. In 2001, intentional firearm injuries were the fifth leading cause of death among five-to fourteen-year olds, and the eleventh leading cause of death for people of all ages. *See id.*

4. Philip J. Cook & Jens Ludwig, *Principles for Effective Gun Policy*, 73 *Fordham L. Rev.* 589 (2004).

5. *See id.*

Reduced to its essentials, their argument rests on four well-established observations: (1) use of a gun in a violent encounter increases the probability that the encounter will end in death; (2) the social costs of gun use are high and almost certainly outweigh the benefits; (3) the risk of gun misuse is concentrated and amenable to targeted intervention; and (4) demand for guns is at least somewhat elastic and therefore subject to changes in the cost of obtaining and possessing guns.⁶ Cook and Ludwig's policy recommendations regarding gun crime focus on policies that increase the cost of gun ownership on the demand side (for example, increasing the probability of sanction for gun misuse) and on policies that reduce availability to criminal users on the supply side (for example, regulating all transfers of guns).⁷ These recommendations are sensible and, judging by opinion polls, socially acceptable.⁸ Cook and Ludwig choose to limit their discussion to gun crime, rather than the broader category of intentional firearm violence. While their reasons are sensible, in doing so they constrict their argument and fail to address the larger part of the problem of intentional gun mortality in the United States, gun suicide.

I. SUICIDE

In the United States, suicides have outnumbered homicides for at least several decades.⁹ Each year approximately 30,000 people in the United States commit suicide, an unremitting toll that, in 1999, led to development of the federal *National Strategy for Suicide Prevention*.¹⁰ A major goal of the *National Strategy* is to reduce access to lethal means and methods of self-harm.¹¹ This strategy encompasses access

6. *See id.*

7. *See id.* at 596-612.

8. For a summary of public opinion polls, see David Hemenway, *Private Guns Public Health* 161-65 (2004). *See also* Tom W. Smith, 2001 National Gun Policy Survey of the National Opinion Research Center: Research Findings, at <http://www.norc.uchicago.edu/online/guns01.pdf>.

9. For mortality data, see Nat'l Ctr. For Injury Prevention and Control, WISQARS Fatal Injuries: Mortality Reports, at <http://webappa.cdc.gov/sasweb/ncipc/mortrate.html> (last visited Oct. 14, 2004).

10. *See* Substance Abuse & Mental Health Servs. Admin, United States Dep't of Health & Human Servs., Summary of National Strategy for Suicide Prevention: Goals and Objectives for Action (2001), available at www.mentalhealth.samhsa.gov/publications/allpubs/SMA01-3518/default.asp.

11. The fifth of eleven stated goals of the National Strategy calls for the reduction of access to lethal means:

Goal 5: Promote Efforts to Reduce Access to Lethal Means and Methods of Self-Harm. Evidence from many countries and cultures shows that limiting access to lethal means of self-harm may be an effective strategy to prevent self-destructive behaviors. Often referred to as "means restriction," this approach is based on the belief that a small but significant minority of suicidal acts are, in fact, impulsive and of the moment; they result from a combination of psychological pain or despair coupled with the easy

to any number of means (for example, tall buildings, lethal doses of over-the-counter medications such as acetaminophen), but certainly includes guns, responsible for approximately 55% of U.S. suicides.¹² Whether regulation has the potential to affect gun suicide is an open question. Using Cook and Ludwig's principles to structure the inquiry, I argue that it can.

II. MEANS MATTER

The ready availability of firearms is positively correlated with rates of suicide, not only at the individual level,¹³ but at the county, state, and regional levels. In the United States, both historically and at present, where there are more guns there are more suicides, with rates of suicide highly and statistically significantly correlated with levels of household gun ownership both overall and in every age and sex subgroup.¹⁴ The relationship between firearm ownership and suicide is

availability of the means by which to inflict self-injury. Thus, a self-destructive act may be prevented by limiting the individual's access to the means of self-harm.

Id.

12. In 2001 there were 16,869 firearm suicides of 30,622 total suicides. See Nat'l Ctr. for Injury Prevention and Control, 15 Leading Causes of Death, United States (2001), available at <http://webapp.cdc.gov/sasweb/ncipc/leadcaus.html>.

13. Hemenway, *supra* note 8, at 38-45; see also Matthew Miller & David Hemenway, *The Relationship Between Firearms and Suicide: A Review of the Literature*, 4 *Aggression and Violent Behav.* 59 (1999). Numerous epidemiologic studies that compare groups with and without an outcome of interest with respect to the proportion that are exposed to a specific risk factor ("case-control" studies) have found that the presence of a gun in the home is a risk factor for suicide. See, e.g., James E. Bailey et al., *Risk Factors for Violent Death of Women in the Home*, 157 *Archives of Internal Med.* 777 (1997); David A. Brent et al., *Firearms and Adolescent Suicide: A Community Case-Control Study*, 47 *Am. J. of Diseases of Child.* 1066 (1993); David A. Brent et al., *The Presence and Accessibility of Firearms in the Homes of Adolescent Suicides: A Case-Control Study*, 266 *JAMA* 2989 (1991); David A. Brent et al., *Risk Factors for Adolescent Suicide: A Comparison of Adolescent Suicide Victims With Suicidal Inpatients*, 45 *Archives of Gen. Psychiatry* 581 (1988); David A. Brent et al., *Suicide in Adolescents with No Apparent Psychopathology*, 32 *J. of the Am. Acad. Adolescent Psychiatry* 494 (1993); David A. Brent et al., *Suicide in Affectively Ill Adolescents: A Case-Control Study*, 31 *J. of Affective Disorders* 193 (1994); Yeates Conwell et al., *Access to Firearms and Risk for Suicide in Middle-Aged and Older Adults*, 10 *Am. J. Geriatric Psychiatry* 407 (2002); Arthur L. Kellermann et al., *Suicide in the Home in Relation to Gun Ownership*, 327 *New Engl. J. Med.* 467 (1992); Douglas T. Wiebe, *Homicide and Suicide Risks Associated with Firearms in the Home: A National Case-Control Study*, 41 *Annals of Emergency Med.* 771 (2003). Studies also show that the purchase of a gun is a risk factor for suicide in the home. See, e.g., Peter Cummings et al., *The Association Between the Purchase of a Handgun and Homicide or Suicide*, 87 *Am. J. Pub. Health* 974 (1997); Garen J. Wintemute et al., *Mortality Among Recent Purchasers of Handguns*, 341 *New Engl. J. Med.* 1583 (1999).

14. See Matthew Miller et al., *Firearm Availability and Suicide, Homicide, and Unintentional Firearm Deaths Among Women*, 79 *J. Urb. Health* 26 (2002); Matthew Miller et al., *Firearm Availability and Unintentional Firearm Deaths, Suicide, and Homicide Among 5-14 Year Olds*, 52 *J. of Trauma, Injury, Infection and Critical Care*

driven by the relationship between *firearm* ownership and *firearm* suicide and not by a relationship between firearm ownership and non-firearm suicide.¹⁵ Some people may believe that those who are intent on suicide will kill themselves using whatever means necessary, but at the policy-relevant levels of region, state, and county, the evidence shows that in the (relative) absence of guns, substitution of methods is incomplete, even when the number of suicide attempts in an area, or the prevalence of mental illness in a U.S. census division, are taken into account.¹⁶

As is true of homicide, then, policies that reduce access to guns are likely to be associated with reduced mortality, a generally accepted public health and public policy objective.

III. SOCIAL COSTS OF FIREARM SUICIDE

Not surprisingly, the cost of gun suicides, using almost any metric, is high: around 6 billion dollars annually using Institute of Medicine figures for lost productivity,¹⁷ on the order of 300,000 years of potential life lost annually using National Center for Health Statistics figures,¹⁸ and over \$800,000 (Canadian) per suicide based on a mid-1990s study.¹⁹ While countervailing costs of mental health problems such as depression or schizophrenia are also substantial, few would argue that the “benefit” of reduced medical costs associated with the

267 (2002) [hereinafter Miller et al., *5-14 Year Olds*]; Matthew Miller et al., *Household Firearm Ownership and Suicide Rates in the United States*, 13 *Epidemiology* 517 (2002).

15. A comparison of firearm suicide deaths among five-to fourteen-year old in the five states with the highest gun ownership levels and the five states with the lowest gun ownership levels over the decade 1988-1997 finds for nearly identical populations that there are 153 to 22 gun suicides (a ratio of 6.7:1), 69 to 82 non-gun suicides (0.8:1) and 220 to 104 overall suicides (2:1); in multiple regressions, the relationship between firearm ownership and both firearm and overall suicide is statistically significant, while the relationship between firearm ownership and non-firearm suicide is not. Miller et al., *5-14 Year Olds*, *supra* note 14.

16. Matthew Miller et al., *The Epidemiology of Case Fatality Rates for Suicide in the Northeast*, 43 *Annals of Emergency Med.* 723 (2004) [hereinafter Miller et al., *Suicide in the Northeast*]; Matthew Miller et al., *Firearms and Suicide in the Northeast*, *J. of Trauma, Injury, Infection, & Critical Care* (forthcoming 2004) (on file with author). Other evidence that overall suicide rates are affected by firearm prevalence among adolescents can be found in John Henry Sloan et al., *Firearm Regulations and Rates of Suicide: A Comparison of Two Metropolitan Areas*, 322 *New Engl. J. Med.* 369 (1990).

17. *Reducing Suicide: A National Imperative* 56 (S.K. Goldsmith et al. eds., 2002).

18. See Nat'l Ctr. for Injury Prevention & Control, *Fatal Injuries: Years of Potential Life Lost Reports* (2001), available at <http://webappa.cdc.gov/sasweb/ncipc/ypll.html>.

19. See Dale Clayton & Alberto Barceló, *The Cost of Suicide Mortality in New Brunswick, 1996*, 20 *Chronic Diseases in Canada* 89 (1999), available at <http://www.hc-sc.gc.ca/pphb-dgspsp/publicat/cdic-mcc/pdf/cdic202e.pdf>.

deaths of mentally ill or otherwise suicidal people outweigh the enormous human and economic costs associated with their deaths.

An important feature of public safety arguments for regulating guns is the claim that, whatever its benefits, gun ownership imposes risks (costs) on others, either by use of guns in crimes by “criminal” gun owners or through theft or unknowing sale of guns to “criminals” by “law-abiding” gun owners. A similar, and even more direct, argument can be made for regulating guns based on imposed risks in the case of suicide: Not only gun owners, but also their families, are at elevated risk for suicide when there is a gun in the home,²⁰ and youth who commit suicide almost always use their parents’ guns.²¹

IV. GUN MISUSE CONCENTRATED AMONG IDENTIFIABLE SUBPOPULATIONS

Unlike homicide, suicide takes the lives of what survey data suggest are typical gun owners, namely middle aged males in the thirty-to fifty-four-year old age group.²² The demographic correspondence between gun owners and suicide victims, when coupled with the evidence that weapon substitution in suicide is incomplete, suggests that if gun policies result in reduced access to guns (either through reductions in gun ownership or possibly by way of safer storage), not only might diffusion of guns into illegal markets be curtailed, but suicide rates among gun owners and their families as well.

In some subgroups, the link between homicide and suicide rates is quite tight. In the late 1980s and early 1990s both homicide and suicide rates among young black men rose dramatically, then began to fall.²³ Both the increases and decreases were attributable almost entirely to increases in *firearm* homicide and *firearm* suicide, and homicide and suicide in this group over this time period are highly correlated. The firearm death rate for young black men appears to have followed their need for, and exposure to, guns during this period.

20. See *supra* note 14 and accompanying text.

21. Harvard Injury Control Research Ctr., Preliminary Data from the National Violent Injury Statistics System (on file with author).

22. For information on gun ownership, see Hemenway, *supra* note 8. See also Philip J. Cook & Jens Ludwig, *Guns in America: Results of a Comprehensive Survey on Firearms Ownership and Use* (1996); Gary Kleck, *Targeting Guns: Firearms and Their Control* 70-72 (1997). For data on suicide, see Nat’l Ctr. for Injury Prevention, *supra* note 9.

23. In the years 1981-1998, the homicide rates per 100,000 population for fifteen-to twenty-four-year old black males rose from a low of 59.80 in 1984 to a high of 163.21 in 1993. Suicide rates per 100,000 population for the same group went from 11.00 in 1984 to a peak of 20.36 in 1994. See Nat’l Ctr. for Injury Prevention, *supra* note 9.

V. DEMAND FOR GUNS IS (AT LEAST SOMEWHAT) ELASTIC

In the field of criminology it is well established that would-be criminals are responsive to changes in the probability, celerity, and severity of punishment, and it is sensible to think that policies making gun misuse more costly will have an effect on their behavior. Less is known about behavior change and suicide. Nonetheless, at least some evidence exists. For example, a 2004 national survey looking at people's gun acquisition and disposal decisions suggests that gun ownership and storage decisions may be affected by factors amenable to legislative interventions, such as child access prevention laws (for example, people report that they now keep their guns locked up to minimize the likelihood of theft, or have gotten rid of guns because of fears of misuse by children).²⁴

In addition, several case-control studies examining risk factors for suicide have found that storing a gun in a way that makes it more accessible (for example, loaded and unlocked) is associated with elevated risk of suicide.²⁵ The potential of policy to impact gun ownership and storage behavior, coupled with the risks of unsafe storage, collectively suggest that laws increasing the costs of gun ownership, increasing liability for misuse of guns by others, and personalizing guns, might plausibly reduce the toll of suicide at least among those whose suicide attempts are less deliberative—particularly younger people whose suicides are disproportionately more likely to be impulsive,²⁶ and less likely to involve serious mental illness or repeated suicide attempts.²⁷

CONCLUSION

The policies identified by Cook and Ludwig may plausibly reduce gun violence, including suicide both in the subpopulations at highest risk for homicide and more broadly. Because some and perhaps many suicides are impulsive acts (and when substitution exists it is to less lethal means²⁸), any policy that reduces access to guns (by raising the cost of gun ownership, by promoting technology that personalizes guns, by increasing incentives for safer storage, or by enacting

24. Harvard Injury Control Research Ctr., Preliminary Results from National Random Digit Dial Telephone Survey, (2004) (on file with author).

25. See, e.g., Yeates Conwell et al., *Access to Firearms and Risk for Suicide in Middle-Aged and Older Adults*, 10 Am. J. Geriatric Psychiatry 407 (2002); Arthur L. Kellermann et al., *Suicide in the Home in Relation to Gun Ownership*, 327 New Engl. J. Med. 467 (1992).

26. Deborah Azrael et al., *Youth Suicide: Insights from 5 Years of Arizona Child Fatality Review Team Data*, 34 Suicide & Life Threatening Behav. 36 (2004).

27. Harvard Injury Control Research Ctr., *supra* note 21.

28. Among suicide attempts that result in admission to a hospital or death prior to admission, 91% of firearm suicide attempts result in death compared to 84% of drownings, 82% of hangings, and 64% of poisonings by gas. See Miller et al., *Suicide in the Northeast*, *supra* note 16.

regulations that interpose time between the impulse to commit suicide and the act such as waiting periods) will impact the toll of suicide in the United States. Additional policies targeting demand for guns and better enforcement of laws regarding access to guns by non-authorized users might reduce the toll further. These policies can and should complement public health strategies designed to prevent suicide through improved screening, restriction of access to other means of suicide, improved access to mental health care, and efforts to destigmatize mental illness.

Notes & Observations