

**IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION**

SHAWN GOWDER,)	
)	
Plaintiff,)	
)	
v.)	
)	No. 11-cv-1304
CITY OF CHICAGO, a municipal corporation, et al.,)	
)	
Defendants.)	Judge Der-Yeghiayan

**PLAINTIFF’S RESPONSE TO DEFENDANTS’
LR 56.1 STATEMENT OF ADDITIONAL FACTS**

1. The stated purpose of Chicago’s Responsible Gun Ownership Ordinance is “protecting the public from the potentially deadly consequences of gun violence.” Exhibit 1 (Responsible Gun Ownership Ordinance, July 2, 2010 Journal of the Proceedings of the City Council, at 96237). In 2009, Chicago had the second-highest murder and non-negligent manslaughter rate (16.1 per 100,000 residents) of the 10 U.S. cities with the largest population. Exhibit 2 (Uniform Crime Reporting Statistics – 10 cities). That rate was nearly double that of Los Angeles (8.1) and nearly triple that of New York City (5.6), the two cities with a higher population than Chicago. *Id.*

RESPONSE: Admit.

2. Dr. Jens Ludwig, the McCormick Foundation Professor of Social Service Administration, Law, and Public Policy at the University of Chicago, testified that the total annual social cost of Chicago gun violence is estimated to be about \$2.5 billion, or \$2,500 per household, and estimated to depress total property values by around \$30 billion and property tax revenues by \$30 million per year. Exhibit 3 (June 29, 2010 Ludwig Written Testimony for Chicago City Council Committee on Police and Fire at C0398-401); Exhibit 4 (J. Ludwig & P.J. Cook, *The Benefits of Reducing Gun Violence: Evidence from Contingent-Valuation Survey Data*, 22 Journal of Risk and Uncertainty 207-26 (2001)).

RESPONSE: Admit that Dr. Ludwig so testified.

3. Dr. Daniel Webster, Co-Director of the Center for Gun Policy and Research at Johns Hopkins University, testified to the Chicago City Council that one the most effective policies for preventing gun violence “is proscribing the most high-risk people from possessing firearms.” Exhibit 5 (June 29, 2010 Webster Testimony to Chicago City Council at C0243-47; C0407-09). Dr. Webster concluded that convicted misdemeanants fall into this “high risk” category because they are more likely to commit violent crimes in the future. *Id.* One of the

studies Dr. Webster relied upon to support this conclusion is Garen J. Wintemute, *et al.*, *Prior Misdemeanor Convictions as a Risk Factor for Later Violent and Firearm-Related Criminal Activity Among Authorized Purchasers of Handguns*, 280 J. Am. Med. Ass'n. 2083, 2086 (Dec. 1998) ("Wintemute Study"), attached as Exhibit 6.

RESPONSE: Admit that Dr. Webster so testified and that he relied on the Wintemute Study but, for the reasons explained in response to Statement of Additional Fact No. 4, dispute that the Wintemute study establishes that convicted misdemeanants are more likely than the general public to commit violent crimes in the future or that it justifies banning nonviolent misdemeanants from possessing firearms.

4. The Wintemute Study examined the criminal histories of 5923 individuals over 15 years who purchased handguns in California, dividing them into two groups: those who had at least one prior conviction for a misdemeanor offense at the time of purchase, and those who had no prior criminal record. Ex. 6 at 2083. It found that overall, handgun purchasers with at least one misdemeanor conviction had a 7.5 times higher risk for a later offense. *Id.* at 2086, Table 4. The study further found that even those who, like Plaintiff, had prior misdemeanor convictions for *nonviolent*, firearm related offenses were at a 6.4 times higher risk for later offenses in general; at a 4.4 times higher risk for violent offenses; and at a 7.7 times higher risk for a nonviolent firearms offense. *Id.*, Table 5. "Our findings indicate that the characterization of high risk also applies to handgun purchasers with prior convictions for misdemeanor offenses, regardless of the nature of those offenses." *Id.* at 2087.

RESPONSE: Admit that the Wintemute Study includes the cited findings, but dispute that it supports Chicago's ban on nonviolent misdemeanants from possessing firearms. The Wintemute Study compares nonviolent misdemeanants who purchased a handgun to handgun purchasers with no criminal record. Because it does not compare misdemeanants who purchased a handgun with those who did not, it does not demonstrate that gun-owning misdemeanants pose a greater risk to public safety than misdemeanants who do not own a gun. It also does not compare arrest rates for non-violent misdemeanants who purchased a handgun with arrest rates for the general public, so it does not demonstrate that gun-owning misdemeanants pose a greater risk to public safety than the average citizen. The study's results

are also skewed by its exclusion of persons who had been arrested but not convicted from the control group of persons without a criminal record. *See* Chi. Exhibit 6 at 2084-85, *see also id.* at 2083.

5. A study conducted in 2010 examined the incidence of “prohibitory crimes” (crimes that disqualify individuals from gun possession under both federal and state law) committed by lawful owners of handguns with past misdemeanor convictions. Exhibit 7 (Mona A. Wright, et al., *Felonious or Violent Criminal Activity that Prohibits Gun Ownership Among Prior Purchasers of Handguns: Incidence and Risk Factors*, J. Trauma Injury, Infection, & Critical Care (2010) (“Wright Study”). This study found that past misdemeanants were on average 5 times more likely to commit future prohibitory crimes. *Id.* at 3 and Table 2.

RESPONSE: Admit that the Wright Study includes the cited findings, but dispute that it supports Chicago’s ban on nonviolent misdemeanants from possessing firearms. Like the Wintemute Study, the Wright Study does not indicate whether nonviolent misdemeanants who purchase a handgun pose a greater risk to public safety than nonviolent misdemeanants who do not purchase a gun. Unlike the Wintemute Study, it does compare nonviolent misdemeanants who purchase a gun to the general adult population, and it finds that California handgun purchasers with a single misdemeanor conviction on their record were arrested at a *lower* rate than the general adult population of California. Chi. Exhibit 7 at 6, Table 4. The Wright Study did find that the conviction rate was higher for one-time misdemeanants. *See id.* But given the study’s finding that “age was inversely associated with absolute risk for all [crime] outcomes,” *id.* at 6, this finding is undermined by the fact that the age range of the study sample of misdemeanants is 21-49, while the comparison general adult population encompassed ages 18-69, *see id.* at 6, Table 4. Also unlike the Wintemute Study, the Wright Study does not look in particular at nonviolent firearms offenders. And the Wright Study found that handgun purchasers with a prior arrest, but no prior convictions—a group Chicago *does not* ban from possessing firearms—were convicted for violent crimes more often than handgun purchasers

with a single prior misdemeanor conviction. *See* Chi. Exhibit 7 at 6, Table 4. Finally, the Wright Study acknowledges a number of limitations, including that “California’s population of legal handgun purchasers is systematically different from such populations in other states,” and thus that “[r]eplications of this study would be very helpful.” *Id.* at 7.

6. Numerous criminology studies have concluded that persons with an arrest history, even a single prior arrest, are as a group substantially more likely to engage in criminal behavior in the future than persons with no such history. Ex. 6 at 2083 and fns. 9-12.

RESPONSE: Admit that the Wintemute Study includes language similar to this finding.

7. Guns make violent events more lethal compared to crimes involving other weapons. Ex. 3 at 398; *see also* Exhibit 8 (Franklin Zimring: *Is Gun Control Likely to Reduce Violent Killings?*, 35 U. Chic.L. Rev. 721 (1968)); Exhibit 9 (Zimring, *The Medium Is The Message: Firearm Caliber As A Determinant Of Death From Assault*, 1 Journal of Legal Studies 97 (1972)).

RESPONSE: Dispute that guns substantially increase the lethality of crimes involving other weapons once the criminal’s intent is controlled for. *See* Exhibit 1 at 57 (Philip J. Cook, *The Influence of Gun Availability on Violent Crime Patterns*, 4 CRIME & JUST. 49 (1983)) (“[T]he assailant’s intent is a major determinant of his choice of weapon. The assailant who clearly intends for his victim to survive will not fire a gun at him.”); Exhibit 2 at 166 (GARY KLECK, POINT BLANK, Chapter 5 (1991)) (“when the gun is actually used in an attack, it is almost always the result of a choice, however hastily made, among weapon alternatives”); *id.* at 168-69. The Zimring studies cited by Chicago did not control for attacker intentions. *Id.* at 166.

8. Gang members and professional criminals regularly engaged in crime intimidate and commit crimes merely by “brandishing the weapon.” Exhibit 10 (Philip J. Cook, et al., *Underground Gun Markets*, *The Economic Journal* (2007), 117 at F563). *See also* Exhibit 11 (June 29, 2010 Written Testimony of Chicago Police Department Deputy Superintendent Ernest Brown for Chicago City Council at C0392)) (“Intimidation by gangs in particular would increase if gang members could lawfully carry arms in public.”).

RESPONSE: Admit that gang members and professional criminals regularly engaged in crime intimidate and commit crimes merely by “brandishing the weapon.” Dispute any implication, however, that (a) banning carriage substantially reduces gun carrying by gang members and professional criminals, (b) any substantial number of gang members or professional criminals would qualify to carry a gun if carriage were lawful, or (c) any substantial number of gang members or criminals who could qualify to carry a gun actually would take the steps necessary to obtain a permit to do so. Indeed, if anything Chicago’s evidence cuts in the other direction. *See* Chi. Exhibit 10 at F560 (concluding that “Chicago’s handgun ban ... was ineffective in reducing the prevalence of gun ownership in the City”); *id.* at 566 n.18 (a “possible explanation” for the low incidence of Chicago criminals purchasing guns at suburban gun stores is that licensed dealers “are by law required to record the identity of the official purchaser, which increases the legal risk associated with buying a gun from a dealer”).

9. Public carry increases the risk of accidental shootings and threats to law enforcement when responding to calls for assistance. Exhibit 12 (July 1, 2010 Legislative Findings of City Council Committee on Police and Fire at C0788).

RESPONSE: Disputed. As an initial matter, Chicago’s support is a legislative finding simply asserting that public carry “increases the threat to law enforcement when responding to calls for assistance.” *See* Chi. Exhibit 12 at C0788. Moreover, empirical evidence casts doubt on the proposition that lawful gun carrying would lead to increased risks for Chicago law enforcement officers responding to calls for assistance. *See, e.g.,* Exhibit 3 at 280 (Gary Kleck & E. Britt Patterson, *The Impact of Gun Control and Gun Ownership Levels on Violence Rates*, 9 J. OF QUANT. CRIM. 249 (1993)) (“No impact of gun prevalence on fatal gun accident rates was detected. Given the random component in accident causation and the rarity of fatal gun

accidents (one or two a year in most cities), the absence of a relationship is perhaps not that surprising.”); Exhibit 4 at 218 (Gary Kleck & Marc Gertz, *Carrying Guns for Protection*, 35 J. RESEARCH IN CRIME & DELINQUENCY 193 (1998)) (“carrying guns in public places is common in the United States, is primarily done for protection, and is rarely done for the purposes of committing a violent crime”); *id.* at 210 (data “impl[ies] that less than one in a thousand instances of gun carrying involve a violent crime committed with a gun”); Exhibit 5 at 1082-83 (Philip J. Cook, et al., *Gun Control After Heller*, 56 U.C.L.A. L. REV. 1041 (2009)) (“Based on available empirical data ... we expect relatively little public safety impact if courts invalidate laws that prohibit gun carrying outside the home, assuming that some sort of permit system for public carry is allowed to stand. ... On the available data ... the issue of public carry standing alone seems more likely to be a source of litigation than a serious threat to social welfare.”).

10. On May 16, 2011, the City served a Notice of Deposition on Plaintiff for June 28, 2011. Exhibit 13 (Notice of Deposition).

RESPONSE: Admit.

11. On October 18, 2011, the Court denied the City’s request to take Plaintiff’s deposition. Exhibit 14 (October 18, 2011 Hearing Transcript, pp. 18, 23).

RESPONSE: Admit.

12. Plaintiff’s arrest record shows two other arrests in Illinois: one in 1993 for obstruction of service of process, and one in 2004 for assault. Exhibit 15 (Plaintiff’s Criminal History Data).

RESPONSE: Admit that plaintiff’s arrest record shows these two arrests, but dispute that this fact is relevant or material. Plaintiff’s prior arrests are inadmissible for the purpose of proving his character or a propensity to behave in a certain manner under Federal Rule of Evidence 403.

Respectfully submitted,

s/Stephen A. Kolodziej

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CERTIFICATE OF SERVICE

I, Stephen A. Kolodziej, an attorney, hereby certify that on May 21, 2012, service of the foregoing is being made in accordance with the General Order on Electronic Case Filing section XI to the following:

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LIST OF EXHIBITS

Exhibit 1 -- Philip J. Cook, *The Influence of Gun Availability on Violent Crime Patterns*, 4 CRIME & JUST. 49 (1983)

Exhibit 2 -- GARY KLECK, POINT BLANK, Chapter 5 (1991)

Exhibit 3 -- Gary Kleck & E. Britt Patterson, *The Impact of Gun Control and Gun Ownership Levels on Violence Rates*, 9 J. OF QUANT. CRIM. 249 (1993)

Exhibit 4 -- Gary Kleck & Marc Gertz, *Carrying Guns for Protection*, 35 J. RESEARCH IN CRIME & DELINQUENCY 193 (1998)

Exhibit 5 -- Philip J. Cook, et al., *Gun Control After Heller*, 56 U.C.L.A. L. REV. 1041 (2009)

EXHIBIT 1

Philip J. Cook

The Influence of Gun Availability on Violent Crime Patterns

ABSTRACT

The spectacular increases in violent crime that began in the mid-1960s continue, and Americans are currently being murdered, robbed, and raped at historically unprecedented rates. Firearms are used in a minority of violent crimes but are of special concern because more than 60 percent of the most serious crimes—criminal homicides—are committed with firearms. This essay presents a variety of evidence to the effect that the widespread availability of firearms contributes to the criminal homicide rate and influences violent crime patterns in several other respects as well.

A gun is usually superior to other weapons readily available for use in violent crime; even in the hands of a weak and unskilled assailant, a gun poses a credible threat and can be used to kill quickly, from a distance, and in a relatively “impersonal” fashion. Guns are particularly valuable against relatively invulnerable targets. Hence, gun availability facilitates robbery of commercial places and lethal assaults on people who would ordinarily be able to defend themselves against other weapons. Some of the patterns of gun use in violent crime can be readily interpreted in terms of relative vulnerability of different types of victims.

Guns are also more dangerous than other weapons, in the sense that victims of robbery and assault are more likely to be killed if the assailant uses a gun. On the other hand, the victim is *less* likely to be injured in a gun robbery than in other robberies, since the gun robber usually does not feel the need to employ physical force.

This analysis suggests a number of predictions concerning the effects of gun availability on the number, distribution, and seriousness of violent crimes. In principle, these predictions could be tested directly by observing the effects of changes in gun availability on statistical characterizations of violent crime patterns. Not much research of this sort has been done,

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This essay is a substantial revision of my earlier paper entitled “The Role of Firearms in Violent Crime: An Interpretive Review of the Literature, with Some New Findings and Suggestions for Future Research.” This revision owes a great deal to the editors of this volume.

50 Philip J. Cook

in part because it is difficult to find a suitable measure for gun availability. Future research should be directed toward remedying this problem. In the meantime, it seems fair to conclude from the available evidence that the type of weapon is not an incidental aspect of violent crime, but rather has a substantial influence on the nature of the encounter and its likely consequences.

Approximately 682,000 violent crimes were committed with firearms in 1977, including 11,300 criminal homicides, 367,000 assaults (ranging from criminal threats with a gun up to attempted murder), 15,000 rapes, and 289,000 robberies (Cook 1981b). This high volume of gun-related crime is a reflection of two unarguable facts: first, the rates at which people attacked and threatened each other with any and all types of weapons reached unprecedented levels during the 1970s; second, a large fraction of the United States public has ready access to firearms.

There are at present 100–140 million firearms in private possession, of which 30–40 million are handguns (Wright et al. 1981).¹ These numbers are the result of a decade of growth in the private inventory of firearms; the total volume of handgun import and manufacture for the past decade has exceeded the total volume for the preceding six decades combined, and new sales of long guns have also been high during recent years. Surprisingly, the fraction of households owning one or more firearms has remained constant (at about 50 percent) since 1959; the rapid influx of new guns is accounted for by the growth in the number of households during the 1970s and by a tendency for gun-owning households to increase their average inventory. The most important aspect of this tendency is the increase in the number of households that own handguns; by 1978 about half of all gun-owning households (24 percent of all households) possessed at least one handgun, whereas in 1959 only about one-quarter of gun-owning households possessed handguns.²

¹The other statistics in this paragraph are also taken from Wright et al. (1981). Their calculations are based on careful analysis of both national survey data and data on manufacturing and import. Cook (1982) presents a more detailed analysis of the commercial flows of new handguns in a recent year.

²Some handguns are of course being sold to households that have never previously owned a gun, but this is the exception rather than the rule—75 percent of households that own handguns also own at least one rifle or shotgun (Cook 1982). Hobbyists and sportsmen continue to dominate the statistics with respect to firearms ownership: I estimate that the top one-third of handgun-owning households (about 7.5 percent of all households) own more than 60 percent of all handguns, and the top one-third of all long-gun-owning households (about 14 percent of all households) own more than 60 percent of all long guns (Cook 1982).

I believe that the widespread availability of firearms has a profound influence on violent crime patterns. The principal purpose of this essay is to explain and justify this highly controversial assertion. The secondary purpose is to summarize the descriptive statistical information concerning the role of firearms in violent crime. Section I presents a brief overview of trends and patterns in firearm use in the four major types of violent crime—criminal homicide, aggravated assault, robbery, and rape. Sections II–IV present and interpret some of the evidence suggesting that the type of weapon used in a violent crime is not an incidental or inconsequential aspect of the event, but rather one that influences the choices made by both criminal and victim and the likely consequences of these choices. First, section II sets out a conceptual framework for thinking about weapon use in violent crime. Major elements of this framework include the *vulnerability hypothesis* (firearms are more useful and more likely to be employed against relatively invulnerable targets) and the *objective dangerousness hypothesis* (the probability of death in an assault or robbery is greater if the assailant uses a gun than if he uses another weapon). These hypotheses, together with several others, provide a concise explanation for observed weapon-related patterns in violent crime and provide a basis for predicting the effects of changes in the availability of firearms. Sections III and IV present some of the statistical evidence relevant to evaluating the vulnerability and objective dangerousness hypotheses; most of this evidence is confirmatory, though much research remains to be done. The most direct approach to testing these hypotheses is systematic analysis of the effects of changes in gun availability on violent crime patterns. Section V presents a brief discussion of the problems entailed in conducting such tests, focusing on the preliminary problem of defining “gun availability” in an operational fashion. Finally, section VI suggests a modest agenda for future research.

It should be noted at the outset that the crime of rape is virtually ignored in this essay, even though it obviously deserves equal treatment with robbery and assault. The reason is simply the absence of pertinent information on the role of weapons in rape.

I. Trends in Violent Crime Rates

The postwar “baby boom” cohorts have been responsible for an extraordinarily rapid increase in violent crime rates. Between 1965 and 1974, the police-reported rates of criminal homicide, rape, and aggravated assault each doubled, and the robbery rate tripled. After a brief

respite between 1975 and 1977, violent crime rates began increasing again, and the most recent data suggest that they reached an all-time high in 1980 and are continuing to increase.

A decade ago it was popular among criminologists to discount these trend data, primarily on the grounds that they might be reflecting an upward trend in the fraction of violent crimes reported to the police (and thence to the FBI) rather than an increase in the “true” crime rates. One problem with this argument is that it does not apply to the criminal homicide rate, which is believed to reflect nearly a 100 percent reporting rate. Since criminal homicides are *known* to have been increasing rapidly during the violent decade beginning in 1965, it seems entirely reasonable to take the trend data shown in table 1 on other violent crimes at near face value.

The effects of this incredible growth in violent crime are varied and surely profound, ranging from substantially reduced life expectancy and enhanced disability rates for some demographic groups to the widespread adoption of costly efforts to minimize victimization risk. Indeed, the effects are much more obvious than the ultimate causes. One possible cause is the increased availability of guns during the past fifteen years, an issue to which the data in table 2 are germane.

In recent years, firearms have been used in more than 60 percent of the criminal homicides, and in about two-fifths of the reported robberies and one-quarter of the reported aggravated assaults. (The *Uniform Crime Reports* offer no data on weapon use in rape.) Most of these gun-related crimes involve handguns. Since handgun ownership has become much more widespread over the past two decades, it is reasonable to suppose that increased gun availability has exacerbated the violent crime problem in recent years. Although I believe this conclusion is correct, it is far

TABLE 1
Percentage Increases in Violent Crime Rates

Year	Nonnegligent Manslaughter and Murder	Aggravated Assault	Robbery	Rape	Burglary
1965-70	53	48	141	54	64
1970-75	23	40	27	44	43
1975-80	6	28	12	38	9
1965-80	100	165	242	206	156

Source: Computed from data in Federal Bureau of Investigation, *Crime in the United States*, 1970, p. 65; *Crime in the United States*, 1980, p. 41.

TABLE 2
Trends in Violent Crime Rates and Gun Use in Violent Crime

Year	Nonnegligent Manslaughter and Murder			Aggravated Assault		Robbery	
	Rate/ 100,000 (1)	Fraction with Firearms (2)	Fraction with Handgun (3)	Rate/ 100,000 (4)	Fraction with Firearms (5)	Rate/ 100,000 (6)	Fraction With Firearms (7)
1965	5.1	.57		109.5	.17	71.3	
1966	5.6	.60	.44	118.4	.19	80.3	
1967	6.1	.64	.48	128.0	.21	102.1	.36
1968	6.8	.65	.50	141.3	.23	131.0	
1969	7.2	.65	.51	151.8	.24	147.4	
1970	7.8	.65	.52	162.4	.24	171.5	
1971	8.6	.65	.51	178.8	.25	188.0	
1972	9.0	.66	.54	188.8	.25	180.7	
1973	9.4	.67	.53	200.5	.26	183.1	
1974	9.8	.68	.54	215.8	.25	209.3	.45
1975	9.6	.66	.51	227.4	.25	218.2	.45
1976	8.8	.64	.49	228.7	.24	195.8	.43
1977	8.8	.63	.48	241.5	.23	187.1	.42
1978	9.0	.64	.49	255.9	.22	191.3	.41
1979	9.7	.63	.50	279.1	.23	221.1	.40
1980	10.2	.62	.50	290.6	.24	243.5	.40

Source: Federal Bureau of Investigation, *Crime in the United States*, various issues.

Note: Firearms use in robberies is not available between 1968 and 1973. Handguns were used in about 96 percent of firearms robberies in 1967.

from a complete explanation for the increase in violent crime. The data in table 2 indicate that gun crimes did increase faster than nongun crimes from 1965 to 1973, but that since 1973 nongun crimes have been increasing at least as fast as gun crimes. Taking the period 1965–80 as a whole, we see that gun-related criminal homicide increased 118 percent while nongun homicide increased 77 percent. The force behind the crime surge since 1965 pushed both gun and nongun rates up to unprecedented levels; increased gun availability probably played some role in the late 1960s and early 1970s, but apparently did not in subsequent years.

The propensity to use guns in violent crimes differs widely across geographic areas. For example, the 1973–74 gun fraction in assaultive homicides (i.e., homicides excluding felony-related murders) ranged among large cities between 42 percent (Newark) and 83 percent (Baton Rouge); the 1974–75 gun fraction in robberies ranged from 28 percent (Boston) to 72 percent (Houston).³ Furthermore, these gun fractions for robbery and assaultive homicide are highly correlated with each other across the 49 largest cities; the correlation coefficient is .70. This geographic pattern in gun use is also reflected in the suicide statistics; the intercity correlation between gun fractions in criminal homicide and suicide was .82 in 1973–74. Cook (1979, table 5) presents evidence that these intercity differences in the propensity to use guns in killings and in robbery are clearly related to intercity gun ownership patterns. The cities with the lowest rate of firearms ownership are in New England and the mid-Atlantic region. The cities with the highest gun ownership rates are in the South Atlantic, South Central, and Mountain regions. The fractions of criminal homicides, suicides, and robberies involving guns follow this same regional pattern.

What can we conclude from this brief description of violent crime patterns? First, Americans are currently being murdered, robbed, and raped at greater per capita rates than at any time in the fifty years of national recorded crime statistics, owing to the spectacular increases in these rates that began in the mid-1960s. Second, firearms are used in a minority of violent crimes but are of special concern because more than 60 percent of the criminal homicides involve firearms. Third, cities differ widely with respect to the fraction of violent crimes (and suicides) that involve guns, and this geographic pattern is roughly congruent with the geographic pattern of gun ownership. These results serve to set the stage

³These and subsequent statistics in this paragraph are calculated from unpublished FBI data. A complete description of sources and methods is available from the author.

for the detailed exploration of gun use in violent crime presented in the next three sections.

II. Conceptualization

The most important question considered in research on the criminal use of weapons is how the availability of dangerous weapons, especially firearms, influences the incidence and seriousness of violent crime. The observed patterns of weapon use in violent crime suggest a number of testable hypotheses concerning the potential effects of changes in gun availability. These hypotheses are motivated and stated in sections III and IV. The theoretical framework that guides this discussion is summarized here, without reference to sources or supporting evidence. This bare statement of the main ideas serves as a reader's guide to the more cluttered presentation of subsequent sections.

In addition to "gun availability" there are three basic elements to the theoretical framework, as depicted in figure 1: (1) the perpetrator's intent, or choice of task (e.g. which target to rob); (2) the type of weapon he uses in the crime; and (3) the outcome (Was the victim wounded, killed, or unharmed? Was the robbery successful?). There is some interrelation between the type of weapon used in a violent crime and the criminal's intent or choice of task; the causal process goes both ways. The actual outcome of the crime is of course influenced both by the perpetrator's intent and by his choice of weapon, as shown in figure 1. The fourth element of the theoretical framework, gun availability, influences weapon type and also has an effect on the quality of opportunities confronting the violent criminal.

A gun has a number of characteristics that make it superior to other readily available weapons for use in violent crime: even in the hands of a weak and unskilled assailant, a gun can be used to kill. The killing can be accomplished from a distance without much risk of effective counterat-

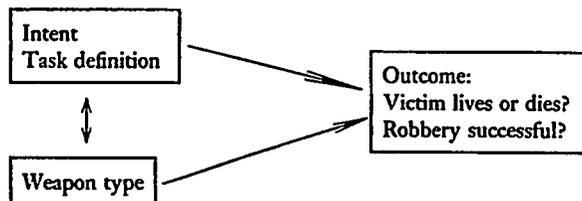


Fig. 1. The elements of a theoretical framework. The vulnerability pattern: relation between task and weapon type.

tack by the victim, and the killing can be completed quickly without sustained effort and in relatively “impersonal” fashion. Furthermore, because everyone knows that a gun has these attributes, the mere display of a gun communicates a highly effective threat. In most circumstances, a gun maximizes the probability of success for a would-be robber, rapist, or murderer.

The value of a gun as a tool in violent crime is closely related to the vulnerability of the victim. A victim who is unarmed, alone, small, frail, or impaired by alcohol or drugs is highly vulnerable. Against a vulnerable victim, the probability of perpetrating a successful robbery or murder is only slightly affected by the type of weapon employed. But a gun is essential for murdering a policeman or robbing a bank. The value of a gun in a crime will influence the probability that a gun will be the weapon actually used in that crime. Hence we have the *vulnerability pattern*: the fraction of robberies involving guns is inversely related to the vulnerability of the victim. The same pattern is characteristic of murder.

A variety of possible explanations can be given for the vulnerability pattern. Two explanations are of special interest: (1) “The tool determines the task.” A robber’s choice of target will be influenced by the type of weapon immediately available to him. In robbery or other confrontations, the impulse to kill is more likely to be acted on if an adequate weapon is available. (2) “The task determines the tool.” In robberies and murders that involve some planning and preparation, the perpetrator will have a chance to equip himself with an adequate weapon. What he considers “adequate” will depend on the vulnerability of the victim. There is no need to choose between these two explanations—both no doubt have some validity.

A gun is usually the most effective weapon for launching a deadly attack or for generating a convincing threat of deadly attack. But in most violent confrontations, the assailant’s intent is not to kill (or threaten death), but rather to hurt or gain control over the victim. Casual observation suggests that schoolyard scuffles, routine family fights, even bar-room brawls are typically completely lacking in homicidal intent and would not even be considered “crimes” by the participants or (in practice) the police and courts. In violent confrontations of this sort, the protagonists are unlikely to resort to deadly weapons even when they are readily available. Husband and wife may exchange punches or throw dishes any number of times, yet refrain from reaching for the carving knife or shotgun. These commonsense observations suggest that the assailant’s choice of weapon is a good indicator of his intent in assault

offenses. The correlation between intent and weapon deadliness is by no means perfect, since weapon availability is an important intervening variable. Nevertheless, the assailant's intent is a major determinant of his choice of weapon. The assailant who clearly intends for his victim to survive will not fire a gun at him. The assailant who is determined to kill his victim probably will use a gun if one is available. Weapon choice in the intermediate case, in which the assailant's intent is ambiguous, may be governed by immediate availability.

A. *The Objective Dangerousness Pattern: Outcome as a Function of Intent and Weapon Type*

The details of this causal process differ somewhat between assault and murder, on the one hand, and robbery and rape on the other. These two crime categories are hence treated separately here.

1. *Assault and murder.* Whether the victim survives a serious assault with a deadly weapon depends in part on his ability to defend himself—his vulnerability relative to the nature of the attack. But in a large proportion of assaults with deadly weapons, the assailant ceases his attack by choice, rather than because of effective victim resistance. We can infer, in unsustained attacks of this sort, that the assailant's intent is to injure or incapacitate the victim—there is no deliberate, unambiguous intent to kill. Whether the victim does in fact die in such cases is largely a matter of chance—whether the first blow happens to strike a vital organ. Ambiguously motivated gun attacks are more dangerous than ambiguously motivated attacks with other weapons. This is the *objective dangerousness pattern*: gun attacks have a higher probability of killing the victim than do knife attacks in otherwise similar circumstances, and the difference is especially large when the intent of the assailant's attack is ambiguous.

2. *Robbery violence.* In robberies in which the robber's intent is to complete the robbery successfully, using force only as necessary to forestall or overcome victim resistance, the likelihood of physical attack or victim injury will be inversely related to the lethality of the robber's weapon—victims are less likely to attempt resistance to a gun than to other weapons. I have labeled this inverse relation the *instrumental violence pattern* in robbery.

While the instrumental violence pattern is evident in robbery statistics, it is nonetheless true that some robbers engage in unnecessary violence. They injure or kill victims who are cooperating with their demands. This *excess violence pattern* accounts for a large fraction of

58 Philip J. Cook

serious injuries and deaths for each of the weapon categories in robbery. The robber's intent in these cases is evidently to complete the robbery successfully *and*, as a separate matter, to injure or kill the victim.

The type of weapon employed has an important independent effect on the probability of victim death in robbery as well as assault. There is some evidence that most robbery murders are deliberate, and hence a reflection of the excess violence pattern. It may be that the type of weapon at hand influences the robber's decision making during the course of the robbery; the relative ease of executing a victim with a gun encourages this course of action when a gun is at hand.

B. Inferences concerning the Effects of Gun Availability

As indicated above, the type of weapon used in a violent crime is closely related to a number of the observable characteristics of the crime, including the vulnerability of the victim, the likelihood that the crime will be successful, and the seriousness of injury to the victim. These statistical patterns are interesting primarily as a basis for generating hypotheses (predictions) concerning the likely effects of a change in the availability of guns to violent offenders.

Suppose a jurisdiction is successful in reducing gun availability to robbers and violence-prone individuals (or in increasing the cost of using guns in crime). I postulate two effects: a pure *weapon substitution* effect, and a *selective deterrence* effect.

1. **Weapon substitution:** Pure weapon substitution occurs when the criminal simply substitutes a knife or club for the gun he would have preferred to use, without modifying his basic decision of what target to rob, or whether to attack someone he wants to hurt or kill. As suggested by the objective dangerousness pattern, this type of substitution will reduce the fraction of violent attacks that result in the victim's death. By the instrumental violence pattern, substitution will increase the victim injury rate in robbery.

2. **Selective deterrence:** In addition to weapon substitution, we expect a reduction in gun availability to forestall some types of violent crime, as suggested by the vulnerability postulate. The commercial robbery rate should be reduced, since the probability of failure of a nongun robbery against a commercial target is high (hence the high fraction of gun use in commercial robbery). Since there may be some displacement to noncommercial targets, it is not clear whether the noncommercial robbery rate will fall or increase.

A reduction in gun availability should reduce the criminal homicide rate by discouraging some homicidal attacks. The vulnerability pattern suggests that the murder victimization rate will fall the most (proportionately) for the least vulnerable victims. Controlling for the vulnerability of the victim, the murder offense rate should fall the most for the weakest potential killers (women, youths, elderly people). These predictions are predicated on the assumption that the reduction in gun availability is uniform across relevant subgroups of the population.

These predictions, which follow from an analysis of the offenders' capabilities, may have to be modified somewhat if the intervention that deprives offenders of guns also reduces gun availability to potential victims. If there is a general reduction in gun availability, then potential victims will be less likely to be armed with guns and hence will be more vulnerable to robbery or assault. In effect, a general reduction in gun availability changes the quality of opportunities available to criminals. One effect may be to increase the rate of (nongun) assault; individuals will be more likely to give vent to violent impulses if they are confident that their intended victim lacks a gun. There may also be some effect on robbery patterns, although not enough is known about self-defense in robbery to permit specific predictions. In any event, it should be clear that some legal interventions will have little effect on general availability of guns (e.g. sentencing enhancements for criminals who use guns), and others will be very broad (e.g. an increase in the federal tax on handguns). Predictions should of course be tailored to the precise nature of the intervention.

In sum, we are concerned with the effect of gun availability on three dimensions of the violent crime problem: (1) the *distribution* of robberies, aggravated assaults, rapes, and criminal homicides across different types of victims—for example, commercial versus noncommercial robbery; (2) the *seriousness* of robberies, rapes, and aggravated assaults; and (3) the overall *rates* of each type of violent crime. Patterns in the violent crime data support a number of predictions concerning these effects.

III. Evidence on the Vulnerability Hypothesis: Patterns of Gun Use in Robbery and Criminal Homicide

Firearms were used in 62 percent of the murders, 40 percent of the robberies, and 24 percent of the aggravated assaults reported to the police in 1980 (see table 2). These percentages have varied over time and differ across jurisdictions, as documented in section I. This section

focuses on the patterns of gun use across the different circumstances in which these crimes occur. What characteristics of the assailant, the victim, and the immediate environment of the criminal act influence the likelihood that a gun will be employed? Since this question has been more prominent in the literature on robbery than on murder, I begin with an analysis of gun use in robbery.

A. *Robbery*

Robbery⁴ is defined as theft or attempted theft by means of force or the threat of violence. The robber's essential task is to overcome through intimidation or force the victim's natural tendency to resist parting with his valuables. A variety of techniques for accomplishing this task are used in robbery, including actual attack (as in "muggings" and "yokings") and the threatening display of a weapon such as a gun, knife, or club. Whatever the means employed, the objective is to gain the victim's compliance quickly or render him helpless, thereby preventing him from escaping, summoning help, or struggling. The amount of what could be called "power" (capability of generating lethal force) the robber needs to achieve these objectives with high probability depends on the characteristics of the robbery target (victim), and in particular on the vulnerability of the target. The most vulnerable targets are people who are young, elderly, or otherwise physically weak or disabled (e.g. by alcohol), who are alone and without ready means of escape. The least vulnerable targets are commercial places, especially where there are several customers and clerks and possibly even armed guards—a bank being one extreme example.

A gun is the most effective tool for enhancing the robber's power. Unlike other common weapons, a gun gives a robber the capacity to threaten deadly harm from a distance, thus allowing him to maintain a buffer zone between himself and the victim and to control several victims simultaneously. A gun serves to preempt any rational victim's inclination to flee or resist.⁵ Skogan (1978) documented the effectiveness of a gun in forestalling victim resistance in his analysis of a national sample of

⁴The perspective of this section was first developed in Conklin's (1972) seminal work on robbery in Boston. Cook (1976) dubbed it "strategic choice analysis" and was the first to employ large victimization survey data sets in documenting weapon use patterns of this sort. Other important contributions are cited in subsequent notes.

⁵Conklin (1972) analyzes the gun's usefulness in terms of the ability it provides the robber to (1) maintain a buffer zone; (2) intimidate the victim; (3) make good the threat, if necessary; and (4) ensure escape (pp. 110–11).

victim-reported robberies:⁶ only 8 percent of gun robbery victims resisted physically in noncommercial robberies, compared with about 15 percent of victims in noncommercial robberies involving other weapons.⁷ Other types of resistance (arguing, screaming, fleeing) were also less common in gun robbery than in robbery involving other weapons.

It seems reasonable to assume that, from the robber's viewpoint, the value of employing a gun tends to be inversely related to the vulnerability of the target. A gun will cause a greater increase in the likelihood of success against well-defended targets than against more vulnerable targets. A strong-arm technique will be adequate against an elderly woman walking alone on the street—a gun would be redundant with such a victim—but a gun is virtually a requirement for a successful bank robbery. Skogan (1978) provides evidence supporting this claim: he finds little relation between robbery success rates and weapon type for personal robbery but a very strong relation for commercial robbery. He reports that success rates in commercial robbery were 94 percent with a gun, 65 percent with a knife, and 48 percent with other weapons.⁸

In economic terms, we can characterize robbery as a production process (Cook 1979, pp. 752–53) with weapons, robbers, and a target as “inputs.” The “output” of the production process can be defined as the probability of success. This probability increases with the number and skill of the robbers, the vulnerability of the target, and the lethality of the weapons. For given robber and target characteristics, the “marginal product” of a gun can be defined as the increase in probability of success if the robber(s) substitutes a gun for, say, a knife. The evidence pre-

⁶Skogan used incident reports collected from the National Crime Panel on robberies that occurred during calendar year 1973. This and subsequent citations to Skogan's work refer to an unpublished manuscript that was subsequently published in abbreviated form as Skogan (1978). It should be noted that any analysis of victim survey data relies on the victim's impression of the nature of the weapon that was employed in the robbery. In some cases the “gun” may be a toy, or simulated; Feeney and Weir (1974, p. 33) report that of fifty-eight “gun” robbers interviewed in Oakland, three claimed to have used toys and four to have simulated the possession of a gun.

⁷Block (1977) found from studying robbery police reports in Chicago that victims who resisted with physical force typically (68 percent) did so in response to the robber's use of force. Other types of resistance typically (70 percent) preceded the robber's use of force.

⁸McDermott (1979) presents evidence that there is a similar pattern in rape. She analyzed the National Crime Panel victimization survey data for twenty-six cities. From the statistics she presents on pages 20 and 21 of her report, it can be calculated that success rates in rape were 67 percent when the assailant used a gun, 51 percent when he used another weapon, and only 15 percent when he was unarmed. These percentages exclude rapes perpetrated by nonstrangers.

sented above suggests that the marginal product of a gun is small against vulnerable targets and relatively large against well-defended targets. We can go one step further and define the “value of a gun’s marginal product” as its marginal product (increase in success probability) multiplied by the amount of loot if the robbery is successful. Since, for obvious reasons, targets with greater potential loot tend to be better defended against robbery,⁹ the *value* of the gun’s marginal product is even more strongly related to target vulnerability than is its marginal product. The conclusion can be put in the form of a proposition:

The economic value of a gun in robbery tends to be greatest against commercial targets and other well-defended targets, and least against highly vulnerable targets.

It makes good economic sense, then, for gun use in robbery to be closely related to target vulnerability. Cook (1980a) demonstrates that this is indeed the case, on the basis of tabulating results of more than 12,000 robbery reports taken from victim survey data gathered in twenty-six large cities. These results are reproduced in table 3.

From table 3 (part A) we see that 55 percent of gun robberies committed by adults, but only 13 percent of other adult armed robberies, involve commercial targets. Those gun robberies that were committed against people on the street are concentrated on relatively invulnerable targets—groups of two or more victims or prime-age males—while street robbery with other weapons was more likely to involve women, children, or elderly victims. Skogan (1978) provides further detail for commercial robberies, reporting that the likelihood that a gun is present in such robberies is only 44 percent for commercial places that have only one employee, but 68 percent for commercial places with two or more employees.¹⁰

What is the process that produces these patterns in gun robbery? There are two plausible explanations, both compatible with the evidence presented above: (1) robbers who aspire to well-defended, lucrative targets equip themselves with guns to increase their chances of success; or (2) robbers who happen to have guns are more tempted to rob lucrative, well-defended targets than robbers who lack these tools.

⁹It is obvious that commercial targets tend to be more lucrative than noncommercial ones, and that a group of two or more victims will be more lucrative on the average than a single victim. Feeney and Weir (1974) report the not so obvious result that robberies of male victims resulted in a much higher median take (\$50) than robberies of female victims (less than \$20) (p. 24).

¹⁰Calculated from the statistics reported in table 3 of Skogan’s article.

63 Gun Availability and Violent Crime

TABLE 3
Percentage Distributions of Robberies by
Location and Victim Characteristics

	Gun	Knife or Other Weapon	Unarmed
<i>A. All Robberies across Locations</i>			
Commercial	55.1	13.3	19.1
Residence	6.4	10.4	8.5
Street, vehicle, etc.	38.5	76.3	72.4
Total	100.0	100.0	100.0
<i>B. Street Robberies by Victim Characteristics</i>			
Male victim aged 16-54	59.8	53.8	41.1
Two or more victims	10.5	5.8	3.7
All others (young, elderly, and/or female victim)	29.7	40.4	55.2
Total	100.0	100.0	100.0

Source: Adapted from Cook 1980a, p. 43. The distributions are calculated from National Crime Panel victimization survey data on twenty-six cities.

Note: All incidents involved at least one male robber age 18 or over. Entries in the table reflect survey sampling weights.

The first explanation suggests that the observed relation between gun use and target choice is the result of differences between the kinds of people who rob lucrative targets and those who commit relatively petty street robberies—a difference reminiscent of Conklin's (1972) distinction between "professionals" and "opportunists." Victim-survey evidence does suggest that gun robbers as a group have more of the earmarks of professionalism than other armed robbers: beside the fact that they make bigger "scores," gun robbers are older, less likely to rob acquaintances, and less likely to work in groups of three or more (Cook 1976; Skogan 1978). Cook and Nagin (1979, p. 25) demonstrated that the factors that determine a robber's choice of weapon have some tendency to persist: a cohort of adult men arrested for gun robbery in the District of Columbia showed a greater propensity to use guns in subsequent robberies than a corresponding cohort arrested for nongun robberies.¹¹

¹¹Based on 541 adult male gun robbery arrestees and 761 nongun robbery arrestees. This cohort, which was arrested in 1973, was tracked through 1976 through PROMIS (Prosecutor's Office Management Information System). The robbery rearrest rate for the gun cohort was 0.43, of which 58 percent were gun robberies. The robbery arrest rate for the nongun cohort was 0.45, of which 40 percent were gun robberies. The two cohorts had

It seems reasonable to hypothesize, then, that robbers who engage in planning and who seek out big scores will take pains to equip themselves with the appropriate weapon—usually some type of firearm. The extent to which other less-professional robbers use guns, and hence the kinds of targets they choose, may be more sensitive to the extent to which such people have access to guns and are in the habit of carrying them, for whatever reason. Increased availability of guns may then result in some target switching by this group—substitution of more lucrative, better-defended targets for more vulnerable targets. Increased gun availability may also result in weapon substitution for a given type of target, implying an increase in the fraction of street robberies committed with a gun; that is, guns will be put to less valuable uses as they become “cheaper.” These hypotheses can be stated more precisely as follows.

- An increase in gun availability in a city will have the following effects:
- increase the fraction of noncommercial robberies committed with a gun;
 - increase the fraction of robberies committed against commercial and other well-defended targets.

B. *Criminal Homicide and Assault*

The qualities of a gun that make it the most effective robbery weapon, particularly against well-defended targets, are also of value to a killer. A decision to kill is easier and safer to implement with a gun than with other commonly available weapons—there is less danger of effective victim resistance during the attack, and the killing can be accomplished more quickly and impersonally, with less sustained effort than is usually required with a knife or blunt object. As in robbery, a gun has greatest value against relatively invulnerable victims, and the vulnerability of the victim appears to be an important factor in determining the probability that a gun will be used as the murder weapon.

The least vulnerable victims are those who are guarded or armed. All presidential assassinations in United States history were committed with handguns or rifles. Almost all law enforcement officers who have been murdered in recent years were shot: between 1970 and 1979, 94 percent of the 1,078 murdered policemen were killed by firearms (FBI, *Crime in the United States 1979*, p. 312).

the same rearrest rate for burglary (0.13), but the nongun cohort was much more likely to be rearrested for assaultive crimes (0.22, as opposed to 0.13 for the gun cohort). See table 9 of Cook and Nagin (1979).

Physical size and strength are also components of vulnerability. In 1977, 68.5 percent of male homicide victims were shot, compared with only 51.0 percent of female homicide victims (*Statistical Abstract 1978*). The age pattern, shown in figure 2, is strikingly regular: about 70 percent of victims aged 20–44 are shot, but this fraction drops off rapidly for younger and older—more vulnerable—victims.

Vulnerability is, of course, a relative matter. We would expect that the lethality of the murder weapon would be directly related to the *difference* in physical strength between the victim and killer, other things being equal. To investigate this hypothesis, I used the FBI data coded from the supplemental homicide reports submitted for 1976 and 1977 by police departments in fifty large cities. These data include the demographic characteristics of the victim and (where known) the offender, as well as the murder weapon, immediate circumstances, and apparent motive of the crime. Tables 4 and 5 display some results that tend to confirm the relative vulnerability hypothesis. First, from table 4 we see that women tend to use more lethal weapons than men to kill their spouses: 97 percent of the women, but only 78 percent of the men, used guns or knives. The gun fractions alone are 67 and 62 percent—admittedly not a large difference, but one that is in the predicted direction. This result is especially notable since women typically have less experience than men in handling guns and are less likely to think of any guns kept in the home as their personal property. Table 4 also shows that women who kill their “boy-

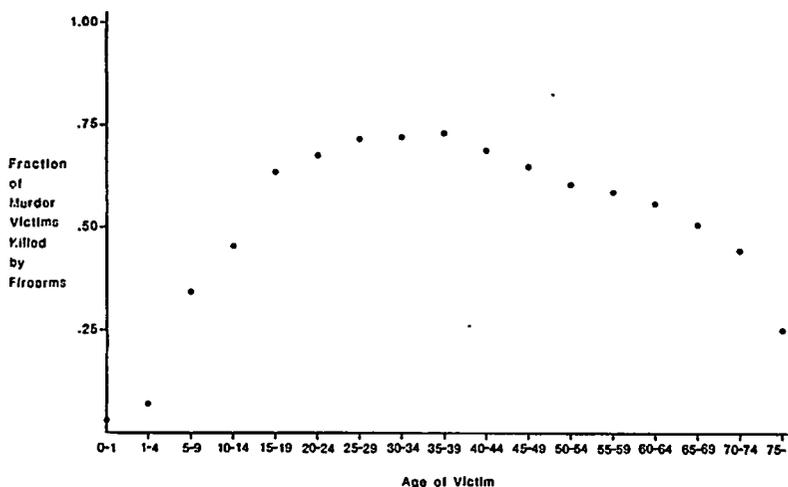


Fig. 2. The fraction of murder victims killed by firearms, 1978, by age of victim. From *Uniform Crime Reports, 1978*.

66 Philip J. Cook

TABLE 4
 Weapon Choice in Homicides Involving
 Spouses and Intimates

Weapon	Identity of Victim			
	Husband	Wife	Boy Friend	Girl Friend
Gun	67.1%	61.6%	58.4%	53.5%
Knife	29.8	16.3	38.0	19.1
Blunt object	1.6	4.9	1.4	5.3
Other	1.4	17.2	2.3	22.0
<i>N</i>	553	547	216	209

Source: FBI Supplemental Homicide Reports, fifty cities, 1976 and 1977 combined.
 Note: "Husband" and "wife" classifications include common-law relationships. Arson cases are omitted.

friends" are more likely to use a gun than men who kill their "girl friends."

Table 5 focuses on killings that resulted from arguments and brawls in which both the killer and the victim were males. The gun fraction increases with the age of the killer and is inversely related to the age of the victim: the highest gun fraction (87 percent) involves elderly killers and youthful victims; the lowest gun fraction (48 percent) involves youthful killers and elderly victims. Since age is highly correlated with strength and robustness, these results offer strong support for the relative vulnerability hypothesis.

Why are less vulnerable murder victims more likely to be shot than relatively vulnerable victims? A natural interpretation of this result is that intended victims who are physically strong or armed in some fashion are better able to defend themselves against homicidal assault than are more vulnerable victims—unless the assailant uses a gun, the "great equalizer." The "vulnerability pattern" can then be explained as resulting from some combination of three mechanisms: (1) homicidal attacks are more likely to fail against strong victims than against weak ones, and the difference in the likelihood of failure is greater for nongun attacks than for attacks with a gun. (2) The likelihood that an individual will act on a homicidal impulse depends in part on the perceived probability of success. The intended victim's ability to defend himself acts as a deterrent to would-be killers—but this deterrent is much weaker if the killer has a gun. (3) In the case of a planned murder, the killer will have

67 Gun Availability and Violent Crime

TABLE 5
Gun Use in Murders and Nonnegligent Homicides
Resulting from Arguments or Brawls,
Male Victim and Male Offender

Age of Victim	Age of Offender		
	18-39	40-59	60+
18-39	68.0%	79.6%	87.2%
<i>N</i>	1,906	368	47
40-59	54.5%	64.1%	66.7%
<i>N</i>	398	245	57
60+	48.3%	49.2%	63.3%
<i>N</i>	58	61	30

Source: FBI Supplemental Homicide Reports, fifty cities, 1976 and 1977 combined (unpublished data).

Note: The sample size (the denominator of the fraction) is given in each cell. Cases in which the age of the killer is not known are excluded.

the opportunity to equip himself with a tool that is adequate to the task. Against well-defended victims, the tool chosen will almost certainly be a gun, if one can be obtained without too much difficulty.

Each of these mechanisms is compatible with the prediction that a reduction in gun availability will cause a reduction in murder, a reduction that will be concentrated on killings that involve a victim who is physically stronger than the killer. A number of specific hypotheses are suggested by this observation, including the following.

A reduction in gun availability will:

- reduce the male/female victimization ratio in murders of spouses and other intimates;
- reduce the fraction of murder victims who are youthful males;
- reduce the fraction of murderers who are elderly.

A number of similar hypotheses can be generated from the same perspective.

For a large percentage of violent crimes, it is in the assailant's interest to take care to *avoid* killing the victim. Robbery murder, for example, is a capital crime in many jurisdictions—even if the killing was an “accident” or a spontaneous reaction to victim resistance. Conklin (1972, p. 111) interviewed several robbery convicts who used an unloaded gun for fear they might end up shooting their victims. In other violent confrontations, such as fights between family members, this same concern may

deter the combatants from reaching for a gun—even when there is one readily available. A loaded gun is not an appropriate weapon when the assailant's intent is to hurt, not kill, the victim. Phillips (1973) reasoned on the basis of such considerations that weapon choice in aggravated assault will be influenced by the probability and severity of punishment for criminal homicides; controlling for gun availability, the fraction of assaults committed with a gun should be inversely related to the perceived severity of sanctions. The results of his regression analysis of state level data is compatible with this prediction.¹²

IV. Evidence on the Objective Dangerousness Hypothesis

A. *The Role of Weapon Type in Determining the Outcome of Violent Attacks*

The main lessons from the previous section are common sense. Guns are more lethal than other readily available weapons. Killing with a gun requires less skill, strength, energy, and time than killing with a knife or club. A gun attack is harder to escape from or otherwise defend against than are attacks with other weapons. For these reasons, guns are the most effective weapons in robbery and murder and are especially valuable (from the assailant's viewpoint) against victims who are relatively invulnerable. It is not surprising, then, that the likelihood that a gun will be used to commit robbery and murder is systematically related to the vulnerability of the victim. The task is chosen to suit the tool, or the tool is chosen to suit the task. Either way, the "vulnerability pattern" is the result.

These observations are reasonable and fit the data, but they do not tell the whole story, especially for murder. A large proportion of serious attacks are ambiguously motivated—the "task" is not clearly defined in the mind of the assailant. The outcome of such attacks appears to be largely a matter of chance. The probability that the victim will die as a result of such attacks (in my interpretation) reflects conscious choices made by violent criminals—the "objective dangerousness" pattern, on the other hand, is a probabilistic phenomenon.

I begin the discussion of objective dangerousness with a discussion of aggravated assault and murder. The use of violence in robbery needs a separate treatment, which is presented subsequently.

¹²One flaw in Phillips's analysis is that he omitted from his regression specification of sanction severity for aggravated assault. Deterrence theory suggests that it is not the absolute severity of sanctions for criminal homicide that is salient to the choice of weapon, but rather the *difference* between sanction severity in assault and murder.

1. *Intent and the probability of death in serious attacks.* The fraction of serious gun assaults that result in the victim's death is much higher than for assaults with other weapons. Block (1977, p. 33), for example, found that of all aggravated assaults resulting in injury to the victim (and reported to the Chicago police), 14 percent of the gun cases, but only 4 percent of the knife cases, resulted in the victim's death.

One explanation for this result is that an assailant who intends to kill his victim is more likely to equip himself with a gun than an assailant who merely intends to hurt his victim. While this explanation may be valid for those murders in which there is some planning and preparation,¹³ it is not a plausible explanation for the large proportion of deadly attacks that occur as the immediate result of an altercation or other provocation.

Zimring (1972) has demonstrated that a large proportion of murders are similar to serious assaults in that the attacks are unsustained—the assailant does not administer the coup de grace, the blow that would ensure the death of his victim. Indeed, the victim was shot only once in about two-thirds of the gun murders in Zimring's Chicago samples. These cases differ very little from serious assaults: for every death resulting from a single wound in the head or chest, Zimring found 1.8 victims with the same type of wound who did not die¹⁴—victims who were apparently saved not by any differences in the gunman's intent, but rather just by good luck with respect to the precise location of the wound.

Evidently, some proportion of gun murders are not the result of a clear intent to kill; given that the majority of murders are the immediate result of altercations, often involving alcohol and rarely much thought, it seems unlikely that many killers have *any* clearly formulated "intent" at the time of their attack. The assailant's mental state is characterized by an impulse—to punish, avenge an insult, stop a verbal or physical attack—backed by more or less cathexis. The immediate availability of a gun makes these circumstances more dangerous than would a less lethal weapon, because an unsustained attack with a gun—a single shot—is more likely to kill.

Zimring buttressed the conclusions from his first study, which compared knife and gun attacks, with a later (1972) study comparing attacks with large- and small- caliber guns. Even after controlling for the num-

¹³Wolfgang (1958) concludes from his study of homicide in Philadelphia: "The murderer who carefully plans his felonious, willful, and malicious assault is more likely to employ a weapon that performs his intended task quickly and efficiently. In such a situation a pistol or revolver probably will be used. During a drunken brawl, or in the white heat of passion, an offender uses whatever weapon is available" (pp. 80–81).

¹⁴Computed from Zimring (1972), table 7, p. 104.

ber and location of wounds, he found that attacks with .38 caliber guns were more than twice as likely to kill as attacks with .22 caliber guns. It appears, then, that weapon dangerousness has a substantial independent influence on the death rate from serious assaults.

Zimring's seminal work in this area supports several important propositions, including two testable hypotheses:

- A restrictive gun control policy that caused knives and clubs to be substituted for guns would reduce the death rate in serious assault.¹⁵
- A gun control policy focused on handguns may increase the death rate from gun assault if shotguns and rifles are substituted for handguns as a result.¹⁶

There is also an important normative proposition: In setting prosecution and sentencing priorities for aggravated assault cases, gun assaults should be viewed as more serious than assaults with other weapons, *ceteris paribus*, since there is a higher probability of the victim's dying in the gun assaults. This is Zimring's "objective dangerousness" doctrine.¹⁷

Block (1977) extended Zimring's work on instrumentality by comparing death rates in aggravated assault and robbery cases. He concludes that "the relative fatality of different weapons in violent crime may be a technological invariant . . . the probability of death given injury and a particular weapon remains relatively constant and unrelated to the type of crime committed" (p. 32). The notion that the number of deaths per hundred criminal attacks is a "technical" constant, largely determined by the lethality of the weapon, is not supportable, however. Zimring demonstrated that the type of weapon was *one* important determinant of the outcome of serious attacks but did not claim it was the only determinant. Presumably the weapon-specific death rates in such attacks will differ

¹⁵Zimring (1967) titled his original article "Is Gun Control Likely to Reduce Violent Killings?" His work was a response to a view espoused by Wolfgang (1958): "It is the contention of this observer that few homicides due to shootings could be avoided merely if a firearm were not immediately present, and that the offender would select some other weapon to achieve the same destructive goal (p. 83)"—a viewpoint expressed more succinctly by the bumper sticker: "Guns don't kill people; people kill people."

Seitz (1972) attempts to test Wolfgang's substitution hypothesis directly by calculating the correlation coefficient between total homicide rates and firearms homicide rates across states. For 1967 this correlation coefficient is .98. Seitz claims that the substitution hypothesis predicts that this correlation should be about zero. The problem with Seitz's inference, of course, is that he makes no attempt to control for the underlying etiological factors that largely determine both the gun and the nongun homicide rates in a state—indeed, these are highly positively correlated with each other.

¹⁶This implication has been pointed out by Kleck and Bordua (1981).

¹⁷"In the generality of cases, how likely is it that conduct such as that engaged in by the offender will lead to death?" (Zimring 1972, p. 114).

across jurisdictions and vary over time depending on the mix of circumstances, the quality of medical care, and so forth. Swersey (1980) presents an interesting case in point.

Swersey reports that the number of assaultive (as opposed to felony) gun homicides in Harlem increased from nineteen in 1968 to seventy in 1973, and then fell back to forty-six in 1974. Much of the change between 1968 and 1973 was due to an increase in intentional killings resulting from disputes involving narcotics activities. The importance of changes in the intent of violent perpetrators during this period is indicated by the fact that the death rate in gun attacks more than doubled between 1968 and 1973, then fell back in 1974. He shows that these changes reflect changes in murder—changes in intent to kill, rather than changes in the availability and quality of weapons and their spontaneous use. This conclusion is supported by observations on the circumstances and apparent motives of the murders.¹⁸ Swersey concludes that more than 80 percent of the rise and fall in Harlem homicides was due to changes in the number of deliberate murders. He finds a similar pattern for the rest of New York City.

Swersey's findings do not undermine Zimring's position. Zimring did not deny that some killings were unambiguously motivated, or that the importance of intent in murder was subject to change over time, or that intent might be more important in Harlem than in Chicago. In any event, Swersey's results are useful in documenting these possibilities.

Calculations from the FBI's supplemental homicide reports file confirm that death rates in gun assault often vary over time by enough to have a substantial effect on the overall homicide rate. Table 6 reports death rates from gun assault for selected cities. Atlanta and Detroit exhibit the most extreme fluctuations during the period 1965–75. The death rate drops in all of these cities between 1972 and 1975, which is interesting given the widely noted reductions in big-city homicide rates during this period.

My conclusions can be briefly stated. The likelihood of death from a serious assault is determined, *inter alia*, by the assailant's intent and the lethality of the weapon used. The type of weapon is especially important when the intent is ambiguous. The fraction of homicides that can be viewed as deliberate (unambiguously intended) varies over time and

¹⁸Swersey also notes several other indications of an increasing fraction of deliberate murders in the homicide statistics for New York City as a whole. During the 1970s, the clearance rate declined for homicide, as did the fraction of homicides occurring on the weekend and the fraction involving family members.

TABLE 6
 Percentage of Gun Assaults Resulting in Death,
 Selected Cities

City	1965	1970	1972	1975
Atlanta	15.8	22.4	15.1	7.4
Chicago	13.2	12.5	12.2	10.6
Cleveland	14.7	14.1	15.4	10.7
Detroit	8.4	17.4	18.4	13.6
New York	9.4	9.2	9.7	7.5
Philadelphia	15.2	13.4	11.9	10.0

Source: FBI Supplemental Homicide Reports (unpublished data file) and unpublished FBI data on assaults.

Note: The numerator of each entry is the number of gun murders and nonnegligent manslaughters, excluding felony or suspected felony-type murders. The denominators are the sum of this murder count and the number of aggravated assaults with guns reported to the police.

space but is probably fairly small as a rule. The fraction of gun assaults that result in the death of the victim is one indication of the relative prevalence of deliberate gun murders.

2. *Weapon dangerousness in robbery.* The principal role of a weapon in robbery is to aid the robber in coercing the victim (either by force or by threat) to part with his valuables. If the threat is sufficiently convincing, physical force is not necessary. For this reason it is hardly surprising that the use of force is closely related to the weapon type in robbery, being very common in unarmed robbery and relatively rare in gun robbery. Table 7 documents this pattern for both commercial and noncommercial robberies committed by adult males. As shown in this table, gun robberies are less likely than other armed robberies to involve physical violence, and furthermore are less likely to injure the victim.¹⁹ These patterns are compatible with the notion that violence plays an instrumental role in robbery—that it is employed when the robber believes it is needed to overcome or forestall victim resistance, and that this need is less likely to arise when the robber uses a gun.

There is evidence, however, that this “instrumental violence” pattern can account for only a fraction of the injuries and deaths that result from robbery (Cook 1980a). Three observations are relevant in this respect: first, more than two-thirds of the victims injured in noncommercial gun robberies do not resist in any way—even after the attack (Cook 1980a,

¹⁹Other sources on this pattern include Conklin (1972), Cook (1976), and Skogan (1978).

73 Gun Availability and Violent Crime

TABLE 7
Likelihood of Physical Attack and Injury in Robbery

	Gun ^a	Knife	Other Weapon	Unarmed
Noncommercial robbery^b				
Victim attacked	22.1%	39.4%	60.4%	73.5%
Victim required medical treatment ^c	7.2	10.9	15.5	11.1
Victim hospitalized overnight	2.0	2.6	2.7	1.6
<i>N</i>	892	841	1,060	1,259
Commercial robbery				
Victim required medical treatment	4.8%	10.8%	17.9%	5.1%
Victim hospitalized overnight	1.5	3.5	6.0	0.4
<i>N</i>	2,307	288	117	570

Source: National Crime Panel victimization surveys of twenty-six cities. This table is excerpted from Cook 1980a, table 2.

Note: All incidents included in this table involved at least one male robber age 18 or over. Entries in the table do not reflect the survey sampling weights (which differed widely among the twenty-six cities).

^aMany robberies involve more than one type of weapon. Incidents of that sort were classified according to the most lethal weapon used.

^bRobberies occurring on the street, in a vehicle, or near the victim's home.

^cOnly about one-third of the injured gun robbery victims were actually shot. Two-thirds of the injured knife robbery victims were stabbed.

p. 36); similarly, twenty out of thirty victims killed in gun robberies in Dade County, Florida, between 1974 and 1976 did not resist the robber (p. 29); second, the likelihood that the victim will be injured in an armed robbery is much higher if the robbery is committed by a gang of three or more than otherwise; since victims are *less* likely to offer resistance to a group of three or four robbers than to a lone robber, this result is clearly incompatible with the "instrumental violence" hypothesis; and, third, judging from rearrest statistics for a large cohort of adults arrested for robbery in Washington, D.C., it appears that robbers who injure their victims tend to be more violence-prone than other robbers (Cook and Nagin 1979, p. 39).²⁰ These findings are different aspects of an "excess violence" pattern: much of the violence in robbery is not "necessary," in the sense of being an instrumental response to anticipated or actual

²⁰The subset of the robbery arrest cohort that had injured their victims were less likely to be rearrested for robbery than the remainder of the cohort—but members of this subset were much more likely to be rearrested for assault and for murder.

resistance by the victim. Rather, it is motivated by objectives or impulses that have little to do with ensuring successful completion of the theft. In particular, street robberies committed by large groups (which typically have a low "take") are best viewed as a form of recreation, and the high incidence of gratuitous violence against victims may be just part of the fun.

Given these findings, it is useful to attempt a distinction between robbery with intent to injure or kill, and robbery without such intent (in which violence would be used only to overcome victim resistance). The latter form of robbery dominates the statistics—most victims are not in fact injured, and the likelihood of injury is less with guns than with other weapons. However, the more vicious strain of robbery, involving an intent to injure, apparently accounts for a high percentage of the serious injuries and deaths that do occur in the robbery context. Furthermore, the incidence of excess violence in robbery is subject to change over time, as Zimring (1977) demonstrated in his study of robbery murder in Detroit. He found a sharp discontinuity in 1972 in the fraction of victims killed in armed robbery: after ten years of stable weapon-specific death rates, this fraction doubled between 1971 and 1973 for gun robberies and increased even more during this period for other armed robberies.

Are gun robberies more dangerous than other armed robberies, in the sense of being more likely to result in the victim's death? Victims are killed in a higher fraction of gun robberies than others: based on victim survey and homicide data in eight cities, I calculated that there are 9.0 victim fatalities for every 1,000 gun robberies, compared with 1.7 victim fatalities per 1,000 nongun armed robberies (Cook 1980a, p. 39). Furthermore, it appears that the type of weapon plays an independent role in determining the likelihood of robbery murder; in a cross-section analysis of fifty cities, I found that the fraction of robberies resulting in the victim's death is closely related to the fraction of robberies that involve firearms (Cook 1979, p. 775).²¹ Thus the objective dangerousness pattern

²¹The regression equation is as follows:

$$\text{Robbery murders/1,000 robberies} = 1.52 + 5.68 \text{ Gun robberies/1,000 robberies.}$$

(1.16) (2.38)

A closely related result uses the per capita (rather than "per robbery") murder rate:

$$\text{Robbery murders/100,000} = -.284 + .907 \text{ Gun robberies/1,000} + .136$$

Nongun robberies/1,000.

(.232) (.089) (.072)

(Numbers in parentheses are the standard errors of the ordinary least-squares regression coefficients.) The data for fifty cities are 1975-76 averages.

The second question has an $R^2 = .82$, suggesting that robbery murder is very closely

applies to robbery as well as assault, for reasons that remain a bit obscure.

Why does the presence of a (loaded, authentic) gun in robbery increase the probability of the victim's death? My studies of robbery murder in Atlanta (Cook and Nagin 1979) and Dade County, Florida (Cook 1980a), indicated that in at least half of the cases the killing was deliberate: for example, the victim was tied and then executed or shot several times from close range. But insofar as intent could be ascertained from police reports, it appears that these intentional killings were not premeditated, but rather decided on during the course of the robbery. Perhaps the explanation for why these spontaneous decisions are more likely to occur when the robber is holding a gun is related to Wolfgang's (1958) suggestion: "the offender's physical repugnance to engaging in direct physical assault by cutting or stabbing his adversary, may mean that in the absence of a firearm no homicide occurs" (p. 79).

The principal testable hypothesis derived from the discussion above is this:

A reduction in gun availability will increase the robbery injury rate (Skogan 1978) but reduce the robbery murder rate.

The evidence also supports a normative proposition: given the excess violence pattern in robbery, the robbery cases in which the victim is injured should be allocated special emphasis in establishing criminal prosecution and sentencing priorities (Cook 1980a). In a high proportion of these crimes, the attack that caused the injury was not instrumental to the robbery, but rather was a distinct act. A relatively severe judicial response to such cases might act as a deterrent to excess violence in robbery.

3. *Coercion and assault.* Does the instrumental violence pattern in robbery have any parallel in assault? I suspect the answer is yes, but I know of no empirical evidence.

Some (unknown) fraction of assault cases are similar to robbery in that the assailant's objective is to coerce the victim's compliance—the assailant wants the victim to stop attacking him (physically or verbally), or stop dancing with his girl friend, or get off his favorite barstool, or turn down the stereo. And, as in the case of robbery, the probability of a

linked to robbery. Including the assaultive murder rate in this equation as an independent variable does not affect the other coefficients much—and the coefficient on the murder variable is not statistically significant. I conclude that robbery murder is more robbery than murder.

physical attack in such cases may be less if the assailant has a gun than otherwise, because the victim will be less inclined to ignore or resist a threat enforced by the display of a gun. (It may also be true that the assailant would be more hesitant to use a gun than another weapon to make good his threat.) If this reasoning is correct, it supports the following:

A general increase in gun availability will reduce the number of assault-related injuries.

B. *Conclusion*

Sections II–IV have described and labeled several patterns that have been discovered in the violent crime data. These patterns, interpreted in the context of what we know or suspect about the nature of violent encounters and the motives of criminals, suggest a number of hypotheses about the effects of a change in gun availability on the distribution, incidence, and seriousness of violent crime. While these hypotheses are plausible extrapolations from the data, our confidence in them would be increased if they were supported by direct evidence—observations on changes in gun use patterns associated with changes in gun availability. A few direct tests of this sort have been conducted, and the next section discusses some of these studies. They have all confronted the initial problem of developing a suitable operational definition of “availability.” Section V begins with an analysis of the alternatives in this regard.

V. Gun Availability

Casual discussions of gun availability usually begin and end with statistics on the number of guns (or handguns) in private hands. The numbers are impressive—perhaps 40 million handguns and as many as 100 million long guns. Nevertheless, guns are nowhere near as prevalent as, say, kitchen knives. Only a quarter of all households possess a handgun, and the prevalence of handguns is even less in urban areas, where most of the violent crime occurs. Most handguns are expensive,²² and someone seeking to obtain one may have to overcome or circumvent fairly substantial legal barriers. The point is that despite the vast arsenal of guns in private hands, guns remain a scarce commodity. This scarcity surely prevents some criminals from obtaining them or using them in violent

²²For example, among the cheapest of the popular handgun models is the Ruger Standard, which retailed at a suggested price of \$92 in 1980 (Cook 1982, table 3).

crime—why else would two-fifths of the criminal homicides and three-fifths of the reported robberies be committed with less effective weapons? Furthermore, it is reasonable to suppose that the terms on which guns are available to potential criminals vary over time and differ rather widely among jurisdictions at any point in time. These variations and differences in gun availability provide a potential basis for testing hypotheses concerning the effects of gun availability on violent crime patterns. The first problem in conducting such tests is to develop one or more statistical indicators of gun availability.

Defining “availability” for an individual is easier than defining this concept for a group. For any single individual, “availability” denotes the amount of money, effort, legal risk, and delay entailed in acquiring a gun. In economic terms, availability is the sum of money price and transactions cost: what Moore (1977) calls the “effective price.” Transactions costs are a more important consideration for guns than for other commodities because gun transactions are extensively regulated by law, and a number of important groups (youths, convicted felons, etc.) are legally prohibited from purchasing guns. Within a single jurisdiction, then, the effective price of obtaining a gun will range from near zero (for those who already possess a suitable gun) to some large number (for those who are legally proscribed from buying a gun and lack ready access to people who would be willing to lend or sell them one). The notion of availability when applied to an entire group denotes some sort of average of the effective prices for the individuals who make up the group. This average effective price is closely related to the prevalence of gun ownership. In areas where gun ownership is relatively widespread, individuals who “need” a gun for use in a violent crime are comparatively likely to own one or be able with relative ease to buy, borrow, or steal one from a friend or family member. Furthermore, prevalent gun ownership is likely to be associated with an active black or gray market supported by hand-to-hand transfers and guns stolen in burglaries (Moore 1981).

The prevalence of gun ownership is not the sole determinant of average effective price, however. Legal restrictions designed to discourage gun transfers to certain population subgroups, or to raise the money price of a gun through, for example, taxes or minimum quality requirements, may increase the average effective price associated with a given prevalence of gun ownership.

These indicators of gun availability—prevalence of gun ownership and stringency of legal restrictions on gun commerce—are discussed in detail in the next two sections.

A. *The Prevalence of Gun Ownership*

One rather surprising finding from national surveys is that the fraction of United States households owning guns has remained roughly constant for two decades. Gallup polls in 1959, 1965, 1966, and 1972 and the National Opinion Research Center (NORC) General Social Surveys in 1973, 1974, 1976, and 1977 all found that about half of United States households own at least one gun. This statistic differs a bit from poll to poll but shows no discernible trend over this twenty-year period. Reported *handgun* ownership rates increased slightly (from 12.6 percent in 1959 to 15.4 percent in 1972) in the Gallup polls; the NORC General Social Surveys find a higher, untrended rate of about 20 percent between 1973 and 1977.²³ Two large national surveys conducted in 1978 by Decision Making Information, Inc. (DMI) and Cambridge Reports, Inc., found virtually identical handgun ownership rates of 23 percent (DMI) and 24 percent (Cambridge Reports).²⁴ Reasonable conclusions from these polls are: (1) About half of United States households own guns, and this fraction has not changed much since 1958. (2) About half of the gun-owning households currently own handguns, and this fraction appears to have increased considerably since 1959. (3) The increase in the total stock of guns has been absorbed without an increase in the fraction of households that own guns by (a) an increase in the average number of guns per gun-owning household and (b) an increase in the number of households (Wright et al. 1981).²⁵

One implication of the survey-based estimates of the private gun inventory is that there are more than three guns for every gun-owning household. Table 8 summarizes the results of the DMI survey in 1978 on number of guns owned by the 47 percent of all households who reported they owned at least one gun. These data permit a rough estimate of the degree of ownership concentration. A conservative estimate²⁶ is that the top one-third of handgun-owning households (about 7.5 percent of all households) own more than 60 percent of all handguns; the top one-third of all long-gun-owning households (about 14 percent of all households) own more than 60 percent of all long-guns.

²³These results were provided by James Wright in private correspondence.

²⁴See Wright (1981) for a discussion of these two polls.

²⁵Wright et al. (1981) give evidence that some substantial portion of the increase in the handgun sales was the result of increased demand by local police departments.

²⁶I assume that household respondents that admit owning guns of the specified sort but refuse to say how many are distributed similarly to other households. I also assume that the average number of guns in the open-ended category is twelve. Both of these assumptions are highly conservative, in the sense that they probably lead to an underestimate of the degree of concentration in ownership.

TABLE 8
 Number of Guns Owned by Gun-Owning Households,
 1978

Number	Handguns	Rifles and Shotguns
None	46%	14%
One	30	29
Two	8	21
3-4	4	16
5-9	1	5
10+	1	2
Yes only	8	9
Refused	4	4

Source: "Attitudes of the American Electorate toward Gun Control 1978," by Decision Making Information, Inc., Santa Ana, California, as reported in James D. Wright, "Public Opinion and Gun Control: A Comparison of Results from Two Recent National Surveys" (University of Massachusetts, Amherst, 1979).

Another inference from the statistics in table 8 is that about three-quarters of the households that own handguns also own long guns. It seems likely, then, that much of the recent growth in handgun ownership has involved households that already owned rifles or shotguns.

In each of the years 1975 through 1979, the annual sum of handgun imports and domestic manufacture has been between 2.0 and 2.3 million units (Cook and Blose 1981). The total volume of import and manufacture for the past decade has exceeded the total volume for the preceding six decades combined (Wright et al. 1981), and there is ample reason to believe that the current volume is supporting a continuing buildup in the private inventory of handguns. However, the increase in the private inventory in any one year is substantially less than the number of units manufactured and imported. For example, approximately 2,224,000 handguns were manufactured or imported in 1975. Of these, fewer than 1,750,000 were sold to private (household and business) domestic buyers. Furthermore, these new additions to the private inventory were compensated for by the loss of more than 150,000 handguns to the police (i.e., handguns confiscated by the police and not returned) and probably larger (but unknown) numbers that were lost through normal attrition. There may also be a significant number of illegal (and hence uncounted) exports associated with the international trade in illegal drugs, in which handguns are sometimes the medium of exchange. My conclusion is that we lack the data necessary to develop

good estimates of year-to-year changes in the private inventory of handguns.

The incidence of firearms ownership is not uniform across society. Wright and Marston (1975) found that the fraction of households owning guns increased with income, decreased with city size, and was higher in the South than elsewhere. The same patterns are observed when the analysis is limited to handguns only. I (Cook 1979) analyzed regional patterns of ownership for residents of large cities, using NORC polls taken in the mid-1970s and found a range for handgun ownership from 5 percent for residents of large cities in New England and the Mid-Atlantic region up to 34 percent for residents of the Mountain region cities (Denver, Tucson, Phoenix). The southern region cities were relatively high—about 24 percent—and the Pacific and North Central cities low—about 13 percent. Similar regional patterns were also obtained for long-gun ownership by urban residents in these regions: only 10 percent of urban households in Boston and the Mid-Atlantic cities owned any type of firearm, compared with about half of urban households in the Mountain cities.

This brief review suggests that gun “availability,” in the sense of the extent of ownership, has not been increasing over the past twenty years. Handgun ownership has become more widespread over this period, however. The private inventory of firearms is perhaps as high as 140 million, but this inventory is highly concentrated in the relatively small fraction of households that own three or more guns. Finally, gun “availability” differs widely across regions and by-city size.

These results are interesting as a global overview of gun availability patterns, but they lack the detail and precision needed for statistical analysis of the relation between gun availability and violent crime patterns. Several researchers have attempted to develop statistical proxies for gun availability, which, unlike manufacturing or survey data, can be measured for a number of jurisdictions. Of these, the only validated proxy measure is that developed in Cook (1979).

In constructing this index, I first calculated the gun fractions for suicide and assaultive homicide for each of fifty large cities, combining 1973 and 1974 data for each. The distributions of suicides and murderers differ from each other rather dramatically in terms of race, age, socioeconomic status, and so forth, and of course the immediate circumstances in which these acts occur are very different. Nevertheless, the gun fractions for suicide and assaultive homicide are highly correlated across these fifty cities (.82), suggesting that environmental determinants

81 Gun Availability and Violent Crime

of weapon choice for both types of violent acts are similar. I assumed that the underlying environmental determinant was gun availability (prevalence of ownership) and constructed an index of gun availability by averaging these two fractions in each city. The validity of this index was tested by the following technique: the fifty cities were divided into eight regional subsets and an “urban regional index” was constructed by combining the indexes for each city. This urban regional index was then compared with the fraction of urban households in each region that reported owning a gun in three of the recent NORC General Social Surveys (three surveys were combined to achieve sufficiently large sample sizes).²⁷ My index proved completely compatible with the survey results.

This index was then used as a measure of gun availability in a regression analysis of robbery rates.²⁸ Controlling for other variables important in explaining intercity differences in robbery, the principal results were as follows: (1) a 10 percent reduction in the number of handguns in a city is associated with about a 5 percent reduction in the robbery rate; (2) the overall robbery rate is not discernibly influenced by gun availability in a city; and (3) a 10 percent reduction in the number of handguns in a city is associated with about a 4 percent reduction in the number of robbery murders. Thus gun density influences weapon choice in robbery but not the overall robbery rate. Weapon choice is important because it influences the likelihood that a robbery victim will be killed. These results are compatible with the discussion in sections II–IV and tend to confirm two of the hypotheses stated there.²⁹

B. Regulation of Handgun Commerce

Restrictions on handgun transfers have become more stringent in some states and cities since the mid-1960s. The overall effective price of a handgun may have increased in these jurisdictions as a result.

The federal Gun Control Act of 1968 imposed a national ban on mail-order purchases of firearms except by federally licensed dealers, and it restricted interstate commerce in other ways as well. The intended effect of these regulations was to insulate the states from each other, so

²⁷Survey-based estimates of this sort are not strictly valid, since the sampling frame is not constructed to produce representative samples in these regional city clusters.

²⁸This index has also been used by Moore (1980) and by Sherman (private communication). Sherman finds a high correlation between this measure of gun availability and the number of police killed in a city.

²⁹A number of other proxies for gun availability that have appeared in the literature are summarized and analyzed in Cook (1982).

that the stringent regulations on firearms commerce adopted in some states would not be undercut by the greater availability of guns in other states.

A number of states have adopted significant restrictions on commerce in firearms, especially handguns. About half the states, including two-thirds of the United States population, currently require that handgun buyers obtain a permit or license (or at least send an application to the police) before taking possession of the gun (Cook and Blose 1981). In most of these states, the objective of the permit or application system is to prevent felons and other undesirables from obtaining handguns without infringing substantially on the majority's ability to purchase and possess them. These state systems differ with respect to the fee, the waiting period, the involvement of state (as opposed to local) agencies, the thoroughness of the criminal record check, and so forth. Perhaps more important in practice are differences among states with respect to law enforcement efforts aimed at plugging the inevitable "leaks" between the entitled and proscribed sectors: thefts, black-market sales, illegal sales by licensed dealers, and so forth. A transfer system that appears stringent on paper may be quite lax in practice if law enforcement officials view enforcement activities in this area as being of low priority.

All but a few state transfer control systems are "permissive," in the sense that most people are legally entitled to be issued a permit and obtain a handgun. In a few jurisdictions, however—New York, Boston, Washington, D.C.—it is very difficult to obtain a handgun legally. Washington, D.C., is the most restrictive jurisdiction in this respect; only law enforcement officers and security guards are legally entitled to obtain handguns there under current law (Jones 1981).

The effect of a transfer control system is to increase the effective price of a legally purchased handgun by requiring a permit fee, a waiting period, or both, and by requiring applicants to do some paperwork and submit to a criminal record check. A number of states and cities adopted or strengthened requirements of this sort during the 1970s. A transfer control system may discourage some people from purchasing handguns and motivate others to evade the transfer regulations by purchasing from nondealers. (Transfer requirements usually apply to purchases from nondealers but are very difficult to enforce for such transactions.) While it is certainly possible to evade transfer requirements and the costs thereof, purchase from a nondealer may be costly in other ways—nondealer sources are typically less reliable and less accessible than dealers.

Major changes in gun regulations, or in the effort devoted to enforcing such regulations, are “natural experiments” that may be analyzed for evidence concerning the effect of gun availability on violent crime patterns. Such changes can be evaluated even in the absence of a valid measure of gun availability: if introducing a stringent restriction on gun sales results in a reduction in the gun robbery rate, then it can be assumed that the effect was transmitted through a reduction in gun availability, even if there is no direct statistical evidence on availability. A case in point is Operation DC, a short-lived experiment by the Bureau of Alcohol, Tobacco, and Firearms (BATF) to interdict the illegal flow of firearms into the District of Columbia. BATF enforcement staff in the District was increased from seven to between thirty-five and fifty special agents for the first six months of 1970. According to Zimring (1975), the gun murder rate dropped significantly during this period and rebounded thereafter, while the nongun murder rate remained roughly constant throughout. This result is highly supportive of the claim that gun availability is sensitive to law enforcement efforts, and further, that gun availability influences the gun murder rate and the overall murder rate. However, this picture is clouded somewhat by the fact that the gun assault pattern shows no corresponding pattern during the period when Operation DC was in effect.

Other important innovations in gun regulation that have been evaluated include the Gun Control Act of 1968 (Zimring 1975) and Massachusetts’ Bartley-Fox Amendment (Pierce and Bowers 1981; Deutsch and Alt 1977).

C. *Conclusion*

A major stumbling block in testing the effect of gun availability on violent crime patterns is developing an operational measure of gun availability that can be implemented from existing data. Several proxies for gun availability have been utilized by researchers, but only one meets normal standards for measurement validity—and that only for cross-sectional comparisons. It is possible to circumvent this measurement problem by taking advantage of “natural experiments”—policy innovations that are designed to change gun availability. Any observed changes in violent crime patterns resulting from the policy innovation can then be attributed to the resulting change in gun availability. Several published evaluations of major policy innovations support the hypotheses developed in preceding sections, although the evidence is not conclusive for any one of these changes in law or enforcement policy.

VI. Notes on a Research Agenda

It is my impression that social scientists tend to ignore each other's suggestions for future research unless they are funded and come in the form of a request for proposals. Rather than suggest specific research projects, my objective in this review has been to demonstrate that the technology of violent crime is an interesting and important topic—a topic that is eminently researchable and yet has been largely neglected by social scientists qua scientists. The choice of weapon by the assailant in a violent criminal encounter is not just an incidental aspect of this encounter, but may be every bit as important in shaping the encounter and determining the outcome as the underlying motivation and state of mind of the assailant, the relation between assailant and victim, the location of the attack, and so forth. More generally, the extent to which firearms are available to violent criminals may have a profound influence on the nature and seriousness of violent crime. I submit the following list of propositions as a credible summary of the likely effects of gun availability on violent crime:

- Gun availability does not have much effect on the rates of robbery and aggravated assault, but it does have a direct effect on the fractions of such crimes that involve guns.
- Since gun attacks are intrinsically more deadly than attacks with other weapons, gun availability is directly related to the homicide rate.
- Increased gun availability promotes a relative increase in robberies and homicidal attacks on relatively invulnerable targets.

There is some evidence available supporting these propositions, which I have reviewed above. More work is needed.

If funding were available for research in this general area, I would recommend that highest priority be given to three types of projects:

1. Analysis of the victim survey and homicide data to determine if the crime of rape is characterized by the same weapon-related patterns as robbery (e.g. the vulnerability, objective dangerousness, and instrumental violence patterns).
2. Fine-grained evaluations of the effect of gun regulations.
3. Interviews with violent criminals to gain greater insights into the notion of gun availability:

- Where and how do criminals obtain guns? How do state and local ordinances affect the distribution of sources of guns?

- Do violent criminals who use other weapons have ready access to guns? If so, why do they not use them? In particular, why are fewer than half of all robberies committed with guns?
- Why are handguns used in such a high percentage of gun-related crime, given that long guns are more widely available and generally more effective?
- What is the mix of motives that results in the decision of many criminals to carry a gun?

This is enough of a “shopping list,” given the current austerity of funding for criminal justice research.

I have not emphasized the policy relevance of research in this area, in part because I thought it was important to stress that the role of weapons in violent crime should be of as much interest to criminologists as to policy analysts and polemicists. Ultimately, however, the policy implications cannot be ignored. It is not too far-fetched to hope that the accumulation of knowledge in this area will encourage the adoption of wiser and more effective policies.

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89 Gun Availability and Violent Crime

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EXHIBIT 2

Gary Kleck

**POINT
BLANK**

**Guns and Violence
in America**



ALDINE TRANSACTION
A Division of Transaction Publishers
New Brunswick (U.S.A.) and London (U.K.)



*To my wife Diane and my children Matthew and Tessa
To my parents, William and Joyce Kleck
and to my mentor, David Bordua*

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CHAPTER

5

Guns and Violent Crime

Several facts about violent crime in America are indisputable. The United States has a high level of violence, it has a large number of guns, and a very high share of its homicides are committed with guns. Further, relative to other industrialized nations, the United States has more violence, more guns per capita, and a higher fraction of its violent acts committed with guns. From these simple facts, some draw a simple conclusion: America's higher level of gun ownership causes its higher rate of violence (for an example of this reasoning, see Sloan et al. 1990). This conclusion is a non sequitur. Even if 100% of violent acts were committed with guns, it would be a logical possibility that every single gun death and crime would have occurred by other means even if there were no guns, and that high gun ownership levels had no impact on violence rates. Further, it is possible that there is a causal connection between the two, but that it is high violence rates that cause high gun ownership levels, rather than the reverse.

Whether guns in some sense cause violence cannot be inferred from these facts; this inference requires more complicated analysis of a considerably larger set of facts. Two approaches to the question are used here, one at the level of individual incidents of violence and the other at the level of city rates of violent crime. Two questions are addressed. First, are incidents of violence in which the aggressor possesses a gun more likely than otherwise similar incidents to result in an attack on the victim, injury to the victim, or the victim's death? Second, do areas with higher rates of gun ownership have, as a result, higher rates of violence? It should be emphasized that this chapter addresses the effects of the aggressor's possession and use of weapons on the outcomes of violent incidents and on rates of violence; the effects of the victim's possession or use were addressed in the last chapter.

Guns and Power

Individual power has primarily been conceptualized by social scientists as deriving from lasting attributes of persons and from their position in the social structure, e.g., from social class position, gender, age, and race (e.g., Wrong 1988, Chapters 6–8). For example, in the family violence literature (e.g., Strauss et al. 1980), power is typically viewed as deriving from family role and gender. All of these sources of power, however, ultimately derive to some extent from a capacity to use physical force and violence, either exercised by the actor or by agents the actor can call upon. And capacity to use force in turn often relies partly on a rather transitory attribute of the person, the possession of weaponry.

Indeed, the single most important factor that sets human violence apart from aggression among lower animals is arguably man's greater technological capacity to inflict harm. The tools of death available to humans are vastly more lethal than even the most deadly natural equipment of animals. Whereas interpersonal conflict of some sort is inevitable and universal, it may be factors such as use of weaponry that determine whether verbal conflict escalates to violence, whether physical attacks are completed by reaching their target, and whether they inflict serious injury or death when they do.

The power that weaponry confers has been conventionally treated as exclusively violence-enhancing—it was commonly assumed that weapon possession and use act only to increase the likelihood of the victim's injury and death (e.g., Newton and Zimring 1969). This is an unduly restrictive conceptualization of the significance of weaponry. A broader perspective starts with a recognition of weapons as sources of power, used instrumentally to achieve goals by inducing compliance with the user's demands. The ultimate goal behind an act of violence is not necessarily the victim's death or injury, but rather may be money, sexual gratification, respect, attention, or the humiliation and domination of the victim. Power can be, and usually is, wielded so as to obtain these things without inflicting injury. Threats, implied or overt, usually suffice and are often preferred to physical attack. The inflicting of injury may even be an indication that the preferred mode of exercising power failed.

Weapons are an important source of power, especially so in a nation such as the United States, where half of the households possess a gun. As such, they are frequently wielded to achieve some emotional or material goal—to obtain sexual gratification in a rape or money in a robbery, or, more frequently, to frighten and dominate victims in some

other assault. All of these things can be gained without an attack, and indeed the possession of a gun can serve as a substitute for attack, rather than its vehicle.

Issues of Assault Outcomes

Violent crimes occur within hostile or threatening situations, which can be categorized into the "hierarchy of violence" illustrated in Figure 5.1. A "threatening situation" is an encounter in which one person (the "victim") is either physically attacked or perceives that another person

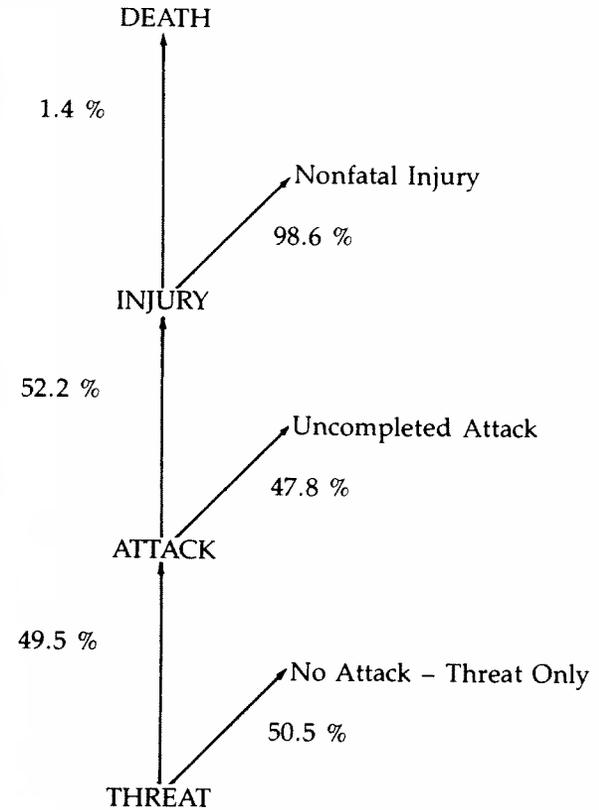


Figure 5.1. The hierarchy of violence. Percentages are weighted. Those below INJURY are from the 1979–1985 NCS stranger violent incident sample. Those above INJURY are from the merged 1982 NCS and SHR dataset.

(the "aggressor") is threatening them with physical harm in some way, including verbal threats, menacing gestures, or other actions. Most threatening situations never proceed beyond mere threat. Aggressors obtain what they want from a threatening speech or gesture, or limit their aggression to words out of fear of the consequences of doing more. (In the common law, to threaten to hurt another person is assault, regardless of whether any actual attempt to physically injure is made.)

In the 1979–1985 National Crime Surveys (NCS), half of assaults were mere threats, without any attack. And of those assaults involving an attack, only about half were completed, i.e., resulted in an injury. Finally, based on combined NCS and FBI Supplementary Homicide Reports (SHR) data for 1983, only about 1% of those attacks that caused injury resulted in death. Each of these possible outcomes of threats is separately addressed, with subsequent sections assessing the impact of weaponry on attack, injury, given that an attack occurred, and death, given that an injury was inflicted.

Attack

An attack could be the throwing of a punch, swinging of a club, thrusting of a knife, or firing of a gun. Does possession of guns or various other common weapons encourage or discourage attack? The principal possible effects of weapons on attack are conceptualized as facilitation, triggering, inhibition, and redundancy.

Facilitation

An Old West saying asserted that "God created men—Colonel Colt made them equal," or alternatively, "Colonel Colt made all men six feet tall." Just as a gun can serve as an "equalizer" for victims of attacks (Chapter 4), it can do the same for aggressors. It has long been argued that firearms give some people the courage to attempt aggressive acts they would otherwise be afraid to attempt. In particular, a weapon may be especially important in facilitating the aggression of weaker aggressors against stronger victims.

There is some empirical support for this argument. For example, Cook (1982, p. 257) used police data from 50 cities to show that guns are more commonly used in homicides in which the attacker was older and presumably weaker, and the victim younger and presumably stronger. Likewise, wives or girlfriends killing their husbands or boyfriends were

more likely to use guns. Table 5.1 furthers this analysis by using national data and examining three different measures of attacker–victim power differentials. The data indicate that gun use in homicides is more common when (1) the victim is male rather than female, (2) the victim is male and the attacker is female, compared to the reverse situation, (3) the attacker is outside the "physical prime" ages of 16–39, compared to other ages, (4) the attacker is outside the "prime" age span and the victim is in that age span, compared to the reverse situation, (5) there is a single attacker, compared to a group of attackers, and (6) there is a single attacker and multiple victims, compared to the reverse situation. In each of these comparisons, gun use was more likely when the attacker(s), if not armed with a gun, would usually be less powerful than the victim, due to gender, age, or numbers. These findings do not conclusively prove that guns facilitate attacks that would not otherwise have occurred. It is possible that the minority of attackers who choose guns are so strongly motivated that, although they would prefer to use a gun, they would still attack without a gun, even with the odds against them. Nevertheless, the results are quite consistent with the equalizer hypothesis.

Unlike other common personal weapons, guns permit effective attack from a great distance. As one gun control advocate put it, "a gun may not be necessary to kill another, but at fifty yards it's certainly a help." Guns therefore can facilitate long-range attacks. However, few assaults occur at ranges longer than the length of the average barroom or kitchen. Studies of general samples of gun attacks do not report ranges, but inferences can be made from attack locations. In a 17-city study of crimes known to police, 61% of criminal homicides and 49% of aggravated assaults (with or without guns) occurred in indoor locations (Curtis 1974, p. 176). Given the dimensions of most rooms, virtually all of these must have involved ranges no greater than 20–30 feet.

Information on attack ranges is available for a near-complete national sample of one special type of gun attack. FBI data on the gunshot killings of 960 police officers killed in 1970–1987 indicated that 72% of the attacks involved a range of 10 feet or less, and 87% a range of 20 feet or less (U.S. FBI 1971–1988; e.g., the 1984 issue, p. 14). Generally speaking, then, gun attacks usually occur at ranges short enough that other weapons could have been used had the attacker been willing to close the distance and make physical contact with the victim.

However, for some attackers, maintaining a distance of just a few feet or even inches from their victim may be essential to carrying out an attack. It has been hypothesized that guns may facilitate attack by per-

sons too squeamish to come into physical contact with their victims or to use messier methods to injure them (Wolfgang 1958, p. 79). Some prospective attackers may be psychologically incapable of doing something as distasteful and ugly as plunging a knife into another human being's chest cavity or bashing in their skull with a blunt instrument, yet are perfectly capable of shooting their victim. Guns provide a more impersonal, emotionally remote, and even antiseptic way of attacking others and could allow some attackers to bypass their inhibitions against close contact with their victims. There is some experimental evidence that people are less willing to inflict pain on others if it requires physical contact with the victim (Bandura 1973, p. 177). However, these acts of laboratory aggression were done on the orders of experimenters and directed at "victims" against whom the subjects had no serious grievances. Whether the phenomenon can be generalized to serious real-world violence, and how many attackers need a gun for this psychological facilitation, are both unknown.

Triggering

Experimental psychologists Berkowitz and LePage (1967) proposed the "weapons effect" hypothesis, which stated that the sight of a weapon could elicit aggression from angered persons, due to the learned association between weapons and aggressive behavior. Thus, they believed that weapons can trigger attacks by angry persons. The "weapons effect" studies all used experimental designs and most were conducted in laboratories. In a typical study, subjects (Ss) were led to believe they were participating in some sort of learning experiment in which they supposedly administered painful electric shocks to another S each time this person failed to respond properly. Some Ss were exposed to weapons, others were not. Experimenters tested to see if Ss exposed to weapons aggressed more than the controls.

There were many variations on this basic pattern. Some researchers conducted experiments in natural settings. In one especially imaginative study conducted by Turner and his associates (1975), a confederate of the experimenters intentionally stopped a pickup truck at an intersection and refused to move when the light turned green, even though it was clear he was capable of doing so. The Ss were the drivers stuck behind the truck and their aggression was measured by whether they honked their horns. The experimental stimulus was whether or not the truck had a rifle in a gun rack visible to Ss.

Table 5.2 summarizes the results of 21 studies of the "weapons effect" hypothesis, emphasizing the way in which findings relate to how real-

istic the conditions of the experiments were. Overall, the findings are extremely mixed—studies have been almost evenly divided between those that were supportive and those that were unsupportive. The degree of realism of the experiments, and their relevance to real-world conditions of weapons-linked violence in the United States, varied widely, and this appears to have influenced the results. For example, whereas some studies exposed Ss to real weapons, others exposed them only to toy weapons or pictures or films of weapons. In some studies Ss believed they were inflicting physical pain in the form of electric shocks to another person, whereas in others they engaged in play "aggression," honked car horns, or were merely asked how much aggression they would *like* to inflict on the target. Some studies used adults and adolescents as Ss, i.e., persons in age groups likely to commit serious acts of violence and to be exposed to guns in an aggressive context. Others used children. Some studies were conducted in the United States, where both gun ownership and gun violence are common, whereas others were conducted in foreign nations where both are rare. The general pattern of findings, summarized in Part B of Table 5.2, is that the more closely the experiments simulated real-world situations of weapons-linked aggression in the United States, the less likely they were to support the weapons hypothesis. Supportive findings seem to be heavily dependent on various artificial experimental conditions prevailing.

Nevertheless, there were a few moderately realistic studies that yielded some support for the "weapons effect" hypothesis, and several substantive findings from this literature are worth noting. First, some studies indicated that weapons elicited aggression only if Ss assigned an aggressive meaning to them. For example, in the pick-up truck experiment, the gun was sometimes paired with a bumper sticker that read "vengeance," and at other times with one that read "friend." The sight of the gun elicited more horn-honking only when paired with the violent meaning (Turner et al. 1975). Other scholars interpreted a failure to discover a weapons effects to the rural setting of their study—where hunting was common, more positive meanings were attributed to guns, reducing their aggressive cue value (Halderman and Jackson 1979).

Second, some studies found that guns could inhibit aggression among some subjects, as well as elicit it. Fisher et al. (1969) found inhibiting effects for women. Turner et al. (1975) found inhibiting effects for both men and women under a variety of conditions. Fraczek and Macaulay (1971) found inhibiting effects for highly emotional Ss, speculating that such persons had learned to be especially fearful of the consequences of their aggression.

One study found the "weapons effect" occurred only among people

who had no prior experience with guns (Buss et al. 1972). This is especially important for a number of reasons. First, the Ss in most of these studies were college students, commonly in psychology classes. College students and college-educated persons are less likely to own guns, and therefore less likely to have real-world contact with them (see Table 2.5). Thus, the unrepresentative nature of the student subject pool may have artificially increased support for the hypothesis.

This finding also helps explain another pattern evident in Table 5.2—studies with foreign Ss were much more likely to support the hypothesis than those with U.S. Ss. There is little tradition of recreational ownership and use of guns among the mass of Europeans, and far less gun ownership of any kind than in the United States.

The findings can be tied together to provide a straightforward explanation for these patterns. The “weapons effect” has been detected only among people with no prior experience with guns. Persons with direct experience have gained it largely in nonaggressive, recreational contexts. Persons without such experience know guns only through the aggression-laden contexts of military service or gunplay in television and films. Members of the inexperienced group, which would include most children, college psychology students, and Europeans, are therefore more likely to attribute an aggressive meaning to guns, which apparently is essential for the “weapons effect” to occur.

The relevance of this body of research to real-life gun violence is further cast in doubt by the fact that the weapons to which Ss were exposed were either associated with the victims of the aggression, or with no one at all; they were almost never associated with the S whose aggression was being assessed. In the only study that actually associated a weapon with Ss, no weapons effect was observed [Buss et al. (1972) had some Ss fire a BB gun before being assessed for aggression]. Consequently, none of the studies provided any evidence directly supporting the idea that possessing a gun encourages physical aggression, or that the “trigger pulls the finger.”

At best, some of the studies inadvertently concerned the effect of gun possession by *victims* of aggression on the behavior of aggressors. The analysis of victim survey data in Chapter 4 indicated that aggressor attack was *less* likely when the victim used a gun in self-defense. How can the conflict between real-world experience and the findings of half of the experimental studies be reconciled? One way would be to hypothesize that the sight of a gun in the possession of a prospective target of aggression increases the aggressor’s aggressive *arousal*, i.e., it stimulates anger, but that it inhibits actual physical attack because the would-be

aggressor fears a dangerous counterattack by the victim. Since no such counterattack was likely in the experiments, aggressors were free to act on their aggressive impulses in a way that would be unlikely in real life.

Inhibition

In an early study of victim survey data from eight cities, Hindelang (1976, p. 263) concluded that “when a gun is involved in a victimization, both the victim and the offender appear to be more restrained and interested in avoiding an attack with the weapon.” Thus, not only does victim defensive use of a gun inhibit aggressor attacks (Chapter 4), but even the aggressor’s possession of a gun can inhibit his own aggression, as well as that of his victim. In many assaults the aggressor not only lacks an intent to kill, but specifically wants to *avoid* killing his victim. Instead, he may want only to frighten or to hurt without killing. Possession of a lethal weapon gives such an assaulter more killing power than he needs or wants, and to attack would risk inflicting more harm than the assaulter wanted. The possession of deadly weapons raises the stakes into what may seem to be an all-or-nothing situation—kill or do not attack at all. Assuming the intentions of assaulters as a group cluster predominantly at the less deadly end of the continuum, one effect of aggressor possession of guns and other deadly weapons could therefore be inhibition of attack behavior. As previously noted, a number of “weapons effect” experiments indicated that the sight of weapons could inhibit aggression under some conditions.

Redundancy

A deadly weapon empowers its possessor to terrify, coerce compliance with demands, deter another’s aggression, nonfatally injure, or kill. Power increases the likelihood its user will get what he wants, whatever that may be. If most assaulters do not want to kill, then a lethal weapon enables its user to achieve other goals. In robberies, the robber’s use of a gun ensures compliance with his demands for money and deters the victim from resisting, convincing the victim that the robber has the capacity to inflict death or serious injury (Luckenbill 1982). Without a gun it would often be impossible for the robber to achieve this without actually attacking. Threat with a gun can thereby serve as a substitute for actual attack, rather than its vehicle. In short, possession of a gun can make a physical attack *unnecessary*. Supporting this idea, at least nine prior studies found that robbers armed with guns are less likely to injure their victims than robbers without guns (Normandeau

who had no prior experience with guns (Buss et al. 1972). This is especially important for a number of reasons. First, the Ss in most of these studies were college students, commonly in psychology classes. College students and college-educated persons are less likely to own guns, and therefore less likely to have real-world contact with them (see Table 2.5). Thus, the unrepresentative nature of the student subject pool may have artificially increased support for the hypothesis.

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A deadly weapon empowers its possessor to terrify, coerce compliance with demands, deter another’s aggression, nonfatally injure, or kill. Power increases the likelihood its user will get what he wants, whatever that may be. If most assaulters do not want to kill, then a lethal weapon enables its user to achieve other goals. In robberies, the robber’s use of a gun ensures compliance with his demands for money and deters the victim from resisting, convincing the victim that the robber has the capacity to inflict death or serious injury (Luckenbill 1982). Without a gun it would often be impossible for the robber to achieve this without actually attacking. Threat with a gun can thereby serve as a substitute for actual attack, rather than its vehicle. In short, possession of a gun can make a physical attack *unnecessary*. Supporting this idea, at least nine prior studies found that robbers armed with guns are less likely to injure their victims than robbers without guns (Normandeau

1968; Conklin 1972; Feeney and Weir 1973; MacDonald 1975, p. 138; Hindelang 1976, p. 213; Block 1977; Cook and Nagin 1979, p. 35; Luckenbill 1981; U.S. Bureau of Justice Statistics 1986b).

This pattern need not be limited to acquisitive crime such as robbery. Aggressors in ordinary anger-instigated assaults have their own peculiar goals whose attainment can, if they have a weapon, be achieved without attacking. Those who want to frighten, humiliate, or dominate their victims can do so by merely pointing a gun, without firing it. On the other hand, without a gun, nothing short of attack may suffice. The same qualities of weapons that make them dangerous if used to attack can preclude the necessity of actually doing so. Simple percentage analysis of early National Crime Survey (NCS) victimization survey data indicated that the fraction of assaults resulting in attack and the fraction resulting in injury were both lower in those involving gun-armed offenders than for those with either offenders armed with other weapons or unarmed offenders (Hindelang 1976; U.S. Bureau of Justice Statistics 1986b, p. 4). Likewise, King (1987), using analysis of variance on later NCS data, also found lower rates of injury for gun-armed offenders in assault as well as robbery.

A combatant may also regain a favorable situational identity through the use of a weapon to control others and to compel their unwilling obedience. He can demonstrate to his victim, to himself, and to any bystanders that he cannot be pushed around, and that he must be granted respect, or at least fear. The weapon can be used to place its possessor into a superordinate position in situations in which this might otherwise be impossible to achieve without an actual attack.

One combatant's use of a lethal weapon may also give his opponent a socially acceptable excuse for not retaliating for an insult or other challenge to his self-image: "only a fool attacks someone with a gun." The failure to retaliate, which might otherwise be regarded by witnesses as evidence of cowardice, is instead viewed as mere prudence in the face of greatly unequal power. The extreme imbalance of power can thus prevent an escalation to physical violence by exacting from the weaker opponent some gesture of deference or an exit from the scene.

Injury

If an attack does occur, it may or may not be completed, i.e., result in injury by a bullet reaching its target, a knife penetrating skin, or a fist or club bruising flesh or smashing bone. The attributes of weapons that can

facilitate attack may also reduce the attack completion rate by encouraging attacks at a longer range, against more formidable opponents or under more difficult conditions. It is possible to shoot a victim from a great distance, but the rate at which this is achieved is likely to be far lower than the rate at which thrown punches land. Concerning the more common close range gun attacks, those unfamiliar with firearms marksmanship might assume that shooters are virtually certain to hit their target. This assumption is not born out by the real-life experiences of persons shooting under conditions of emotional stress. NCS data covering the United States from 1979 to 1987 indicate that only 19% of incidents where an attacker shot at a victim resulted in the victim being hit, i.e., suffering a gunshot wound (U.S. Bureau of Justice Statistics 1990a, p. 5). In contrast, corresponding data on NCS-reported knife attacks indicated that about 55% resulted in a knife wound [U.S. Bureau of Justice Statistics 1986b, p. 4; 9.8% of knife attacks involved a knife wound, while another 7.9% involved an attempted knife attack without injury— $9.8/(9.8 + 7.9) = 0.55$].

Even individuals trained and presumably mentally prepared to shoot under stressful conditions, such as police officers, commonly have difficulty hitting their targets. A study of shots fired by New York City police officers, who unambiguously intended to shoot their adversaries (warning shots were excluded), found that of 2303 shots fired "in defense of life" or to "prevent or terminate crime," only 39% wounded the opponent (computed from Fyfe 1979, pp. 318, 320). One would expect this rate to be even lower among the mass of civilians lacking the training and relative emotional preparedness of police officers, and the NCS data supported this expectation. Thus, there is reason to expect that the net effect of gun use would be to decrease the fraction of attacks resulting in injury.

Death

Only about one in seven gunshot woundings known to the police results in death (Cook 1985, p. 96). Because many minor nonfatal gunshot woundings never come to the attention of authorities, the true death rate is almost certainly lower than this. Most gunshot wound victims probably do not seek medical treatment. Even among those willing to report such incidents to the NCS, only half reported receiving any kind of medical treatment (U.S. Bureau of Justice Statistics 1986b, p. 5). Since unreported crime incidents tend to be either less serious or

regarded by victims as private or embarrassing matters, the fraction of unreported gunshot woundings that resulted in medical treatment is probably even lower than half. Consequently, large numbers (probably a majority) of nonfatal gunshot wounds never result in medical treatment and consequently never come to the attention of either doctors or the police. This results in overstated fatality rates in gunshot woundings. Cook's review of the evidence suggested that about 15% of gunshot woundings known to police result in death. If it is assumed that only half of nonfatal woundings (and all fatal woundings) are reported or known to police, the true fatality rate would be about 8% (based on a doubling of nonfatal woundings counted).

Nevertheless, gunshot wounds are more likely to result in death than those inflicted by a knife, the weapon generally assumed to be the next most lethal, among those that could be used in the same circumstances as guns. Although widely cited data from a single city indicated the gun attack death rate to be five times that of knife attacks (Zimring 1968, p. 728), other police-based and medical studies limited to woundings indicate a ratio of gun and knife wounding death rates of about 3-1 or 4-1 (Wilson and Sherman 1961, pp. 640-2; Ryzoff et al. 1966, p. 652; Block 1977). Further, figures in Table 5.3, based on national homicide data and NCS-based estimates of nonfatal woundings, also support a 4-1 ratio.

In Chapter 3, it was fairly simple conceptually to compare long guns with handguns, especially rifles with handguns. Both categories of weapons produce injury in very similar ways—by propelling small objects at high velocity. Likewise, Zimring's (1972) comparisons of smaller caliber guns with higher caliber guns, despite some empirical problems, was understandable at a conceptual level. On the other hand, knives (or clubs, hands, feet, etc.) produce injury in ways very different from guns. It is harder to get a handle on what people mean when they say guns are more lethal than knives, since this is very much an "apples and oranges" comparison. Cook (1982, p. 249) describes the "objective dangerousness pattern" to define what he means by gun-knife lethality differences, stating that "Gun attacks have a higher probability of killing the victim than knife attacks in otherwise similar circumstances." However, this defines lethality or "objective dangerousness" in a somewhat circular way—we want to know how weapon lethality affects assault outcomes, yet Cook uses assault outcome to define weapon lethality. The definition also does not explain *why* guns should more often produce lethal outcomes. It is not self-evident, from the point of view of either physics or medicine, that very small fast-moving objects such as bullets should produce more serious injury than much larger but slower-moving

objects such as knives. Finally, it is not in fact known that gun attacks have a higher probability of killing the victim *in otherwise similar circumstances*, since the available evidence indicates that gun and knife attacks rarely occur in genuinely "similar circumstances," thus affording few opportunities for making the necessary comparisons in any direct or simple way.

Zimring (1968) compared a set of handgun attacks with a heterogeneous sample of attacks involving a miscellany of stabbing and cutting instruments, finding that the fatality rate was five times higher in the latter sample than in the former. However, as Kates (1979b, p. 18) and Wright and his colleagues (1983, p. 199) have pointed out, Zimring was lumping presumably serious attacks using heavy, long-bladed knives in with fairly trivial cases of people scratched with pen knives and possibly even forks and beer can openers! It would be far-fetched to suppose that people who attack with a fork are, on average, comparable in motives, intentions, or strength of aggressive drive with people who shoot others with a handgun.

Wright et al. (1983) argued that a more informative comparison would have been between handgun attacks and just those "knife" attacks committed with long-bladed cutting instruments. As it happened, such research had already been done, long before Zimring's work. At least one medical study compared very similar sets of wounds (all were "penetrating wounds of the abdomen"), and found that the mortality rate in pistol wounds was 16.8%, while the rate was 14.3% for ice pick wounds and 13.3% for butcher knife wounds (Wilson and Sherman 1961, p. 643). This is far from Zimring's 5-1 ratio, yet is based on a study that met Cook's "similar circumstances" condition far better than the work by Zimring on which Cook relied.

Clearly, only some of the difference in death rates of attacks with different weapons, however large or small that may be, is attributable to the technical properties of the weapons themselves. Part of the difference is due to the greater "lethality" of the users of the more deadly weapons. Those with more lethal intentions, a greater willingness to hurt others, or a stronger instigation to aggress choose more serious weaponry, regardless of how vague their intentions are, or how impulsively and even unconsciously these might be arrived at. Thus, weapon lethality and attacker lethality should be closely associated (Cook 1982, pp. 247-8), and thus can easily be confused with one another.

A gun does not get used in an assault simply because it "happened to be there." Although it is rare that an aggressor obtains a gun to commit a

specific act of violence, more seriously violent people are more likely to have acquired guns in the past (usually for "defensive" purposes) and are more likely to keep them available for use, e.g., by carrying them on their person (Wright and Rossi 1986). Further, when the gun is actually used in an attack, it is almost always the result of a choice, however hastily made, among weapon alternatives. It surely is a rare gun homicide that occurs where a knife or blunt instrument is not also available. And certainly every gun killer also has hands and feet with which to attack the victim. For a variety of reasons, then, guns are *chosen* by aggressors.

Furthermore, this choice is not made randomly. The people who choose to use guns are different from those who choose other modes of attack. Reanalysis of data from a prison survey by Wright and Rossi (1986) indicates that as aggressor "seriousness" increases, weapon seriousness increases—killers and other assaulters with more extensive records of prior violence were more likely to have been armed in their attacks, more likely to have used guns, and even somewhat more likely to have used long guns (Table 5.4). This suggests that on average, a criminal gun user's willingness to do violence and inflict serious injury is greater than that of criminals who do not use guns. In addition, those who, at the time of the attack, intend to inflict serious, possibly lethal harm on their victim would presumably be more likely to select a weapon perceived to be more lethal.

If the wounding fatality rate of guns is four times higher than that of knives when the attackers are not matched regarding their lethality, then this ratio would necessarily be less than 4-1, though probably higher than 1-1, if attacker lethality were somehow controlled. Perhaps a reasonable, tentative "guesstimate" of the true guns-vs.-knives lethality ratio might be the average of these two ratios, or about 2.5-1.

Attackers who choose guns over other weapons, then, are more violent people, apart from the weapons they use. Consequently, unless one can somehow control for "attacker seriousness" in assaults, it is logically impossible to use data on the frequency of fatal outcomes in assaults to separate the effects of a weapon's technical properties from the closely associated effects of the attacker's willingness to seriously hurt the victim. Prior research has not measured or controlled for attacker seriousness, so it is impossible to tell from prior studies of assault fatality rates (e.g., Zimring 1968, 1972; Block 1977) whether fewer people would die if nongun weapons such as knives were substituted for guns by the same highly motivated attackers who currently use guns. Since attackers who use guns and those who use knives are likely to be quite different at

the time of the attacks, the fact that gun attacks are more likely to result in death by itself says nothing about whether it was the weapon that was responsible for the more frequent fatal outcomes of gun attacks. Consequently, it is impossible to tell from such data whether fewer assault victims would die if attackers were somehow induced to substitute knives for guns.

It is impossible to directly measure strength of an aggressor's motivation at the time of a real-life assault or to do experiments with serious, armed violence. It would also be pointless to ask attackers about their intentions after the fact, even if they were capable of recalling them. For an aggressor to admit that he intended to kill his victim would constitute a giant step toward a death sentence, or at least a very long prison term. Likewise, one cannot measure or control for attacker motivation by noting the location of wounds inflicted (e.g., Zimring 1972), especially for gun attacks. Given the difficulty of aiming guns accurately, the exact location of gunshot wounds is to a great extent a product of chance rather than aggressor intent (Cook and Nagin 1979, p. 7).

Therefore, to isolate the effects of weaponry itself on assault outcomes one cannot directly control for offender motivation, but only for presumed correlates of motivation. In the analysis of individual violent incidents reported later, the efforts of previous researchers are improved on in this respect only to the extent that the controls introduced are indeed correlated with an attacker's aggressive drive or the lethality of his intentions.

Another issue must be distinguished from that of the relative motivation strengths of gun and knife attackers. To what degree is the motivation of gun attackers strong and unambiguous? If every gun killer had, even for just a few minutes, a very strong aggressive drive and a single-minded intent to kill regardless of the risks and effort needed, then it would do no good to deprive them of guns—they would do whatever was necessary to kill their victims by other means in those few minutes. Arguing against this contention in a 1968 article, Zimring concluded (p. 736) that "a *substantial proportion* of all homicides can be thought to be ambiguously motivated" (emphasis added). By 1972, he had upgraded the weak "substantial proportion" to a majority. Summarizing the 1968 article, he asserted that "*most* homicide is not the result of a single-minded intention to kill at any cost" (emphasis added) (p. 97). Either in its weak or strong forms, the claim was not supported by the evidence Zimring presented; all of it was either irrelevant to the ambiguity claim, unclear as to whether it was supportive, or contrary to the claim.

Before assessing Zimring's evidence, it is worth noting that the killer's cognitive ambiguity may not be all that pertinent to an assessment of whether gun control could prevent homicide. It is possible that most gun killers are ambiguously motivated in the sense that they do not, at the moment of attack, have a clear mental image of their victim dead. On the other hand, they may have a very strong aggressive drive and a willingness to seriously hurt their victim, without regard for exactly how serious an injury they inflict. Under such circumstances, killers deprived of guns could still be sufficiently angry, for a long enough time, to inflict lethal injuries at just as high a rate as they would have with guns. The key concept is the emotional one of strength and persistence of aggressive drive, rather than the cognitive concept of ambiguity of motives. If gun killers typically have a very strong drive to hurt their victims, then they might well not be satisfied until they had inflicted very serious injury, even if it took greater energy and a few more seconds of time to do so with a knife or club.

Zimring (1968) presented four kinds of evidence intended to support his "ambiguous motives" thesis: (1) killers and victims usually know each other before the killing, (2) most killings result from altercations, (3) most gun homicide victims are killed with a single wound, and (4) in most homicides, the killer or victim had been drinking. (It should be noted that most of Zimring's evidence pertained to all homicides, not just gun killings, even though it is only the traits of gun killers that are relevant to the issue of whether gun scarcity would reduce homicides.) Taking Zimring's points in order:

1. There is no evidence that fights between people who know each other are less likely to involve a strong, persistent or unambiguous intent to kill than conflicts between strangers. Indeed, a prior relationship could provide the basis for the development of intense hatred and an accumulation of long-standing grievances. As Wright (1990) has noted, prior relationships tell us nothing about how ambiguous aggressors' motives are.

2. Altercations are unpremeditated and therefore allow less time for an aggressor to rethink his intentions, or to consider the long-term costs of an act of violence. This might well *reduce* aggressor ambivalence. Further, in conflicts in which time passes before the prospective aggressor decides to attack, the strength of the aggressive drive should dissipate. Consequently, the frequency of altercation homicides could easily be seen as *supportive* of the view of killers as unambiguously motivated, rather than the reverse.

3. Similarly, alcohol consumption could reduce ambivalence and inhibit the operation of an aggressor's conscience, strengthening rather than weakening his "single-mindedness."

4. Finally, the fact that a single shot was fired in most homicides may reflect little more than the fact that a single shot sometimes suffices to kill, and that even lethally minded killers stop shooting once the victim is dead. Consequently, there is no reason, on the basis of Zimring's evidence, for believing that all, most, or even a large minority of gun killings are ambiguously or weakly motivated. (For good critiques of the ambiguity thesis, see Hardy and Stompoly 1974, pp. 103-10; Wright et al. 1983, pp. 191-7).

For all one can tell at this point, the majority of gun killers are, at the time of the attack, strongly motivated enough to kill even if no guns were available. On the other hand, the opposite could also be true. Existing evidence does not permit any strong conclusions one way or the other. Nevertheless, it is not ordinarily assumed that the outcomes of intentional human actions are other than what the actors intended. It would seem a reasonable, though rebuttable, assumption that most aggressors who kill their victims intended to do so, and most aggressors who do not kill their victims did *not* intend to do so. If this assumption were generally correct, then it could well be the case that most gun killers have a fairly unambiguous intent to kill and therefore would be likely to kill their victims even if deprived of guns.

Closely related to the "ambiguous motives" thesis is another proposition with even less empirical support. This one can be called the "average Joe" thesis, which states that even though hardened felons cannot be denied guns through gun control, most killers are basically law-abiding citizens who lost their tempers and killed someone only because a gun was there. Such individuals could be effectively denied guns with the right gun laws; these laws could therefore have a significant impact on murder rates, even if they had little impact on rape, robbery, and other violent crimes supposedly committed by "hard-core" criminals. The evidence advanced by gun control advocates in support of this thesis overlaps the evidence Zimring used to support his "ambiguous motives" thesis: (1) killers and victims often knew each other before the killing, and (2) murders are commonly impulsive "acts of passion" (Shields 1981, p. 124; other examples cited in Kates 1990, p. 46). As with the ambiguity evidence, both of these factual claims are accurate, yet neither implies anything about whether most, or many, gun killers are basically "average Joes" who would obey gun laws—even hardened

felons willing to violate gun laws often kill people they know, and frequently commit crimes impulsively.

More to the point, the average killer has a long history of criminal conduct in his or her past (see studies reviewed in Kleck and Bordua 1983, pp. 291–4). This is true not only for killings by professional robbers and Mafia hit men, but also for the perpetrators of domestic “crime-of-passion” homicides. To be sure, only a portion of this history is recorded in police files—most violence goes undetected by the police, and this is particularly true of domestic violence (Strauss et al. 1980). Nevertheless, even if one examines only information known to the police, it is clear that the typical domestic homicide is preceded by many previous acts of serious violence. For example, in 90% of domestic homicides in a Kansas City study, police had responded to a disturbance call at the same address during the previous 2 years, with a median of 5 previous calls (Wilt et al. 1977). This is not to say that everyone who kills with a gun has a prior record of serious criminal conduct. There is a first time for every criminal, and no doubt there have been a few individuals who committed a gun homicide as their first serious act of violence. However, this appears to be a rare exception to the general rule that most people who are seriously violent now, with or without guns, have been seriously violent in the past. On the other hand, this does not prove that there are no gun killers who could be prevented from getting a gun by the right gun laws. Even gun killers fall along a continuum of willingness and motivation to break laws, and a sizable number of them may fall far enough toward the low end of the scale that gun laws could work, by making acquisition or possession of a gun difficult or risky enough for them to refrain from doing so.

Guns in Robbery and Rape

Only about 20% of robberies and less than 10% of rapes involve offenders armed with guns, and in many of these cases guns were incidental to the crime—they happened to be there, but were not actually used to threaten or harm the victim (U.S. Bureau of Justice Statistics 1986b). Further, of the 31,606 gun-related deaths in 1985 (Chapter 2), less than 7% were homicides linked with robbery or “sex offenses” (computed from U.S. FBI 1986, pp. 12, 41). Nevertheless, guns do sometimes play a role in these crimes and this role is worth some discussion.

Robbery

The following generalizations are consistent with, though certainly not proven by, the best available evidence on guns and robbery.

1. Gun ownership levels have no effect on total robbery rates (Murray 1975; Brill 1977; Cook 1979; McDowall 1986). Note, however, that this does not necessarily mean that the immediate availability of guns for robbery, and the rate of gun carrying, does not have an impact on total robbery rates.
2. Gun ownership levels positively affect the rate of gun robberies, but negatively affect the rate of nongun robberies, thereby increasing the fraction of robberies involving guns (Cook 1979; 1987).
3. Injuries are more common in nongun robberies; therefore decreases in gun use among robbers would increase the fraction of robberies resulting in injury (Cook 1980).
4. Victims of gun robberies are less likely than victims of nongun robberies to resist the robber; resisting victims are in turn generally (excepting those who resist with guns—Chapter 4) more likely to be injured than nonresisting victims (Hindelang 1976; Cook and Nagin 1979, p. 37).

Analysts typically attribute the lower injury rate among gun robbery victims to their lower rates of resistance. Although this may be part of the explanation, it should also be noted that gun robbers are less likely to attack or injure their victims, compared to unarmed robbers or those using nongun weapons, even controlling for resistance (Cook and Nagin 1979, p. 37). Further, since resistance often follows injury (Chapter 4; Block 1977), it is not clear that the resistance-injury association indicates that resistance provokes robber attack. To the extent that injury precedes resistance, one cannot explain the lower injury rates of gun robberies by victim resistance patterns.

5. When injuries are inflicted on robbery victims, those inflicted by gun-armed robbers are no more likely to result in hospital treatment of some kind than those inflicted by other robbers. Injuries inflicted by gun-armed robbers are more likely to result in hospitalization *overnight* than those inflicted by unarmed robbers, but they are about the same in this respect as injuries in knife robberies and somewhat *less* likely to result in overnight hospitalization than those inflicted by robbers armed with weapons other than guns or knives (Table 5.6 concerning hospitalization in all violent crimes; Cook 1987, p. 361, concerning hospital treatment and hospitalization overnight among robbery victims). Thus,

if knives were substituted for guns, there is currently no empirical basis for believing that the fraction of injuries requiring hospital treatment or overnight hospitalization would decrease. On the other hand, for the 3% of robbery victims who received overnight hospitalization (Cook 1987, p. 361), the average length of stay is longer for robbery victims wounded by guns (Table 5.6).

6. Murder of the victim is more likely in gun robberies than nongun robberies (Cook 1987). However, it is unclear whether it is the lethality of guns or the greater lethality of robbers who use guns that is responsible for this pattern, for reasons previously discussed. Gun reductions may or may not produce any reduction in robbery murders, depending on the impact of gun scarcity on the number of robberies, how much of an increase in the number of injuries occurs, and how much the injury fatality rate declines, assuming it declines at all (Wright et al. 1983, pp. 209–12). Further, almost all of those robber murders were committed with handguns, and gun control efforts usually cover only handguns (Chapter 8). Most incarcerated felons say they would substitute the more lethal long guns if they could not carry handguns (Wright and Rossi 1986, p. 217), suggesting that laws inducing handgun scarcity would increase the fraction of robbery attacks resulting in death by inducing substitution of long guns (Chapter 3).

7. Guns enable robbers to tackle more lucrative and risky targets such as businesses rather than more vulnerable ones like women, children, the elderly, and so on (Hindelang 1976; Cook 1976). Reducing gun availability could cause robbers to switch from the former to the latter, shifting the burden of robbery to those most vulnerable to injury and least able to absorb the financial losses. Injuries to more vulnerable victims could well result in death more often.

8. Finally, the data in Table 5.5 indicate that robbers armed with guns are more likely to complete their crimes, i.e., get away with the victim's valuables. This is presumably at least partly due to the aforementioned fact that victims are less likely to resist gun-armed robbers; although the impact of victim resistance on injury is uncertain, resistance clearly reduces the likelihood of robbery completion. Thus, if fewer robbers were armed with guns, more victims would probably manage to retain their valuables.

In sum, gun control policies that managed to reduce gun possession among robbers would have the desirable effects of increasing the rate at which robbers failed to get their victims' property and possibly reducing the number of robbery victims killed. On the other hand, gun scarcity

would also probably increase the number of robbery injuries and shift the burden of victimization to victims less able to bear the burden, without reducing the number of robberies. Therefore, it is difficult to say whether the overall set of social consequences of gun scarcity would make an effective gun control policy a success with regard to robbery.

Rape

In the typical male offender–female victim rape, the rapist has a substantial power advantage over the victim even without a weapon. Therefore, use of a weapon by most rapists is probably redundant. It is unknown how large a subset of the 10% of rapes committed by rapists armed with guns actually required a gun to attempt or complete the crime. However, the data in Table 5.5 do indicate that rapists with guns are more likely than unarmed rapists to complete the crime. The differences between rapes by rapists armed with guns and those armed with knives, the weapon most likely to be substituted in the absence of guns, is fairly small (6.8 percentage points). In a multivariate analysis, Kleck and Sayles (1990, p. 155–6) found that armed rapists were more likely to complete their rapes than unarmed rapists, but they could not establish that gun-armed rapists differed from those with knives or other weapons. On the other hand, they found no effect of rapist weapon possession on injury beyond the rape itself.

With this previous research in mind, the impact of guns on violence is now addressed in two ways. First, a nationally representative sample of individual violent incidents is analyzed to see how the aggressor's possession or use of weapons relates to attack, injury and death of victims. Then aggregate level data on cities are used to estimate the net impact of gun ownership levels on violence rates.

Individual-Level Analysis*Problems in Previous Research*

Previous studies of weapon effects in violent incidents have all suffered from one or more of four problems. First, all studies using incidents known to the police or treated by physicians have analyzed samples that were biased regarding the dependent variable, i.e., some measure of assault outcome, including death. Police-based or hospital-based studies examined samples in which incidents of minor violence

had been systematically selected out because they were not regarded as serious enough to bother reporting to the police or did not require medical treatment. Alternatively, other studies bias the sample by excluding the most serious cases, homicides. Second, the studies typically analyzed local samples, usually limited to a single city. Weaponry varies sharply across localities, not only in general availability (e.g., fewer guns in urban areas than rural areas, more in the South than elsewhere), but also in its distribution across weapon subcategories (a higher fraction of guns owned being handguns in urban areas, etc.) and in reasons for ownership (more crime-oriented ownership, either for criminal or defensive purposes, in urban areas) (Chapter 2). Consequently, there may be very limited generalizability of findings from urban-only or single-jurisdiction studies (e.g., Zimring 1968; Wilson and Sherman 1961; Felson and Steadman 1983). Third, analysis in these studies has commonly been unsophisticated, relying on simple percentage table methods, and often bivariate analysis at that. This is particularly a problem because there were no controls for any correlates of assaulter motivation or aggressive drive levels. Fourth, with few exceptions (e.g., Cook and Nagin 1979), prior research on real-life violence has ignored the distinction between weapons' effects on whether the aggressor attacks the victim (rather than merely threatening) and their effects on whether an attack is completed, i.e., produces an injury. Either only the attack outcome is studied, or the two are lumped together into a combined attack-and-injury variable, usually labeled "injury" (e.g., King 1987; Block 1977).

The present study (adapted from Kleck and McElrath 1991) goes beyond the work of others by using nationally representative samples of violent incidents covering the full range of seriousness from very minor threats to homicides, covering both incidents reported to the police and those not reported, using multivariate analytic techniques, distinguishing between attack, injury, and death as outcomes of violent situations, and controlling for a number of likely correlates of offender motivation strength. The present study is unique in combining nationally representative samples of both fatal and nonfatal violent incidents in a single analysis.

Before describing the multivariate analysis, it is worth noting the bivariate association between offender weapon possession and use and the outcomes of violent incidents. The figures in Table 5.6 are based on all violent crime victimizations lumped together, from the 1973–1982 National Crime Surveys. The main interest focusses on the comparison between guns and knives. The data indicate that offenders who possess guns are less likely to attack victims than offenders with knives, or any other weapons for that matter. Gun users are also less likely to injure

their victims, and this is true both for all aggressors and just among those who attacked their victims. If one interprets receiving medical care as an indication the victim was seriously injured, victims of gun users are less likely to be seriously wounded than knife victims. Most of this is due to the low rate of attack and injury in gun incidents, but even just among incidents with injury, gun victims are slightly less likely to receive medical care than knife victims. If hospital care is indicative of an even more serious injury, then the preceding pattern is repeated, except that hospital care is slightly more likely among those injured by guns than among those injured by knives. Finally, among the small share of victims who received hospital care, victims of gun injuries had a median hospital stay about 2 days longer than those hospitalized for knife injuries. In sum, even at the bivariate level, there is little evidence in the NCS that gun possession and use make serious outcomes more likely in violent incidents.

Problems in Analyzing Violent Incidents

The National Crime Surveys (NCS) cover a representative sample of the noninstitutionalized U.S. population age 12 and over. Respondents (Rs) are asked whether they have been a victim of crime in the previous 6 months and are questioned about the details of the crime incidents they recall. At least three "reverse record checks" studies have found that Rs' ability or willingness to recall crimes is worse for assaults than for any other crime type—as few as 36% of assaults known to police were reported to NCS interviewers (Dodge 1981; Murphy and Dodge 1981; Turner 1981). These studies indicated that it was violent incidents among persons who knew one another that were most likely to go unreported. For example, only 22% of assaults involving relatives were reported, compared to 54% of those involving strangers (Turner 1981). This problem is addressed by limiting analysis to stranger cases, where there is less room for underreporting to bias results.

Other known patterns of bias concern R's race and education. Blacks appear to underreport violent incidents, especially less serious incidents, more than whites. And less educated persons consistently report fewer incidents, especially minor ones, than more educated persons (Skogan 1981). By recalling (or defining as assaults) a larger number of assaults without attack or injury, better educated Rs make it seem that their assaults are less likely to result in these outcomes, with an opposite, equally artificial pattern for blacks compared with whites. The result is that the measured fraction of assaults resulting in attack or

injury may be artificially elevated for blacks and for less educated people. These effects were roughly controlled for by including education and race of victim in all initial versions of equations.

Some minor assaults may be recalled only because they were repeated, i.e., part of an ongoing pattern. Although serious assaults are generally recalled in any case, minor assaults, i.e., those without attack or injury, may be more likely to be recalled if they were repeated than if they were isolated. This could make it artificially appear that repeated incidents are less likely to involve an attack or injury. In NCS terminology, a "series" incident is an incident that was one of three or more incidents occurring in the 6-month recall period, which were so similar that the R could not separately describe them. Although not all repeated assaults are "series" incidents, all series incidents are repeated crimes. This effect is controlled by including a measure of whether an incident was a series case.

What is the relationship between these biases and weapon involvement in violence? Could the fraction of assaults involving attack or injury be distorted by response biases that vary across weapon categories? Certainly the NCS coverage of nonfatal assaults is incomplete for both assaults involving attack and/or injury and those involving neither. Although the NCS covers minor assaults better than police records, Cook (1985) has shown that the NCS covers the most serious assaults, such as gunshot woundings, *less* completely than do police records. That is, these gun cases, involving both injury and more serious weaponry, are frequently missed in the NCS. However, whether this is more true for serious-weapon assaults than for minor-weapon assaults is unknown, since minor-weapon assaults may be covered in the NCS at just as low a rate as the more serious ones. The undercoverage of the NCS may simply have been more easily detected with gun assaults because of unusually complete police knowledge of assaults requiring medical treatment—physicians are commonly required by law to report gunshot wounds to the police. Consequently, it is unclear whether the relative average seriousness levels of NCS assaults are distorted by these underreporting problems more in some weapons categories than in others.

Methods of the Present Analysis

Samples

Two datasets are analyzed. The first, used to analyze the attack and injury outcomes, is the set of all NCS violent incidents that occurred in the United States in 1979–1985 and that involved victims and offenders

who were strangers to one another. The NCS covers only victims age 12 or over. The present sample is as inclusive as possible, to avoid introducing additional sample bias by needlessly excluding relevant cases. The only exception was the decision to exclude nonstranger cases, motivated by a judgment that the advantages of reducing the response bias associated with violence among intimates outweighed the sample-biasing effects of this exclusion. This NCS sample includes series incidents, as well as incidents with multiple victims or offenders. All cases involve at least a threat of violence, although they may also involve the elements of other crimes besides assault. Thus, the sample includes incidents classified as rape or robbery in the NCS Type-of-Crime classification. Dummy variables measure whether the elements of rape, robbery (theft plus force), or burglary (illegal entry) were also involved in an incident.

The second dataset, used to analyze the death outcome, is a merger of all NCS stranger violence incidents for 1982 and all Supplementary Homicide Reports (SHR) intentional stranger homicides of victims age 12 and over for 1982, including both civilian and police justifiable homicides. The year 1982 was used simply because it was in the middle of the time span covered in the first dataset. The SHR program, run by the Federal Bureau of Investigation and based on police offense reports, records information on the victim, offender (when known), and circumstances of about 90% of U.S. homicides. To maintain comparability between the NCS and SHR datasets, homicides of victims under age 12 were excluded, and negligent (unintentional) manslaughters were excluded because the NCS is intended to cover only intentional acts. NCS incidents occurring outside the United States were also excluded because the SHRs cover only homicides occurring within U.S. police jurisdictions. All other relevant cases were retained, including incidents involving multiple offenders or multiple victims, and civilian or police justifiable homicides. All variables that existed in some form in both sources were identified and given a common coding scheme. A weight was computed that equalled the NCS incident weight for NCS cases and a number slightly larger than one for SHR cases (see Appendix 6). The resulting merged dataset was a national sample of intentional stranger assault incidents, both fatal and nonfatal, weighted up to represent national totals.

Estimation Techniques

All three dependent variables were binary, so some form of probit was generally used to estimate equations. Ordinary least squares (OLS) regression was used for preliminary screening with the ATTACK and INJURY models before applying the more computationally expensive max-

imum likelihood estimation techniques. A very liberal significance level ($p < .30$) was used in the screening, to avoid prematurely excluding a relevant variable. Because of the extreme distribution of the DEATH variable, even preliminary screening had to be done with probit.

All final versions of the INJURY and DEATH equations were estimated with bivariate probit with a correction for nonrandom sample selection (Van de Ven and Van Praag 1981; Greene 1985). This correction was necessary because of the way the samples were subdivided into increasingly serious subsets. First, all assaults were examined to determine why some involved an attack and others did not. Then analysis was limited to cases with an attack, to analyze why only some attacks resulted in injury. Finally, cases with injury were analyzed to explore why only some injuries resulted in death.

To estimate INJURY equations on the full assault sample would muddle the distinction between attack and injury—estimated models of the INJURY variable would reflect processes affecting ATTACK, as well as those affecting INJURY, given attack. However, selecting only cases with an attack for estimation of the INJURY equation is a nonrandom selection that could bias the coefficient estimates (Berk 1983). To correct for this bias, a “selection” equation was estimated that modeled the inclusion of cases into the sample on which the “substantive” equation was estimated. The ATTACK equation predicts whether an incident will involve an attack. The INJURY equation was estimated only on cases that involved an attack, since those without an attack obviously could not result in injury. Therefore the ATTACK equation in effect predicts whether a case will be “selected” for inclusion in the sample on which the INJURY equation was estimated. A similar procedure was used to estimate the substantive DEATH equations, with an INJURY equation being used as the selection equation, since only cases involving injury were “eligible” to result in death. The sample selection correction procedure works by including a measure of the predicted probability of a case not being selected for the sample as a variable in the substantive equation (Heckman 1979; Van de Ven and Van Praag 1981).

Definitions of Key Variables

Table 5.7 lists the variables included in the individual-level analyses, with their means and standard deviations. Most of the variables are binary, representing the presence or absence of an attribute. Because some incidents involve more than one offender, the offender dummies indicate whether there was at least one offender with the indicated trait. Thus, when MALEOFF is 1, it means there was at least one male of-

fender; there could also have been female offenders. To avoid near-perfect collinearity, at least one dummy variable representing a category of some larger variable was always excluded from each equation. For example, both MALEOFF and FEMOFF, dummies representing the two possible categories of offender sex, could not both be included in an equation, since if there was no male offender, it would always indicate the presence of a female offender, and vice versa.

The dependent variables, ATTACK, INJURY, AND DEATH, are necessarily generic—they reflect attack, injury, or death involving *any* weapon (or no weapon). Therefore, an incident with a gun present and involving an attack and/or injury did not necessarily involve a gunshot wound. Rather, a gun-armed assaulter may have fired the gun and missed, used it only to threaten, used it as a blunt instrument, or not used it at all, instead attacking and/or injuring the victim with fists or feet or with some other nongun weapon. Table 5.7 lists three different versions of each gun variable. In the ATTACK analyses, the gun variables measure whether guns were present, i.e., whether the offender possessed them in a way evident to the victim. In the INJURY analyses, the gun variables measure whether a gun was actually used to *attack* the victim, i.e., whether the victim was shot or shot at. And in the DEATH analyses, the variables indicate whether the victim actually suffered a gunshot wound. In all cases, a victim could be confronted with an offender with more than one type of weapon, and be attacked or injured in more than one way. However, less than 0.1% of assaults involve more than one weapon type being used in an attack.

Equations were estimated not only for the full sample of stranger violent incidents, but also for each of three subsets. First, to see whether results were distorted by lumping robbery, rape, and confrontational burglary incidents in with “pure” assaults, estimates were obtained for the “nonfelony” subset of violent incidents that did not have the elements of theft, rape, or illegal entry. Second, it might be argued that victim recall is poor for series incidents since the information obtained refers to the average features of multiple incidents, rather than any one specific incident. Therefore, estimates were obtained for the “nonseries” subset excluding series incidents. Finally, one could argue that some assaults involve “victims” who were really aggressors and that variables referring to the “victim” were actually describing the offender, and vice versa (see Appendix 6). On the assumption that victims reporting incidents to the police were more likely to regard themselves as true victims, cases in which the victim or a member of the victim’s household reported to the police were separately analyzed.

Most of the variables in each equation were included as likely correlates of offender "motivation," broadly conceived as how willing and able (apart from weaponry possession) aggressors were to attack, injure, or kill victims. Offender attributes (MALEOFF, AOLE11, AOGE30, BLACKOFF) were included because they reflect differing levels of willingness to aggress—males, persons age 12–29, and blacks commit serious violent acts more frequently than others. Victim attributes (MARRIED, GUNOCC) were included because they reflect differing levels of difficulty or risk to the aggressor in attacking and trying to injure the victim—married victims are more likely to have a spouse nearby, while victims employed as a security guard or police officer are more likely to possess a gun. (On the other hand, people in gun-carrying occupations are also more likely to encounter more seriously violent persons.) ROBBERY, RAPE, and BURGLARY were included on the assumption that robbers, burglars, and rapists have longer and more serious records of prior violence than simple assaulters and are therefore more willing to use violence in a sample incident. (On the other hand, these types of aggressors also have goals other than hurting the victim, which could reduce attacks and injuries.) The power differential variables (AGEDIF, SEXDIF, and NUMDIF) were included on the assumption that aggressors with a power advantage would be more willing to attack and injure because they were at less risk of effective counterattack from the victim. (On the other hand, they would also have less need to attack or injure to get what they wanted.) SUMMER was included on the assumption that people are more easily and strongly angered when the weather is hot. Finally, DARK and INSIDE were included because darkness and an inside location should make witness identification or interruption of the crime less likely and thus could reduce situational inhibitions against attack.

Findings

In Tables 5.8–5.10, the excluded weapon category was "no weapon present" (or "no weapon used"), so coefficients reflect the effect of each weapon category relative to weaponless assaults, i.e., those involving only hands, feet, etc. All equations were significant at a level less than .001.

Attack

The findings in Table 5.8 indicate that the net effect of the presence of deadly weaponry in threatening situations is to *reduce* the probability of

attack by the possessors of the weapons. The negative association is significant for handguns, "other" guns (mostly rifles and shotguns), and knives. The apparent effect of the presence of less lethal "other" weapons (blunt objects, broken bottles, etc.) is to increase the probability of attack. Thus, as lethality of the weapons present increases, the probability of attack decreases. Equation 1 shows the ordinary least-squares estimates for the full sample of stranger violent incidents, while Eq. 2 presents the full sample probit estimates. The findings are substantively identical and hence not dependent on the estimation procedure used. The findings also hold regardless of whether felony-linked assaults are excluded (Eq. 3), series incidents are excluded (Eq. 4), or the analysis is restricted just to those cases reported to the police (Eq. 5). Since the "weapons effect" thesis is intended to apply only to angry persons, the present findings are relevant to the extent that it can be assumed that aggressors in the sample incidents were angry. If the "weapons effect" does exist, the findings indicate that the conditions necessary for it to produce a net assault-triggering effect are rarely met in real-life violent incidents, or if the effect does operate, its impact is outweighed by attack-reducing effects of deadly weaponry.

Notice that the education and series variables have the expected negative signs. Better educated respondents are more likely to report assaults in which an actual attack did not occur, and the reported series incidents were more likely to be threats without attack than nonseries incidents. Victim race, on the other hand, was unrelated to ATTACK.

Injury

The findings in Table 5.9 indicate that, given an attack, the use of guns has a statistically significant net negative association with victim injury. The use of knives and "other weapons" in an attack was positively associated with injury. The general pattern of findings is that the more lethal the weapon used in an attack is, the less likely it is that it will be used to actually inflict an injury. These findings hold regardless of the estimation procedure used (Eqs. 6–8). This is important because the correction for sample selection bias used in the bivariate probit estimates will improve estimates only if the sample selection equation models the selection process reasonably well, something of which one can not be certain. Since the procedure corrects for the probability of a case being included in the sample, if the selection process cannot be accurately modeled, it amounts to the same thing as either failing to include a relevant variable in the equation (sample selection bias as a specification error—Heckman 1979) or including a poor measure of that needed control variable.

Death

The findings in Table 5.10, based on analysis of the merged SHR/NCS assault and homicide dataset, indicate that, given a wounding, the wound is more likely to be fatal if it is a gunshot wound. The results suggest the existence of a clear hierarchy of weapon lethality, with gun wounding the most likely to result in death, then injuries produced by knives, then "other weapons," then blunt objects, and finally, hands and feet. These findings are largely independent of estimation procedure used (Eqs. 12–14) and data subsamples analyzed (Eq. 14 vs. Eqs. 15 and 16).

The only missing data indicator variable (see Appendix 6) with a coefficient significantly different from zero in any of the equations was UNDRACEO, indicating that missing data patterns were random with respect to DEATH, except that incidents where the offender's race was unknown were more likely to be fatal.

Discussion of the Individual-Level Findings

These findings support a more complex picture of the significance of firearms in American violence than has commonly been a part of the debate over gun control. The possession of guns appears to both inhibit attack and reduce the probability of injury, given attack, while also increasing the probability of death, given an injury. What would be the net effect on deaths of a reduction in aggressor possession of guns in threatening situations? To answer this question, a DEATH equation was estimated on the full sample of stranger violent incidents, not just those with injuries. The equation included all variables that were available in the combined SHR/NCS dataset and that appeared in any of the three equations for attack, injury, or death. It was estimated with OLS and probit. The results are shown in the last two columns of Table 5.11, which summarizes the sizes of the effects of the weapon variables on each of the assault outcomes.

Note that OLS coefficient estimates are unbiased when the dependant variable is binary, and their values can be interpreted as linear probability coefficients (Aldrich and Nelson 1984, pp. 13, 18). The linear probability interpretation is most meaningful when the predictors, as a group, take on average values, since this is where OLS slopes are essentially identical to slopes estimated with methods assuming nonlinear relationships, such as probit or logit.

The aggressor's possession of a handgun in a violent incident apparently exerts a very slight net positive effect on the likelihood of the

victim's death. The linear probability interpretation of the OLS coefficient implies that the presence of a handgun increases the probability of the victim's death by 1.4%. Thus, the violence-increasing and violence-suppressing effects of gun possession and use almost exactly cancel each other out. This small association is statistically significant, however, because of the very large ($n = 14,922$) sample size.

The effects of aggressor weaponry are quite substantial when taken stage by stage, i.e., when separately examining attack, injury, and death. This is why impressive-appearing results can be obtained when researchers examine, for example, only the last stage, looking solely at the impact of guns on the likelihood of the victim's death, among those wounded. Guns probably do substantially increase the probability that a wounding will result in death. The effects of guns, however, are very small when one assesses the overall net impact of all of their effects, both positive and negative, at all stages of violent incidents. The explanation for this apparent contradiction is simple: gun possession and use have opposite sign effects at the various stages, which largely cancel each other out.

Note also the effect of omitting any direct measure of aggressor motivation. More seriously violent people use more serious weaponry (Table 5.2), and it seems reasonable to assume that, on average, the intensity of the aggressor's desire to seriously hurt the victim, at the moment of attack, would also be positively correlated with the presence of "serious" weaponry. Since aggressor motivation is almost certainly positively associated with the probability of a victim being killed, this means that omitting direct measures of motivation tends to bias the gun coefficients in a positive direction, making it seem that gun use has more of a positive effect than it really does. Consequently, the slight apparent net positive effect of guns on the death outcome would be reduced, and could easily disappear altogether, if motivation could be properly measured and controlled.

Nevertheless, at this point it seems that there may be some slight net effect on the likelihood of the victim's death that could be attributed to guns. Taken at face value, the results suggest that aggressor possession of guns may increase the net probability of the victim dying in a violent incident by about 1%. This would lead to the expectation that laws that were effective in reducing gun possession among aggressors in violent incidents could slightly reduce the homicide rate. On the other hand, gun possession among potential victims may deter some aggressors from initiating violent incidents in the first place. Any laws that reduced gun possession among potential victims, including those who are also

sometimes aggressors, could thereby encourage assaults. The net impact on the homicide rate of these opposite effects could be positive, negative, or zero, depending on their relative magnitudes. These conclusions help explain the findings of prior research, which indicated that trends in aggregate gun levels had no net effect on homicide rates (Kleck 1984a).

The findings also imply that if gun possession were reduced among aggressors in violent situations, total assault injuries would increase, the fraction of injuries resulting in death would decrease, and the total number of homicides would remain about the same. This appears to be precisely what happened in Boston after implementation of the Bartley-Fox law. After gun carrying, and thus the immediate availability of guns in some violent situations, was reduced, total assault injuries increased substantially, but with no significant change in homicides, implying a drop in the fraction of injuries resulting in death (see Chapter 10).

Three limitations of this analysis are important to note. First, it is unclear what response biases may be affecting NCS data. It is possible that a large fraction of gun assaults, even those not involving attack or injury, are remembered just because they involved guns, with many minor nongun assaults going unremembered or unreported. The result would be that an artificially higher fraction of nongun assaults would appear to have resulted in attack, injury, or death, relative to gun assaults, making the gun-nongun differences appear smaller than they really are. Second, the NCS and SHR provide data on only a few of the variables that may influence assault outcomes, having no direct measures of assaulters' motives or the strength of their aggressive drives. This increases the possibility of the models being misspecified due to the exclusion of variables associated with both weapon variables and assault outcomes. Finally, the findings are based on violent incidents between strangers. Whether weapons effects are different in violence among nonstrangers is unknown.

Although the individual-level analysis has the merit of getting closer to the phenomenon, it cannot show what the net overall effect of gun ownership levels is on total rates of violence. For example, even if the net effect of gun possession among aggressors in violent incidents is to increase the probability of the victim's death, there are still other gun effects related to gun possession among prospective victims. As indicated in Chapter 4, not only does the victim's possession of a gun often disrupt a criminal attempt and prevent injury, but the fact of mass gun ownership might deter some prospective aggressors from making criminal attempts in the first place. Therefore, the overall net impact of gun ownership levels on violence rates is assessed using data on cities.

Aggregate-Level Analysis of Gun Ownership and Violence Rates

Previous Research on Gun Ownership Levels and Crime Rates

What is the impact of widespread gun availability on crime rates? Do areas with more guns have, as a result, more crime? Do increases in gun ownership over time increase crime rates? At least 18 previous studies have addressed these questions and are summarized in Table 5.12. The table covers only studies in which there was an attempt to actually measure gun ownership levels, rather than merely assuming differences across cases.

The first thing that is apparent from this table is that there have been an enormous variety of ways of measuring aggregate gun levels—over a dozen of them—with few researchers using the same measures. The survey measures are the most direct ones and would seem to have the highest face validity; yet, as was noted in Chapter 2, there are reasons to question the validity even of survey responses. Whether these problems affect comparisons across aggregate cases, however, is unknown. Further, survey measures are available only for the nation as a whole or for broad regions of the nation.

Other measures are less direct, relying on the relative frequency with which guns are used to commit acts of violence, such as the percentage of homicides committed with guns. Studies using these measures all relied on just one or two indicators. Further, with the exception of Cook (1979), researchers using these measures failed to validate them in any way, such as establishing that they correlate well with more direct survey measures. The “% gun use” measures also raise the possibility of artifactual associations with crime rates. For example, the number of gun homicides is a component in the numerators of both the percentage of homicides committed with guns and either the gun homicide rate or the total (gun plus nongun) homicide rate. This would tend to create a positive association between the gun ownership measure and the crime rate, even if there were no causal relationship. Whereas a few like Cook (1979) took steps to avoid this problem, most other researchers did not.

Even more critically, these kinds of measures reflect not only the availability of guns but also the preference of the criminal population for using guns (Brill 1977, pp. xvi, 20). Whereas availability certainly affects how often criminals choose guns, it has also been seen that offender seriousness affects this choice as well. Consequently, these measures, if used by themselves, tend to confound gun availability with what might be called the “average lethality of the criminal population.” In short, the same problem of separating gun effects from associated effects of crimi-

nals' lethality that afflicted individual-level research also plagues aggregate-level research.

Even some of the more sophisticated researchers in the field have failed to adequately appreciate this problem. For example, Cook (1987, pp. 372–3) found that city rates of robbery murder were more strongly associated with the gun robbery rate than with the nongun robbery rate, and concluded that this was “strong evidence that gun robberies are . . . intrinsically more dangerous than other robberies.” In fact, such findings are not necessarily even weakly supportive of this conclusion, since one would expect precisely this pattern even if gun use had no causal impact on the likelihood of a robbery resulting in the victim's death. If gun use is a good indicator of robber willingness to kill, then the gun robbery rate would be a better indicator of average robber lethality than the nongun robbery rate; the rate of robberies by more “lethally minded” robbers should obviously relate more strongly to robbery murder rates than the rate of robberies by less “lethally minded” robbers. Whether this explanation completely accounts for Cook's findings is unknown. The point is, analyses using aggregate data cannot resolve the matter.

Miscellaneous other gun measures are unsatisfactory. As the empirical results reported later in the chapter will show, the fatal gun accident rate does not correlate significantly with survey gun ownership measures (see also Cook 1979), nor do rates of gun magazine subscriptions. The hunting license rate is marginally significantly correlated with the total gun ownership rate but its association with the handgun rate is not quite statistically significant. This suggests that it serves best as an indicator of long gun ownership, consistent with the fact that most hunting is done with rifles and shotguns. Gun owner license or registration rates are satisfactory as measures of legal gun ownership, but not of total ownership. Similarly, gun magazine subscription rates might serve, at best, as indirect measures of legal long gun ownership. Subscription rates are probably best regarded as indicators of the prevalence of a mostly noncriminal “gun sporting culture” (Bordua and Lizotte 1979) rather than a measure of gun ownership per se. It would be preferable to have separate measures of criminal and noncriminal ownership; however, if only one can be measured, then for purposes of assessing the impact of gun ownership on violence rates, it is criminal ownership that is more relevant. Counts of the number of gun purchase permits also tap only legally acquired guns, and measure only additions to the stock of guns, rather than the total stock.

For time series analyses, a measure that is both very direct and avoids

the possibility of artifactual associations is available. Researchers can cumulate the total number of guns domestically manufactured, minus exports, plus imports, up to a given year, thereby measuring trends in the available stock of guns. However, as noted in Chapter 2, this measure fails to count some additions and deletions of guns from the stock and its use necessitates assuming that these errors are roughly equal and cancel each other out.

The findings of previous aggregate studies are summarized in Table 5.12. Their findings are almost exactly evenly split between 12 findings that support the idea that higher gun levels increase crime and 11 findings that do not. All but a handful of the studies are technically very weak. They rely on small samples, sometimes including as few as nine, or even four cases; only Bordua (1986) had more than 50 cases. In combination with the multicollinearity that typically characterizes aggregate data, this implies very unstable results. Eight of the studies did not control for any other factors that might be associated with gun ownership and could affect crime rates, making it impossible to check whether any observed associations between gun and violence levels were spurious; 11 studies controlled for no more than two other variables.

The most critical flaw is the failure to model the two-way relationship between crime rates and gun levels. As shown in Chapter 2, higher crime rates can cause more people to acquire guns for self-defense, whether or not this effect is mediated by the experience of fear. Consequently, any significant positive associations generated in studies failing to model the possible two-way relationship will at least partially reflect the effect of crime rates on gun rates. Whether there is also any effect of guns on violence is impossible to detect from these findings. Of 18 studies, the problem was statistically addressed in only four, and one of these almost certainly did not succeed in modeling the relationship. McDowall and Loftin (1988) used a simultaneous equation model of a Detroit homicide time series, a model that assumed that homicide rates could affect gun rates. However, their model was underidentified unless a single exclusion restriction was valid (see Johnston 1972 for an explanation of simultaneous equation techniques). They assumed that the Detroit riot of 1967 increased the gun ownership rate, but did *not* otherwise affect homicide rates. In view of Daniel Glaser's (1978, pp. 230–1) strong theoretical rationale for a major impact of ghetto riots on subsequent black violence, this critical assumption lacked a priori plausibility.

Of the three studies that may have adequately modeled the reciprocal causation, two found no impact of gun levels on total violence levels

(Kleck 1984a; McDowall 1986); the third (Kleck 1979) found an impact. However, the second Kleck study was a replication of the first, with a longer time series; the second study's findings therefore should be given greater weight. Note that the robbery findings in the second Kleck study were based on a model that did *not* test for reciprocal causation, so it shares the same flaw as other studies that found a supposed positive impact of gun levels on crime rates. McDowall (1986, pp. 141-3) interpreted his panel design results to indicate that the gun robbery rate positively affected gun ownership levels in the general public, but that the total robbery rate did not have such an effect. He did not provide any explanation for this combination of effects. He also did not report any results assessing Cook's (1979) claim that higher gun levels increase the robbery murder rate. In sum, the best one can say is that the literature fails to make a consistent or convincing case for an impact of guns on violence rates. Put more negatively, one could say that the literature has little of a persuasive nature to say on the matter, and that the few studies that adequately addressed the key technical problems have generally found no impact of gun levels on violence levels.

International Comparisons

One of the least productive lines of inquiry in the gun control debate has been to compare the United States with other nations. It is unproductive because the game has been played in such a way that either side can win regardless of whether there is any merit to their claims. Gun control supporters like to selectively contrast the high gun ownership/high violence United States with nations having both low gun ownership and low violence rates (homicide data are usually cited), such as Great Britain or Japan, concluding that low gun ownership must have contributed to the low violence rates. Opponents selectively cite high gun/low violence nations such as Switzerland or low gun/high violence nations such as Mexico, and conclude that gun ownership either has no impact on violence, or actually reduces it. Obviously, pairwise comparisons of two selected cases is useless for establishing causal connections, or the lack thereof [see Sloan et al. (1988) for a particularly egregious example]. Out of any large number of possible pairings, it is safe to say that at least a few pairs can be found to appear to support either side.

In some cases the comparisons of nations are patently ridiculous. To do no more than compare homicide rates in Japan and the United States

and claim to know whether any of the huge difference in homicide rates is attributable to differences in gun ownership levels is far-fetched. The two nations differ enormously on almost all hypothesized determinants of homicide rates, including degree of social solidarity, cultural and ethnic homogeneity, history of racial conflict, hierarchical rigidity, obedience to authority, subjective sense of unjust deprivation, and so on. Further, most of these differences are not currently measured, making it impossible to empirically disentangle effects of these other variables from effects of gun ownership on homicide.

One way one might crudely and partially control for United States-Japan cultural differences is to compare homicide rates among Japanese-Americans, who live where guns are plentiful, with the homicide rates of their presumably culturally similar brethren in Japan, where private gun ownership is nearly nonexistent. Certainly this pair of populations is more comparable than the population of Japan compared with the entire U.S. population. Up through 1979, the FBI reported homicide arrests sorted by racial breakdowns which included "Japanese." For the period 1976-1978, 21 of 48,695 arrests for murder and nonnegligent manslaughter were of Japanese-Americans, or 0.04% (U.S. FBI 1977-1979). Applying this fraction to the total of 57,460 homicides yields an estimate of 24.78 killings by Japanese-Americans for 1976-1978, or about 8.26 per year. With 791,000 persons of Japanese ancestry in the United States in 1980 (U.S. Bureau of the Census 1984), this translates into an annual rate of 1.04 homicides per 100,000 population. For the same 1976-1978 period, the annual homicide rate in Japan averaged 2.45 (United Nations 1982, pp. 192, 718). Thus, crudely controlling for Japanese culture in this way indicates that in Japan, where civilian gun ownership is virtually nonexistent and gun control laws are extremely strict, the homicide rate is 2.3 times as high as it is among Japanese-Americans living where guns are easily available and gun laws are far less restrictive.

It is possible that the Japanese-American homicide rate was underestimated due to a failure of police officers to consistently note Japanese ancestry of homicide arrestees. However, even if the true Japanese-American share of U.S. homicide arrests were doubled to adjust for this hypothetical data flaw, the homicide rate in Japan would still be higher. A critic could object that there are still many uncontrolled differences between these two populations, and such a critic would be quite correct. These sorts of primitive cross-national comparisons tell us little about the guns-violence link. One would hope, however, that this criticism would be even-handedly applied to all such comparisons, whether used

to spuriously buttress either progun or antigun arguments. The preceding exercise merely served to demonstrate that one simple "control" can make an entire cross-national violence rate difference disappear altogether, and even reverse its direction.

The reasoning used in cross-national comparisons is also very selective. Great Britain is often compared with the United States and it is noted that the former not only has a much lower total homicide rate, but also a lower *gun* homicide rate. This fact is supposed to nail down the claim that it is gun ownership that causes the homicide rate differences. However, the absurdity of the logic becomes evident once it is applied to nongun homicides. Britain's rates of knife homicide and of killings with hands and feet are also far lower than the corresponding rates in the United States, but no one is foolish enough to infer from these facts that the lower violence rates were caused by a lower rate of knife ownership in Britain, or to the British having fewer hands and feet than Americans (Greenwood, 1972, p. 37).

In earlier research, a major obstacle to judging whether gun ownership accounts for any of the homicide rate differences between nations was the absence of any actual data on gun ownership levels in the foreign nations compared to the United States. Some previous comparisons had to rely on very indirect indicators of gun levels, such as the gun homicide rate. Curtis (1974, pp. 110-1) compiled data on a miscellany of nations, foreign cities, tribes, and groups of cities, and found a high correlation between the *gun* homicide rate and the *total* homicide rate, similar to the intra-U.S. state-level analysis of Seitz (1972). Apparently both authors believed the association somehow bore on the issue of whether homicide rates were causally affected by gun ownership levels. As previously noted, this association is at least partly an artifact of the presence of gun homicides as a component in the numerator of both the gun homicide rate and the total homicide rate. Curtis did note that the size of the correlation fluctuated wildly, from +0.96 to -0.92, depending on which exact set of cases was included.

What Curtis did not report was another interesting correlation. If one uses his data to compute the correlation (across 25 cases) between the total homicide rate and the *percentage* of homicides committed with guns, it is 0.065, not significantly different from zero. One would think the percentage of homicides committed with guns would be at least a rough indicator of gun availability, at least among violence prone people; this is certainly how many researchers have previously used it (e.g., Brearly 1932; Fisher 1976; Brill 1977; Cook 1979). Thus, Curtis' data indicated that, cross-nationally, there was not even a bivariate associa-

tion between the homicide rate and an indirect indicator of gun ownership.

Recently, international data based on a more direct measure of gun ownership have become available. Telephone surveys asking about gun ownership were conducted in early 1989 in 14 countries, including the United States. The percentage of households with guns in 11 of these countries was reported by Killias (1990, p. 171), along with their homicide rates. Killias did not statistically analyze his data beyond noting pairwise cross-national comparisons. Generally speaking, nations with higher gun ownership levels had higher total homicide rates—secondary analysis of the published figures yielded a correlation coefficient of 0.774 for the nine nations on which Killias had complete data. Further, the correlation between gun prevalence and the *gun* homicide rate was 0.74. Killias concluded that higher gun ownership levels cause higher homicide rates.

However, what Killias did not note was the fact that countries with higher gun ownership had higher *nongun* homicide rates as well—that correlation was 0.74, just as high as the correlation with gun homicides. This pattern of findings strongly suggests either of two interpretations. (1) Gun ownership levels are a *response* to high violence rates, rather than a *cause* (as found in Kleck 1984a). The data make more sense from this perspective than from Killias', since one would expect both gun and nongun homicides to increase fear and motivate the acquisition of guns for defense, but one would not expect gun ownership levels to increase nongun homicide rates. (2) Alternatively, gun ownership levels, along with the percentage of homicides committed with guns, may serve as indicators of the population's willingness to inflict lethal violence on others. This too would explain why both gun and nongun homicides should be equally correlated with gun ownership levels—both are influenced by the same "population lethality" variable. Either explanation accords more closely with the full set of associations than the assertion that higher gun ownership levels cause higher homicide rates.

At this point it is safe to say that cross-national comparisons do not provide a sound basis for assessing the impact of gun ownership levels on crime rates.

A City-Level Study of Gun Levels and Violent Crime Rates

The following analysis is a city-level cross-sectional study of the impact of gun ownership levels on violent crime rates (and is adapted from Kleck and Patterson 1991). Data were gathered on all 170 U.S. cities that

had a population of 100,000 or larger in 1980. Cities are the smallest, most homogeneous unit or area for which crime data are nationally available. A majority of the reported violent crimes in the United States occurred in these 170 cities (U.S. FBI 1981, p. 173), so the following analysis covers the areas in which most of the violent crime problem is located. Cities smaller than 100,000 could not be included in the sample because person-level vital statistics mortality data, including homicide and suicide data, do not identify locations of deaths for cities with populations smaller than 100,000 (U.S. NCHS 1983, p. 8). These data were needed to obtain city counts of specific subcategories of deaths, such as gun homicides and gun suicides. These counts were essential as components in dependent variables and important as indirect indicators of gun ownership.

Table 5.13 lists the variables used in the city-level analysis of the impact of gun ownership levels. The dependent variables are the rates per 100,000 resident population of homicide, aggravated assault, robbery, rape, and burglary. For the first three of these categories, data were available that allowed separate analyses of rates of violence with guns, without guns, and gun and nongun crimes combined. The analysis covers all of the major categories of crime in which firearms are involved with any significant frequency.

Burglary is rarely committed with guns (Yeager et al. 1976, p. 7). Guns are seldom of much utility to burglars because they rarely confront victims. However, burglary was analyzed for two reasons. First, since residential burglaries occur in the location where a gun-owning householder usually keeps his gun, widespread gun ownership could have a deterrent effect on burglars. However, it has also been argued that the main effect of gun ownership may be to displace burglars from occupied homes to unoccupied homes (Chapter 4; Kleck 1988). Although this would be beneficial in reducing confrontations between burglars and victims, thus reducing burglary-linked injuries, it would not necessarily result in a net reduction in the total burglary rate. Second, analyzing burglary serves as a useful test in detecting spurious or coincidental associations between gun ownership levels and violence rates. For example, if it were found that gun ownership has more of an apparent positive effect on burglary than it does on crimes that frequently involve guns, it would suggest that rather than having a causal effect on violence rates, gun ownership may merely be associated with some other factor that affects crime rates but that was omitted from the models.

The violence rates were averaged over the 3 years, 1979 to 1981, thus bracketing the Census year of 1980 for which data on many of the con-

rol variables were available. Three years were covered rather than a single year to minimize the potential measurement error produced by misclassification. Some of the smaller cities had fewer than a half dozen homicides per year; thus misclassification of just one or two homicides as other kinds of deaths could substantially alter a single year's official count. This should reduce error variance. The dependent variables were expressed in natural logs. This transformation made the initially skewed distribution of the dependent variable (and therefore of the residuals) more nearly normal, and stabilized the variance of the residuals, reducing heteroscedasticity.

Models of violence rates were estimated using LISREL methods (Joreskog 1973; Joreskog and Sorbom 1981a,b), primarily because the gun ownership level was not directly measured and was treated as a latent construct. Also, LISREL was appropriate for estimating models in which a simultaneous reciprocal relationship was specified between violence rates and gun levels, based on the idea that higher violence rates could motivate gun acquisition, in addition to gun ownership increasing violence rates.

The structural models therefore each contain two endogenous variables: the crime rate and gun ownership. For purposes of estimation, crime rates were assumed to be perfectly measured, whereas gun ownership was treated as a latent construct with multiple indicators (i.e., four to five indicators or manifest variables—see Smith and Patterson 1985). For purposes of scaling the latent construct, in each measurement model one loading was constrained to the value of 1.00 (Stapleton 1977; Joreskog and Sorbom 1981a).

Exogenous variables presented in the models represent only a subset of variables that were initially hypothesized as affecting violence rates. Exogenous variables remaining represent those that showed a significant association with violence rates below the .10 level of significance using OLS. In the models these variables were treated as if they were perfectly measured.

Measuring aggregate levels of gun availability for cities is problematic. One fairly direct method would be to use survey data. Although many national surveys have asked gun ownership questions, the surveys do not provide sufficient cases for single-city estimates for most of the cities, even when many surveys are combined. Instead gun availability was measured using multiple indirect indicators. For cities, Cook (1979) used a simple index consisting of the average of two indicators: the percentage of suicides committed with guns and the percentage of non-felony-related homicides committed with guns. He showed this mea-

sure to be highly correlated with survey measures of urban household gun prevalence aggregated over nine census regions, indicating validity for purposes of cross-sectional analyses. Earlier researchers had used similar indirect measures (Brearley 1932, p. 71; Seitz 1972; Curtis 1974, p. 110; Brill 1977, p. 20). These measures were improved by using a total of as many as five indicators of city gun ownership levels: (1) percentage of suicides committed with guns, 1979–1982, (2) percentage of homicides committed with guns, 1979–1982, (3) percentage of aggravated assaults known to the police committed with guns, 1979–1980, (4) percentage of robberies known to the police committed with guns, 1979–1980, and (5) percentage of the dollar value of all stolen property reported to the police that was due to firearms thefts, 1979–1981. Four other indicators were also evaluated: the fatal gun accident rate, the rate of subscriptions to gun/outdoor sport magazines, the rate of National Rifle Association members, and the rate of contributors to the Second Amendment Foundation, another gun owners group. However, in a factor analysis these did not load with the other indicators.

Validation of the Gun Ownership Measure

Following Cook (1979), the validity of the gun indicators was assessed by measuring their associations with survey-based measures of gun ownership. As previously noted, there are insufficient cases in national surveys for the gun prevalence of most cities to be measured. Instead, the results of three national surveys, the General Social Surveys for 1980, 1982, and 1984, were combined to compute reported gun ownership prevalence figures for the nine major U.S. census regions, among persons living in places of 100,000 or larger population. Comparable measures were computed for each of the gun indicator variables, weighting each city measure by the city's population and calculating a weighted big city regional measure for each of the nine regions.

All but one of the five indirect gun indicators were strongly correlated with the survey measures of gun availability in the nine regions, and the indicators were highly correlated among themselves. The only indicator about which there is some doubt is one of the two used by Cook (1979)—the percentage of homicides committed with guns. It was correlated only 0.38 with the survey-based percentage of households reporting a gun, over the nine regions, an association not significantly different from zero. The other indicators showed the following correlations with the percentage of households reporting a gun: 0.69 for percentage of aggravated assaults committed with a gun, 0.83 for percentage of robberies committed with a gun, 0.86 for percentage of suicides committed

with guns, and 0.90 for percentage of the value of reported stolen property attributable to guns. The stolen guns measure, not previously used in gun research, was the best single indicator of gun ownership. These results were confirmed using survey-based measures of respondent (as opposed to household) gun ownership and both household and respondent ownership of handguns.

All of the indicators were more strongly associated with survey measures of handgun ownership than with gun ownership in general. Thus the measure may mainly tap handgun ownership. This is not surprising, since most of the indicators seem to be oriented to measuring gun availability among criminals, and handguns are the predominant gun type involved in crime. On the other hand, the indicators are also less strongly associated with gun ownership among self-reported arrestees than with gun ownership among nonarrestees. Thus, the indicators seem to most strongly reflect noncriminal handgun ownership. In any case, these distinctions are a bit tenuous, since survey-measured ownership among self-reported arrestees and among nonarrestees are highly correlated with each other, indicating that criminal and noncriminal ownership are highly correlated. This would mean that if they could be separately measured for cities, each could serve as a good surrogate for the other, but also that it would be hard to empirically distinguish their separate effects. Consequently, it would seem prudent to interpret the indicators as reflecting general gun ownership, i.e., ownership in the entire population, without distinguishing ownership among criminals from ownership among noncriminals (see Kleck and Patterson 1990 for further details of the validation.)

In each model, when the dependent variable could bear an artifactual association to one of the gun ownership indicators, that indicator was deleted. Thus, the percentage of homicides involving guns was omitted from the homicide model, the gun percentage of assaults was omitted from the aggravated assault model, and the gun percentage of robberies was omitted from the robbery model.

Most of the violence predictors besides the gun ownership indicators were simply measures of the relative sizes of population groups that have especially high or low violence rates, of the prevalence of statuses that frequently give rise to violence, such as divorce, alcoholism, and unemployment, or of social integration, isolation, or transience. They were chosen on the basis of a review of prior studies of violence and crime rates done at the city or metropolitan area level—those that had been consistently found to be significant predictors were specified in initial versions of the corresponding models.

A few of the predictors are sufficiently uncommon to require com-

ment. College enrollment was specified as a predictor of violence rates as a way of controlling for prevalence of city residents with low current income but predominantly middle class origins, culture, and economic prospects, a group both low in violence and high in support for gun control (Wright et al. 1983). Mortality data were used to roughly control for the size of substance-abusing segments of city populations. Alcoholic liver disease deaths per capita served as an indicator of alcohol abuse, whereas per capita deaths due to nonmedical accidental poisoning by opiates served as an indicator of opiates abuse. Since it is questionable how consistently substance abuse-linked deaths are recorded as such on death certificates, estimates for these variables should be interpreted cautiously.

As with nearly all aggregate analyses of violence, the present study uses ratio variables, with city population being the denominator in many variables, both exogenous and endogenous. Many critics have argued that the presence of common components in ratio variables can lead to biased, tautological, or artifactual associations. Firebaugh and Gibbs (1985, p. 715) recommended that if one seeks unbiased coefficient estimates in a regression model containing both endogenous and exogenous variables with a common component (commonly population size) in the denominator, one should also include one divided by the common component as another predictor. Thus all models include one divided by resident population (in 100,000s) as a predictor of violence rates, in addition to those predictors that were computed by dividing some number by the population in 100,000s.

There is another problem related to use of population figures. Computing aggregate crime variables as per capita rates is conventionally done to control for the size of the population at risk of either committing crimes or being victimized in crime. Standard city resident population figures, however, are not completely adequate for this purpose because they do not count nonresident persons at risk, including daily commuters and visitors such as tourists and business travelers. The omission of commuters was controlled by including as a separate predictor the city population as a fraction of the surrounding metropolitan area, on the assumption that cities located in much larger metropolitan areas are likely to have more commuters, in which case resident population would be a more serious underestimate of the population at risk. The contribution of short-term visitors was controlled by including as a separate predictor a "visitors index": the per capita total receipts for hotels, motels, and other lodging places, for the metropolitan area in which a city is located, for 1977. This is an especially important control for cities

with large numbers of tourists relative to resident population, such as Las Vegas, Orlando (Disney World), and Miami.

The relationships between gun ownership and crime levels were treated as reciprocal, based on the assumption that although gun levels may affect violence levels, crime and violence may also motivate gun acquisitions (Kleck 1984a). The rate of subscriptions to gun-related magazines and the state hunting license rate were used as indicators of recreational interest in firearms and the prevalence of a gun sporting subculture. They served as instruments that should have a direct effect on gun ownership but not on violence or crime rates, thereby permitting identification of the model.

Tables 5.14 and 5.15 present the main statistical results. In each model the value of PSI represents the unexplained variance in the endogenous variables, since these coefficients come from a standardized solution in which the variance of the latent variable, gun ownership, has been scaled to 1.0. Thus, for example, the proportion of the variance explained in total homicide rates is $1 - .256 = .744$ (Joreskog and Sorbom 1981a). The tables also present the degrees of freedom, chi-square, and goodness of fit index for each of the models (see Wheaton 1988; Bollen and Liang 1988; Bollen 1989 for discussions of overall model fit).

Because the estimated models are quite large, estimates are reported in two tables, one covering estimated effects of control variables and the other covering estimated effects of gun laws and gun ownership. Table 5.14 reports standardized LISREL parameter estimates for the control variables used in each of the five models. These estimates indicate, for example, that city assault rates are significantly higher in cities in which poverty (RPOV), alcohol abuse (ALCHLSM), and divorce (CNTDIVRT) are high but significantly lower in areas with large college enrollment rates (COLLEGE) and areas in which the city population makes up a smaller percentage of the metropolitan area population (PCTMSA). Because these effects are secondary to this book's concerns, the remainder of these findings are left to the interested reader.

Table 5.15 presents standardized LISREL solutions for estimated effects of gun ownership on the five total crime rates as well as the rates for gun and nongun violence rates for three of the types of violence (homicide, assault, and robbery). In addition, the estimated effects of violence rates on gun ownership are shown.

With two exceptions, levels of general gun ownership had little apparent effect on violence rates (see coefficients in Gun ownership row of each panel). One exception is the homicide model where gun ownership appeared to have a significant *negative* effect on the violence rate. The

only result in Table 5.15 that supports the view that gun levels have a net positive effect on crime or violence as for burglary, a crime that rarely involves guns. Because it is implausible that gun ownership would increase the frequency of crimes that do *not* involve guns, and not increase crimes that *do* involve guns, the association is probably due either to a coincidental association of gun ownership with an omitted variable that affects burglary rates, or to a positive effect of burglary rates on gun ownership that has not been adequately modeled.

Based on the individual-level findings, a reasonable prediction about aggregate rates would be that gun availability would have a negative effect on rates of assaults resulting in attack and on rates of assaults with injury, whereas the overall net effect on the homicide rate should be essentially zero, or perhaps slightly positive. Unfortunately, FBI data count total aggravated assaults, which include both threats and actual attacks, and both attacks with injury and those without. The city-level data indicate that gun levels have no net impact on aggravated assault rates, i.e., on the total rate of both threats and attacks combined, but they cannot tell us the net impact of gun levels on rates of attack or of assault injury. The city data also indicate that gun levels have no net effect on the total homicide rate, as would be expected based on the results of the individual-level analysis.

Note that it is possible that having a gun emboldens some people to enter into situations, settings, and confrontations likely to result in violence. Once in such a situation, the net effect of an aggressor having a gun on the probability of inflicting a death may be zero, yet gun availability could still increase the total homicide rate by increasing the rate at which people enter into such "assault-prone" situations. This possibility cannot be directly assessed because there are no data on the frequency of such encounters.

As expected, homicide and rape rates appear to have a positive effect on gun ownership, confirming national time series findings (Kleck 1979; 1984a), and supporting those survey studies that found gun ownership to be related to crime rates in surrounding areas (Chapter 2). However, results did not support such an effect for assault, robbery, or burglary (Table 5.15).

Although the measurement of gun availability is probably superior to any previously used in aggregate-level research, it is not adequate for the purpose of distinguishing gun ownership among more violence-prone subsets of the population from ownership levels in the general public. Also, some of the indicators of gun ownership can each also be interpreted as indicators of the seriousness of violent motivations of a

city's residents. If a large fraction of a city's aggressors selects serious weapons such as guns to carry out their intentions, this may indicate that a large fraction of them was seriously intent on producing a death. Note, however, that this problem would tend to positively bias the apparent effect of "gun ownership" on violence, i.e., make it seem there was more of an effect than their really was, since weapon effects would be confounded with the effects of aggressor "seriousness." Thus, correcting this flaw would tend only to strengthen the present conclusions that gun ownership levels have no net positive effect on violent crime rates.

Analysts always need to be skeptical about restrictions used to achieve identifiability in structural equation models. The key identification restrictions needed to model the assumed reciprocal relationship between gun ownership and violence rates were the exclusion of gun magazine subscription rates and hunting license rates from the crime equations. Interest in hunting and other gun-related sports was assumed to affect gun ownership rates but to not directly affect crime rates. Some have argued that such interests may reflect, or even generate, proviolent attitudes, but Krug (1968), Eskridge (1986), and Bordua (1986) have all found hunting license rates to have small-to-moderate *negative* associations with violence rates.

Why do gun ownership levels have no apparent net positive effect on violent crime rates, either in the present study or in many previous ones? For burglary and rape, guns are rarely involved (U.S. Bureau of Justice Statistics 1987a), and rarely necessary or helpful in committing those crimes. Thus there was no strong a priori reason to expect a positive effect of gun ownership on these crimes.

There was also no support for the idea that gun ownership deters burglars in a way that produces a net negative effect on the total burglary rate, since the apparent effect was positive. However, the deterrence hypothesis received only a partial test, since home gun ownership should mainly affect residential burglary, whereas the published FBI data cover nonresidential burglaries as well. Since another effect of victim gun ownership might be displacement of burglars from occupied homes to unoccupied homes and nonresidential targets (Chapter 4; Kleck 1988), it is not clear what the net effect would be on total burglary rates. A more relevant test will have to focus on residential burglaries separately, with an attempt to measure occupancy of burglary targets.

The lack of any apparent effect of gun levels on the crime rates could be due to counterbalancing effects of opposite sign, with criminal ownership increasing violence and noncriminal ownership decreasing it due to deterrent effects of ownership among prospective victims. If this

were so, it might still be useful to reduce gun levels among criminals if measures used to accomplish this did not also reduce gun levels among noncriminals to an equal or greater degree.

As previously noted, robber gun possession can have a mixture of both positive and negative effects on robbery rates. Also, gun ownership by prospective victims, especially retail store owners, may deter some robbery attempts (Chapter 4; Wright and Rossi 1986, pp. 141–59; Kleck 1988). The present results confirm the findings of the two best previous studies of city gun ownership and robbery rates, which also found no evidence of a net impact of gun ownership levels on the total robbery rate (Cook 1979; McDowall 1986). They are consistent with an interpretation that effects of opposite sign cancel each other out so as to produce no net effect on the total robbery rate. The findings also indicate that gun ownership levels increase gun robbery and decrease nongun robbery, producing no net effect on total robbery rates (Table 5.15, third panel), just as Cook (1979) and McDowall (1986) found. Because gun robberies are less likely to involve injury, the results are consistent with the hypothesis that higher gun levels reduce robbery injury rates.

In assaultive crimes such as homicide and aggravated assault, gun availability also seems to have a mixture of positive and negative effects. The present aggregate level findings are consistent with a claim that the negative, violence-reducing effects of gun availability, noted in the individual-level analysis, may outweigh the violence-increasing lethality effect, since the findings indicate a net negative association of gun ownership with city homicide rates. It certainly is possible that gun ownership among prospective victims could deter some homicidal attacks. Nevertheless, this surprising result is not emphasized, partly because it contradicts the findings of time series research indicating no net effect, positive or negative, of gun ownership levels on the homicide rate (Kleck 1984a).

It might be argued that positive effects of gun ownership levels are not evident in a sample of U.S. cities because there is little meaningful variation in gun ownership, all U.S. cities supposedly being awash in guns. Empirical evidence indicates otherwise. There is great cross-city variation in all of the indirect indicators of gun ownership (Table 5.12). Surveys have likewise always indicated tremendous variation across U.S. regions. For example, only 24% of New England households reported a gun, compared to 61% in Rocky Mountain states (Table 2.5). Likewise, variation within states, across counties is very large, whether measured with surveys or gun license data (Bordua et al. 1979). Further,

if one cumulates results from 11 national General Social Surveys (GSS) conducted between 1973 and 1989, direct survey measures of gun prevalence can be computed for very large cities, with reasonably large sample sizes. These data indicate enormous cross-city variation in gun ownership within the United States, from very high rates greater than any known to exist outside the United States, to very low rates below those common in the Western European nations often compared with the United States. For example, while the percentage of households reporting a gun was about 61% in Houston and 56% in Birmingham (and probably still higher in many smaller cities), it was only 6% in New York City and 7% in Boston (author's analysis of GSS data).

Nevertheless, one might argue that all of this variation is at a relatively high level, and that one could observe the lower crime rates that would result from lower gun ownership rates only if the latter got down to *very* low levels—levels that are not only lower than those commonly observed in the United States, but are also lower than the 9–33% household gun prevalence levels found in Western European nations (see Killias 1990). Therefore, data from another nation with indisputably low levels of gun ownership are now analyzed.

An English Test of the Link between Guns and Crime Rates

The leading study of English gun control was conducted by Colin Greenwood, who compiled tables of data on gun crimes and rates of legal gun owners in all 47 English police force areas, as of 1969 (1972, pp. 220–23). Greenwood performed no statistical analysis of these data, but informally concluded that “the rate of armed crime is in no way connected with the density of firearms in the community. Indeed, if anything, the reverse appears to be true. The legitimate use of firearms is largely a rural pursuit, and crime is largely a city pursuit” (p. 219).

It is worth analyzing Greenwood's data, both to more rigorously confirm his null finding, and to test his urban/rural explanation. His counts of crimes were translated into per capita crime rates and correlation coefficients between the rate of legal gun owners (firearms or shotgun certificate holders per 100 households) and the rates of “robberies involving firearms” and rates of “indictable offenses firearms” were computed. It was not possible to do more extensive multivariate analyses because Greenwood's police areas do not correspond to the areas for which other data are available.

Greenwood was correct: the legal gun owner rate correlated $-.17$ with

both crime rates. However, although legal gun ownership rates are indeed higher in rural areas, this does not account for the absence of a positive association between gun ownership and crime. Greenwood classified each of the 47 areas of England into four urban-rural types: (1) Rural, (2) Rural/Urban, (3) Urban/Rural, and (4) City or Urban (these two have been combined together, as only one area was "Urban"). Correlations of the legal gun ownership rate even *within* these areas (i.e., controlling for urbanness) were all nonsignificant and were negative in two of the four area types (correlations with the indictable firearms offenses rate were $-.12$, $-.47$, $.48$, and $.05$ within the four types of areas, respectively). This corresponds with the results of similar county-level multivariate analyses performed on Illinois legal gun-owner data by David Bordua and his colleagues (Bordua 1986; Bordua and Lizotte 1979; Bordua et al. 1979). Legal gun ownership is generally either unrelated or negatively related to gun crime rates, even controlling for urbanness. Note that this is true of *gun* crime rates—if legal gun ownership levels are unrelated to gun crime rates, they are even less likely to be related to total crime rates (Table 5.15). Note also that there were no controls for the possible positive effect of crime rates on gun ownership; doing so would presumably reduce even further any impression of a positive effect of gun ownership on crime rates.

It should not be thought that gun ownership did not vary across English areas—the rate of certificate holders per 100 households varied from an extremely low 0.4 in Liverpool to a surprisingly high 16.7 in rural Suffolk. In the latter area, legal gun ownership was higher than all self-reported gun ownership, legal and illegal, is in some areas of the United States. Therefore, considerable variation in legal gun ownership rates at a generally very low level was unrelated to variation in crime rates, just as was true with considerable gun variation at higher levels in the United States. On the other hand, if criminal gun ownership could somehow have been separately measured, results might have been different.

Conclusions

When aggressors possess guns, this has many effects on the outcome of violent incidents, some tending to make harmful outcomes more likely, some making them less likely. Gun possession probably facilitates some attacks by less powerful aggressors against more powerful victims, and may elicit aggression in at least some circumstances, whereas gun

use probably increases the probability of death if a wound is inflicted. On the other hand, possession of guns has the overall effect of reducing the likelihood of attack, probably because it often makes attack unnecessary, and of reducing the probability of an injury being inflicted, perhaps due to the difficulty of aiming guns accurately. The aggregate level analysis of violent crime rates indicated that the net impact of all the various individual effects of gun possession, among prospective victims and aggressors combined, was not significantly different from zero.

Consequently, the assumption that general gun availability positively affects the frequency or average seriousness of violent crimes is not supported. The policy implication is that there appears to be nothing to be gained from reducing the general gun ownership level. Nevertheless, one still cannot reject the possibility that gun ownership among high-risk subsets of the population may increase violence rates. Likewise, the immediate availability of guns produced by gun carrying might increase violence rates even if gun ownership levels do not. Further, gun controls might also be justified on the basis of their potential for reducing deaths from suicides and gun accidents. These last two topics are addressed in Chapters 6 and 7.

Table 5.1. Guns and the Facilitation of Homicide^a

	% of Homicides Involving Guns (Base Frequencies in Parentheses)	
	Sex of Attacker	
	Male	Female
Sex of victim		
Male	68.4 (9096)	63.5 (1779)
Female	59.6 (2737)	39.2 (268)
	Age of Attacker	
	16-39	Other
Age of victim		
16-39	68.3 (7529)	72.5 (3758)
Other	49.5 (2919)	61.9 (3155)
	Number of Attackers	
	2 or more	One
Number of victims		
2 or more	70.3 (91)	69.4 (301)
One	60.7 (1492)	66.0 (12035)

^a Cases are murders or nonnegligent manslaughters that occurred in the United States in 1980 and were reported to the FBI's SHR program.
Source: 1980 Supplementary Homicide Reports (ICPSR 1984a).

Table 5.2. Summary of "Weapons Effect" Experimental Studies
A. Results of Individual Studies^a

Studies	Measure of Aggression	Real Weapon?	Subjects	Weapon Linked with Aggressor?
Supportive				
Berkowitz and LePage (1967)	M	M	M	L
Boyanowsky and Griffiths (1982)	L	M	L	L
Caprara et al. (1984)	M	L	L	L
Frodi (1973)	L	M	L	L
Leyens and Parke (1975)	L	L	L	L
Mendoza (1972)	L	L	L	L
Page and O'Neal (1975)	M	L	M	L
Simons et al. (1975)	L	M	M	L
Simons and Turner (1975)	M	M	M	L
Turner and Goldsmith (1976)	L	L	L	L
Mixed Findings				
Fraczek and Macaulay (1971)	M	M	M	L
Turner et al. (1975)	L	M	M	L
Contrary				
Buss et al. (1972)	M	L	M	M
Cahoon and Edwards (1984)	L	M	M	L
Cahoon and Edwards (1985)	L	M	M	L
Ellis et al. (1971)	M	M	M	L
Fisher et al. (1969)	M	M	M	L
Halderman and Jackson (1979)	L	M	M	L
Page and Scheidt (1971)	M	M	M	L
Tannenbaum (1971)	M	L	M	M
Turner and Simons (1974)	M	M	M	L

^a M, study was more relevant to real-world gun violence in United States; L, study was less relevant or realistic. In Panel B, the first study condition listed, of each pair, is considered to be the more relevant and realistic one.

(continued)

Table 5.2. (Continued)
B. Patterns of Findings in Studies

Characteristic	Condition	Results ^a
Type of aggression Ss believed they were inflicting	Painful electric shocks	4/1/6
	Play aggression, horn honking, hypothetical aggression, etc.	6/1/3
Weapon stimulus	Real weapons	5/2/7
	Toy weapons, pictures, etc.	5/0/2
Subjects	U.S. adults, adolescents	4/2/9
	Non-U.S. or children	6/0/0
Weapon associated with aggressor?	Yes	0/0/1
	No	10/2/8
Overall relevance to real violence in United States	High ^b	2/1/4
	Low	8/1/5
All studies		10/2/9

^a Number of studies with findings generally (1) supportive of / (2) mixed / (3) contrary to "weapons effect" hypothesis.

^b "High" overall relevance means Ss were U.S. adults or adolescents, believed they were inflicting physical pain on another person, and were exposed to real weapons; "Low" means all other studies. (There were no studies with all three of these attributes and the weapon was also associated with the aggressor.)

Table 5.3. Assault Wound Death Rates by Weapon Type, U.S. 1988

	Total	Gunshot Wound	Knife Wound	Injury from Other Weapon	No Weapon
Simple assaults	860000	0	0	0	860000
Aggravated assaults ^a	571000	22190	40062	325956	33118
Homicides ^b	18901	11869	3744	2069	1220
Assaults + homicides	1449901	34059	43806	328025	894338
Death rate ^c	0.0130	0.3485	0.0855	0.0063	0.0014

Ratio of gunshot death rate over knife death rate = 4.08

^a Aggravated assaults completed with injury—gunshot and knife wound figures reflect the fact that only some injuries inflicted by attackers possessing guns or knives actually involved injuries inflicted by those weapons.

^b Murders and nonnegligent manslaughters, excluding those linked with robbery or rape. Killings involving guns of unknown type were allocated across gun type categories according to the distribution among cases with known gun type. Killings where weapon type was among cases with known gun type. Killings where weapon type was not stated at all were similarly allocated.

^c Homicides/(assaults + homicides). The absolute size of these death rates is far too high, due to a serious undercount of woundings in the NCS (Cook 1985). They are computed only for purposes of comparing the gun rate with the knife rate, on the assumption that gun and knife woundings are roughly equally undercounted.

Sources: Assaults: U.S. Bureau of Justice Statistics (1989a) for total number of assaults, U.S. BJS (1989b, p. 64) for assault distribution by weapon type. Homicides: U.S. FBI (1989, pp. 12-14, 47). Fraction of gun and knife assaults with injury that involved gunshot or knife wounds: U.S. BJS (1986b).

Table 5.4. Offender "Seriousness" and Weapon "Seriousness"^a

Weapons Used ^b	Self-Reported Lifetime Arrests			Total
	1	2-5	6 or More	
No weapon	21	55	29	105
Nongun weapon	20	69	92	191
Handgun only	37	166	173	376
Long gun only	9	44	35	88
Long gun and handgun	7	25	36	68
Total	94	369	365	828
% Armed	78	85	92	87
% Armed with gun	56	64	67	64
% Armed with long gun	17	19	19	19

Weapons Used ^b	Self-Reported Lifetime Assaults			Total
	Never or Once	A few	10 or More	
No weapon	21	41	17	79
Nongun weapon	31	94	54	179
Handgun only	47	141	117	305
Long gun only	13	46	22	81
Long gun and handgun	3	35	32	70
Total	115	357	242	714
% Armed	82	89	93	89
% Armed with gun	55	62	71	64
% Armed with long gun	14	23	22	21

^a Table covers all felons in 10 state survey who reported being incarcerated for an assaultive crime—murder, manslaughter, attempted murder, aggravated assault, or simple assault—and who indicated how they were armed when they committed the crime.

^b Weapons with which felons were armed when they committed the offense for which they had been imprisoned.

Source: Secondary analysis of ICPSR (1986).

Table 5.5. Weapons and Crime Completion in Rape and Robbery

Offender Weapon(s)	Rape		Robbery	
	% with Weapon	% Completed	% with Weapon	% Completed
Gun	9.5	48.7	20.0	78.8
Knife	10.7	41.9	16.7	60.6
Other weapons	4.1	19.8	10.0	60.6
Weapons, type unknown	1.1	42.3	2.4	55.5
Unarmed	63.9	28.1	39.7	67.7
Unknown if armed	3.8	22.0	11.2	56.6
				60.8

Source: U.S. Bureau of Justice Statistics (1986b, pp. 3-4; adapted from Tables 5 and 10). Covers violent crime victimizations reported in National Crime Surveys, 1973-1982.

Table 5.6. Rates of Attack, Injury, and Medical Treatment in Violent Crimes, by Weapon Type

	Offender Weapon(s)					
	Gun	Knife	Other Weapon	Combination	Weapon, Type Unknown	No Weapon
% Attacked	36.6	42.7	62.8	58.2	56.1	52.1
% Injured	14.0	24.9	45.0	37.9	42.5	29.9
% Injured, among those attacked	38.3	58.3	71.7	65.1	75.8	57.4
% Received medical care	7.5	13.6	22.0	21.1	18.9	10.4
% Got medical care, among injured	53.6	54.6	48.9	55.7	44.5	34.8
% Received hospital care	6.2	10.1	15.5	14.5	13.3	5.6
% Hospital care, among injured	44.3	40.6	34.4	38.3	31.3	18.7
Median days of hospital care	7.3	5.0	4.1	—	—	3.5

Source: U.S. Bureau of Justice Statistics (1986b, pp. 4, 6; computed from data in Table 12). Table covers violent crime victimizations reported in the 1973-1982 National Crime Surveys.

Table 5.7. Variables in the Individual-Level Analysis

Name	Interpretation	Dataset					
		NCS Assaults, 1979-85		NCS Attacks, 1979-85		NCS/SHR Injuries 1982	
		Mean	SD	Mean	SD	Mean	SD
ATTACK	Victim attacked	.495	.500	1.000	0.000	1.000	0.000
INJURY	Victim injured	.258	.438	.522	.500	1.000	0.000
DEATH	Victim killed	0.000	0.000	0.000	0.000	.014	.119
HGUNPRES	O* had handgun	.114	.318	.061	.239		
OGUNPRES	O had other gun	.022	.147	.014	.120		
KNIFPRES	O had knife	.122	.328	.107	.309		
OWEPPRES	O had other weapon	.136	.343	.170	.376		
HANDGUN	Handgun used in attack (shot or shot at)	.011	.103	.022	.146	.021	.144
OTHERGUN	Other gun used in at- tack (shot or shot at)	.004	.065	.009	.093	.004	.060
KNIFE	Knife used in attack	.021	.144	.043	.202	.056	.230
OTHRWEAP	Other weapon used	.061	.239	.123	.329	.168	.374
UNDTWEAP	Undetermined weapon used in attack	.010	.099	.018	.133	.000	.016
HGSHOT	V shot with handgun					.021	.144
OGSHOT	V shot with other gun					.004	.060
KNIFED	V wounded with knife					.056	.230
CLUBBED	V injured with blunt ob- ject					.223	.416
OWEPINJ	V injured with other weapon					.017	.131
SERIES	Series incident	.057	.232	.037	.189		
INCOME	V household income	8.120	3.947	8.005	3.962		
EDUCATN	Victim's years of formal schooling	15.790	6.475	15.260	6.420		
MARRIED	Victim married	.329	.470	.286	.452		
GUNOCC	V in gun-carrying occu- pation	.038	.192	.040	.195		
BLAKVICT	Black victim	.136	.343	.136	.343	.119	.324
MALEVICT	Male victim	.703	.457	.698	.459	.730	.444
AOLE11	O age 11 or under	.010	.099	.014	.116	.004	.062
AOGE30	O age 30 or over	.236	.425	.197	.398	.202	.402
MALEOFF	Male offender	.942	.233	.936	.244	.941	.236
UNDRACEO	O race undetermined	.021	.143	.022	.146	.025	.156
AGEDIF	Age advantage to O	.210	.407	.209	.407	.269	.444
SEXDIF	Sex advantage to O	.257	.437	.257	.437	.228	.420
NUMDIF	Number offenders minus number of vic- tims	.767	2.787	.910	3.219	.814	1.928
ROBBERY	Robbery involved	.286	.452	.317	.465	.335	.472
BURGLARY	Burglary involved	.038	.192	.030	.170	.032	.176
RAPE	Rape involved	.029	.166	.037	.189	.042	.202
POPGE250	Occurred in city of 250K+ population	.324	.468	.331	.471	.307	.461
SUMMER	Occurred June-August	.279	.448	.283	.450	.270	.444
DARK	Dark at the time	.542	.498	.578	.494		
INSIDE	Occurred indoors	.267	.442	.241	.428		

* V, victim; O, offender. Blank spaces indicate variable did not exist in that dataset.

Table 5.8. ATTACK Equations

Variable	Coefficients (Ratio, Coefficient/Standard Error)				
	1 ^a OLS ^b	2 ^a Probit ^b	3 ^a Probit ^b	4 ^a Probit ^b	5 ^a Probit ^b Reported to Police ^c
	All ^c	All ^c	Nonfelony ^c	Nonseries ^c	
HGUNPRES	-.2836 (-22.40)	-.7704 (-21.64)	-.6084 (-12.74)	-.7769 (-21.57)	-.9310 (-17.00)
OGUNPRES	-.1579 (-5.90)	-.4223 (-5.76)	-.3040 (-3.60)	-.4451 (-5.93)	-.6650 (-6.02)
KNIFPRES	-.1246 (-10.13)	-.3259 (-9.94)	-.2264 (-5.07)	-.3392 (-10.16)	-.3860 (-7.05)
OWEPPRES	.0961 (8.27)	.2545 (8.14)	.2702 (7.59)	.2422 (7.54)	.1614 (2.89)
AOLE11	.1681 (4.22)	.4654 (4.17)	.5135 (3.95)	.4385 (3.78)	.1804 (0.87)
AOGE30	-.0632 (-6.68)	-.1668 (-6.56)	-.2092 (-7.21)	-.1746 (-6.67)	-.0709 (-1.59)
EDUCATN	-.0053 (-8.53)	-.0741 (-8.44)	-.0179 (-8.92)	-.0141 (-8.23)	-.0074 (-2.52)
MARRIED	-.0640 (-7.49)	-.1699 (-7.41)	-.1799 (-6.64)	-.1658 (-7.01)	-.1617 (-4.12)
GUNOCC	.0769 (3.69)	.2081 (3.71)	.2162 (3.69)	.2528 (4.05)	.2647 (2.93)
ROBBERY	.0895 (9.70)	.2391 (9.60)	—	.2391 (9.47)	.3112 (7.30)
BURGLARY	-.0785 (-3.60)	-.2056 (-3.49)	—	-.1963 (-3.27)	-.1917 (-2.32)
INSIDE	-.0293 (-3.05)	-.0820 (-3.18)	-.0966 (-3.42)	-.0751 (-2.81)	-.1759 (-3.51)
SERIES	-.1885 (-10.98)	-.5075 (-10.72)	-.5032 (-10.10)	—	-.3922 (-4.45)
DARK	.8418 (10.46)	.2256 (10.44)	.2609 (10.09)	.2222 (9.98)	.1786 (4.65)
Constant	.5987 (0.08) ^d	.2592	.2900	.2627	.3031
Log-likelihood		-9704.3	-6830.5	-9167.6	-3030.6
Sample (n)	14,922	14,922	10,420	14,040	4,772

^a Equation.

^b Estimation method.

^c Sample.

^d Adjusted R².

Table 5.9. INJURY Equations

Variable	Coefficients (Ratio, Coefficient/Standard Error)					
	6 ^a	7 ^a	8 ^a	9 ^a	10 ^a	11 ^a
	OLS ^b	Probit ^b	Bivariate ^b	Bivariate ^b	Bivariate ^b	Bivariate ^b
	All ^c	All ^c	All ^c	Nonfelony ^c	Nonseries ^c	Reported to Police ^c
HANDGUN	-.3136 (-8.03)	-.9267 (-7.75)	-.9257 (-7.85)	-1.1858 (-8.22)	-.9391 (-7.77)	-1.3116 (-5.88)
OTHERGUN	-.3506 (-5.72)	-1.1619 (-5.40)	-1.1619 (-7.10)	-1.1912 (-6.67)	-1.1386 (-6.82)	-1.2612 (-4.37)
KNIFE	.1357 (4.81)	.3625 (4.72)	.3625 (4.56)	.1674 (1.70)	.3704 (4.53)	.3418 (2.33)
OTHRWEAP	.2058 (11.81)	.5597 (11.64)	.5597 (11.18)	.4623 (7.95)	.5770 (11.15)	.5747 (6.56)
EDUCATN	-.0043 (-4.76)	-.1142 (-4.78)	-.0113 (-4.42)	-.0187 (-5.50)	-.0116 (-4.39)	-.0070 (-1.62)
INCOME	-.0035 (-2.40)	-.0094 (-2.43)	-.0095 (-2.43)	-.0152 (-3.17)	-.0104 (-2.62)	-.0090 (-1.27)
GUNOCC	-.0799 (-2.73)	-.2133 (-2.73)	-.2133 (-2.87)	-.0851 (-1.07)	-.1943 (-2.41)	-.1524 (-1.24)
SEXDIF	-.0537 (-3.82)	-.1403 (-3.79)	-.1403 (-3.79)	-.2623 (-5.41)	-.1618 (-4.32)	-.1494 (-2.43)
AGEDIF	.5592 (3.95)	.1482 (3.95)	.1482 (3.96)	.1113 (2.26)	.1503 (3.93)	.0377 (0.63)
RAPE	.1324 (4.19)	.3428 (4.09)	.3428 (3.87)		.3544 (3.95)	.2227 (1.61)
ROBBERY	.0615 (4.85)	.1647 (4.90)	.1647 (4.57)		.1602 (4.39)	.2454 (4.05)
DARK	.1121 (9.60)	.2943 (9.54)	.2942 (8.95)	.2503 (5.67)	.2940 (8.67)	.1953 (3.54)
Constant	.5104	.0298	.0298	.3079	.0576	.0775
Log-likelihood	(0.06) ^d	-4800	-14542	-10062	-13796	-4623
Sample (n)	7300	7300	7300	4937	7007	2400

^a Equation.
^b Estimation method.
^c Subsample.
^d Adjusted R²

Table 5.10. DEATH Equations

Variable	Coefficients (Ratio, Coefficient/Standard Error)				
	12 ^a	13 ^a	14 ^a	15 ^a	16 ^a
	OLS ^b	Probit ^b	Bivariate ^b	Bivariate ^b	Probit ^{b,d}
	All ^c	All ^c	All ^c	Nonfelony ^c	Reported to Police ^c
HGSHOT	.3782 (35.28)	2.964 (12.49)	2.602 (13.53)	3.093 (2.97)	3.282 (17.59)
OGSHOT	.3948 (15.41)	2.773 (7.29)	2.531 (4.63)	2.654 (2.58)	7.261 (0.28)
KNIFED	.0438 (6.53)	1.397 (6.41)	1.679 (14.37)	1.728 (11.01)	1.264 (8.07)
CLUBBED	-.0051 (-1.36)	0.013 (0.05)	0.160 (2.13)	0.106 (1.11)	0.054 (0.28)
OWEPINJ	.0048 (0.41)	.336 (0.62)	.531 (2.72)	.381 (1.69)	.555 (1.42)
AGEDIF	.0054 (1.53)	.419 (2.29)	.507 (6.57)	.372 (3.85)	.234 (1.70)
NUMDIF	-.0027 (-3.33)	-.158 (-2.63)	-.066 (-3.16)	-.052 (-1.94)	-.017 (-0.33)
ROBBERY	-.0137 (-4.10)	-.560 (-2.80)	-.199 (-2.74)		-.537 (-3.62)
BLAKVICT	.0165 (3.37)	.716 (3.65)	.264 (2.45)	.318 (2.15)	.626 (4.18)
UNDRACEO	.0880 (8.80)	1.139 (4.13)	1.425 (8.73)	1.316 (6.26)	.961 (4.50)
MALEOFF	-.0353 (-5.38)	-.723 (-2.89)	.018 (0.11)	.193 (0.96)	-1.056 (-5.24)
Constant	.0379	-2.485	0.064	-0.112	-1.702
Log-likelihood	(0.29) ^e	-144.81	-3893.5	-2480.6	-252.1
Sample (n)	4322	4322	4322	2868	3914

^a Equation.
^b Estimation method.
^c Sample.
^d Bivariate probit estimates could not be estimated because the correction for sample selection created a near-singular estimated variance matrix.
^e Adjusted R².

Table 5.11. Summary of Weapon Effects in Violent Incidents (OLS Coefficients)^a

Weapon	Attack		Injury, Given Attack		Death, Given Injury		Net Effects, All Incidents, Death	
	b	B	b	B	b	B	b	B
	HGUNPRES ^b	-.284	-.181	-.314	-.092	.378	.459	.014
OGUNPRES ^c	-.158	-.046	-.351	-.065	.395	.199	.016	.038
KNIFPRES ^d	-.125	-.082	.136	.055	.044	.085	.003 ^e	.018
OWEPPRES ^f	.096	.066	.206	.135	-.005 ^g	-.018 ^g	-.000 ^e	-.002
					.005 ^h	.005 ^h		

^a Omitted weapons category—incidents in which no weapons were present or used. b, unstandardized OLS regression coefficient; B, standardized OLS regression coefficient.
^b HANDGUN in Injury equations, HGSHOT in Death (given injury) equation.
^c OTHERGUN in Injury equations, OGSHT in Death (given injury) equation.
^d KNIFE in Injury equations, KNIFED in Death (given injury) equation.
^e Not significant at .05 level.
^f OTHRWEAP in Injury equation, CLUBBED and OWEPINJ in Death (given injury) equation.
^g Coefficient for CLUBBED.
^h Coefficient for OWEPINJ.

Table 5.12. Prior Studies of the Impact of Aggregate Gun Levels on Violent Crime Rates^a

Study	Sample	Two-Way Relationship ?	Measure of Gun Level ^b	Crime Rates ^c	Results ^d
Brearley (1932)	42 states	No	PGH	THR	Yes
Krug (1967)	50 states	No	HLR	ICR	No
Newton and Zimring (1969)	4 years, Detroit	No	NPP	THR, TRR, AAR, GHR	Yes
Seitz (1972)	50 states	No	GHR, FGA, AAR	THR	Yes
Murray (1975)	50 states	No	SGR, SHR	GHR, AAR, TRR	No
Fisher (1976)	9 years, Detroit	No	NPP, GRR, PGH	THR	Yes
Phillips et al. (1976)	18 years, U.S.	No	PROD	THR	Yes
Brill (1977)	11 cities	No	PGC	ICR, THR, TRR	No, Yes, No

(continued)

Table 5.12. (Continued)

Study	Sample	Two-Way Relationship ?	Measure of Gun Level ^b	Crime Rates ^c	Results ^d
Kleck (1979)	27 years, U.S.	Yes	PROD	THR	Yes
Cook (1979)	50 cities	No	PGH, PGS	TRR, RMR	No, Yes
Kleck (1984a)	32 years, U.S.	Yes, No	PROD	THR, TRR	No, Yes
Maggadino and Medoff (1984)	31 years, U.S.	No ^e	PROD	THR	Yes
Lester (1985)	37 cities	No	PCS	VCR	No
Bordua (1986)	102 counties, 9 regions	No ^f	GLR, SIR	HAR, THR	No
McDowall (1986)	48 cities, 2 years ^g	Yes	PGH, PGS	GHR, TRR	No, No
Lester (1988b)	9 regions	No	SGR	THR	Yes
McDowall and Loftin (1988)	36 years, Detroit	No ^h	PGR, FGA	THR	Yes
Linsky et al. (1988)	50 states	No	GMR	GHR	Yes ⁱ

^a Table covers only studies and findings in which the dependent variable was a crime rate, as opposed to the fraction of crimes committed with guns.
^b Measures of Gun Level: FGA, fatal gun accident rate; GLR, gun owners license rate; GMR, gun magazine subscription rates; GRR, gun registration rate; HLR, hunting license rate; NPP, number of handgun purchase permits; PGA, % aggravated assaults committed with guns; PGC, % homicides, aggravated assaults, and robberies (combined together) committed with guns; PGC, same as PGC, but with suicides lumped in as well; PGH, % homicides committed with guns; PGR, % robberies committed with guns; PGS, % suicides committed with guns; PROD, guns produced minus exports plus imports, U.S.; SGR, survey measure, % households with gun(s); SHR, survey measure, % households with handgun(s); SIR, survey measure, % individuals with gun(s).
^c Crime Rates: AAR, aggravated assault rate; GHR, gun homicide rate; HAR, homicide, assault, and robbery index (factor score); ICR, index crime rate; RMR, robbery murder rate; THR, total homicide rate; TRR, total robbery rate; VCR, violent crime rate.
^d Yes, study found significant positive association between gun levels and violence; No, study did not find such a link.
^e Authors modeled two-way relationship, but only report gun impact results for model where this was not done.
^f A few gun-violence associations were positive and significant, but almost all involved female gun ownership or male long gun ownership. Author interpreted pattern to indicate effect of violence on gun ownership. See text.
^g Panel design, two waves.
^h Attempt to model two-way relationship probably failed due to an implausible identification restriction. See text.
ⁱ Only established an association with gun homicide rate. No result for total homicide rate reported.

Table 5.13. Variables Used in City-Level Analysis^a (n = 170 cities)

	Mean	SD	Sources ^b
Violence rates (1979–1981 average, rates per 100,000 resident population, natural logs)			
LNMR	2.47	.78	a
LNASLT	5.90	.58	b
LNROB	5.79	.75	b
LNRAPE	4.04	.54	b
LNBURG	7.77	.35	b
LNSUICID	2.63	.35	a
LNGUNMR	1.98	.88	a
LNNGMR	1.42	.72	a
LNGNASLT	4.55	.75	b, c
LNNGASLT	5.55	.60	b, c
LNGNROB	4.87	.76	b, c
LNNGROBR	5.22	.84	b, c
LNGNSUIC	1.94	.56	a
LNNGSUIC	1.81	.47	a
LNFGA	0.50	1.35	a
Gun ownership indicators			
PGH7982	61.48	11.89	d
PCTGNAST	28.31	11.39	c
PCTGNROB	42.00	13.11	c
PGS7982	53.37	14.91	a
GUNSTOL	1.20	.75	e
Instrumental variables			
RGUNMAG	6564.74	8656.41	f
HUNTERS	6985.58	4252.36	g
Control variables			
PCTBLACK	19.27	16.69	h
PCTHISP	8.82	12.23	h
PCTM1524	10.05	2.30	i
PCTOLD	11.20	3.53	h
RUNM1624	13.18	6.12	i

(continued)

Table 5.13. (Continued)

	Mean	SD	Sources ^b
RPOV	13.97	5.16	h
MFI	19435.52	3592.01	h
INEQUALT	35.51	6.91	h
OWNEROCC	54.14	11.19	h
COLLEGE	7619.66	4267.42	i
PCTMOVE	51.01	8.44	h
TRNSIENT	42.74	15.79	h
PCTFOREN	7.68	8.25	i
POPCHANG	7.32	20.37	h
CNTDIVRT	639.20	245.25	h
FEMHEAD	21.21	10.93	h
CHRMEM	20.38	12.02	j
ALCHLSM	7.77	4.45	a
ADDICTION	.22	.52	a
PCTSMSA	34.58	22.73	i
VISITORS	111.00	269.38	k
INVPOP	.56	.29	h
HSACTRAT	.71	.05	i
PCRM80	6072.55	1805.93	b
HOSPITAL	1013.90	661.20	h

(continued)

Table 5.13. (Continued)

		Mean	SD	Sources ^b
LIVLONE	% households with 1 person	10.18	2.91	h
STORES	Retail establishments/100K respop	851.72	167.09	h
MAXTEMP	Average daily maximum temperature, July	87.16	6.64	h
CROWDING	Percent of occupied housing units with 1.01+ persons/room	4.89	3.23	h
DENSITY	Persons per square mile	4334.26	3375.96	h
STHNBORN	Percent respop born in South	12.93	6.33	i
SOUTH	South region dummy	.32	.47	h
WEST	West region dummy	.28	.45	h
STHNNES	Gastil "Southernness Index"	20.24	7.43	l
POLEXP	Police expenditures per capita	70.65	24.92	h
COPS	Sworn police officers/100K respop	207.57	82.40	b
STPRISRT	State prisoners/100K respop	157.90	164.58	m

^a Unless otherwise noted, each variable refers to a city, as of 1980. In variable descriptions, "county" indicates variable refers to county in which city was located, and "state" indicates variable refers to state in which city is located. Methods of estimating missing values may be obtained from author. respop, resident population.

^b Sources: a. U.S. NCHS (1983); b. U.S. FBI (1980-1982); c. ICPSR (1983); d. ICPSR (1984a); e. ICPSR (1984b); f. Audit Bureau of Circulation (1979-1981); g. U.S. Fish and Wildlife Service (1982b); h. U.S. Bureau of the Census (1983a); i. U.S. Bureau of the Census (1983b); j. Quinn et al. (1982); k. U.S. Bureau of the Census (1981); l. Gastil (1971); m. U.S. Bureau of Justice Statistics (1982).

Table 5.14. Total Violence Rates and Gun Ownership Levels: Effects of Control Variables

	LNMR	Gun Ownership ^b	LNASLT	Gun Ownership ^c	LNROB	Gun Ownership ^d	LNRAPE	Gun Ownership ^e	LNBLURG	Gun Ownership ^f
PCTHISP	-.083 ^a									
PCTBLACK					.260*	.420*	.231	.163		
MFI					-.096*		-.252*		-.091	
PCTM1524	.420*		.453*							
RPOV			.190		.424*				.331*	
INEQUALT					-.249*		-.016			
OWNEROCC					-.181*	.348*	-.428*	.508*		
COLLEGE	.333*	-.161*	-.183*		.107*				-.176*	
TRANSIENT									.262*	
PCTMOVE					-.110*		.016		-.240*	
POPCHANG										.371*
PCTFOREN	-.352*				.063				.021	
CNTDIVRT	.207*		.228*	.217*	-.142*	.440*	.120		.574*	
PCRM80			.145	.192*	.089*					
CHRCHMEM										
ADDICTRT			.225*							
ALCHLSM			-.141*		-.173*	.205*				
PCTSMSA	-.096	.134*								

(continued)

Table 5.14. (Continued)

	LNMR	Gun Ownership ^b	LNASLT	Gun Ownership ^c	LNROB	Gun Ownership ^d	LNRAPE	Gun Ownership ^e	LNBURG	Gun Ownership ^f
VISITORS					.180*	-.221*				
INVPOP	-.333*		.065		-.157*		-.093		.036	
WEST					.047		.268*			-.220*
MAXTEMP			.113	.250*			-.206			.266*
CROWDING	.611*									
DENSITY	-.099	-.394*					-.164			
STHINNESS	.357*	.478*								
HOSPITAL										
LIVLONE										
PCTOLD		.125*		.017		.118*				.037
RGUNMAG		.203*		.113		.039				.063
HUNTERS										-.033
										.128

^a Standardized coefficients.
^b Latent construct with indicators: PCTGNA5T, PCTGNROB, PGS7982, GUNSTOL.
^c Latent construct with indicators: PGH7982, PCTGNROB, PGS7982, GUNSTOL.
^d Latent construct with indicators: PCTGNA5T, PCTGNROB, PGS7982, GUNSTOL.
^e Latent construct with indicators: PGH7982, PCTGNROB, PGS7982, GUNSTOL.
^f * p < .05.

Table 5.15. Effects of Gun Ownership on Violence Rates^a

	LNMR	Gun Ownership ^b	LNGUNMR	Gun Ownership	LNNGMR	Gun Ownership
LNMR		.226*				
LNGUNMR				.164*		
LNNGMR						.232*
Gun ownership	-.604*		-.121		-.673*	
PSI	.256	.076	.239	.088	.310	.117
PSI (2, 1)		.054		-.004		-.046
df		104		104		104
χ ²		244.30		227.07		224.43
GOF		.939		.940		.941

	LNASLT	Gun Ownership ^c	LNGNASLT	Gun Ownership	LNNGASLT	Gun Ownership
LNASLT		.073				
LNGNASLT				.048		
LNNGASLT						.088
Gun ownership	-.085		.604*		-.401	
PSI	.492	.272	.423	.239	.524	.281
df		102		102		102
χ ²		227.65		249.50		226.70
GOF		.939		.934		.938

	LNROB	Gun Ownership ^d	LNGNROB	Gun Ownership	LNNGROBR	Gun Ownership
LNROB		-.051				
LNGNROB				-.099		
LNNGROBR						-.013
Gun ownership	.006		.535*		-.308*	
PSI	.147	.172	.193	.174	.157	.147
df		120		120		120
χ ²		273.31		286.89		273.10
GOF		.937		.934		.937

(continued)

Table 5.15. (Continued)

	LNRAPe	Gun Ownership ^a	LNBURG	Gun Ownership ^a
LNRAPe		.809*		
LNBURG				-.114
Gun ownership	.586		.267*	
PSI	.527	.494	.319	.375
PSI (2, 1)				
df		139		133
χ^2		356.83		287.01
GOF		.909		.919

Summary of Effects of Gun Ownership on Total Violence Rates

	Murder	Assault	Model Robbery	Rape	Burglary
Significant positive effect of gun ownership on crime rates?	No	No	No	No	(Yes)—see text

^a Coefficients for control variables were reported in Table 5.14. Gun law dummies were also included in these models but their estimated coefficients are not reported until Chapter 10.

^b Latent construct with indicators: PCTGNASt, PCTGNROB, PGS7982, GUNStOL.

^c Latent construct with indicators: PGH7982, PCTGNROB, PGS7982, GUNStOL.

^d Latent construct with indicators: PGH7982, PCTGNASt, PGS7982, GUNStOL.

^e Latent construct with indicators: PGH7982, PCTGNASt, PCTGNROB, PGS7982, GUNStOL.

* $p < .05$.

CHAPTER

6

Guns and Suicide

Suicide reduction has not traditionally been regarded as a major object of legal control, although many psychiatrists and public health specialists have argued that it should be (e.g., Browning 1974; Seiden 1977). Although some suicide scholars have proposed gun control measures as an indirect method of controlling suicide through law (e.g., Boyd 1983; Markush and Bartolucci 1984), general studies of gun control usually give only the most cursory attention to suicide (e.g., Cook 1982).¹ Arguments in favor of strict gun control typically place far more stress on anticipated reductions in homicide than on suicide, despite the fact that, in recent years, guns have been involved in more suicides than homicides. For example, in 1985 there was 17,369 gun suicides (representing 55% of all gun deaths) and only 11,621 gun homicides (Table 2.8).

In the United States, guns are by far the most common method for committing suicide, accounting for 57% of U.S. suicides in 1985, compared to only 14% for the next most popular method, hanging (U.S. Bureau of the Census 1989, p. 84). To assess the potential for controlling suicide through gun control it is necessary to first gain some understanding of this extraordinary predominance of gun use among suicide methods. As will become clear, none of the obvious explanations suffices.

Why Do Suicides Use Guns?

When people contemplate suicide, what characteristics of the possible methods influence their choice?² Simple availability of the necessary tools of a given method is an obvious logical prerequisite. One must have access to drugs to commit a drug suicide, access to a high place to commit suicide by jumping, and access to a gun to commit a gun suicide. However, the prevalence of gun use in suicide relative to other

EXHIBIT 3

The Impact of Gun Control and Gun Ownership Levels on Violence Rates

Gary Kleck¹ and E. Britt Patterson²

What effects do gun control restrictions and gun prevalence have on rates of violence and crime? Data were gathered for all 170 U.S. cities with a 1980 population of at least 100,000. The cities were coded for the presence of 19 major categories of firearms restriction, including both state- and city-level restrictions. Multiple indirect indicators of gun prevalence levels were measured and models of city violence rates were estimated using two-stage least-squares methods. The models covered all major categories of intentional violence and crime which frequently involve guns: homicide, suicide, fatal gun accidents, robbery, and aggravated assaults, as well as rape. Findings indicate that (1) gun prevalence levels generally have no net positive effect on total violence rates, (2) homicide, gun assault, and rape rates increase gun prevalence, (3) gun control restrictions have no net effect on gun prevalence levels, and (4) most gun control restrictions generally have no net effect on violence rates. There were, however, some possible exceptions to this last conclusion—of 108 assessments of effects of different gun laws on different types of violence, 7 indicated good support, and another 11 partial support, for the hypothesis of gun control efficacy.

KEY WORDS: gun control; violence.

1. INTRODUCTION

Crime is widely viewed by the public as one of the most important problems facing our society, and violent crime is regarded as the most serious and fearful kind of crime. While violence is often regarded as an intractable problem difficult to reduce through deliberate governmental effort, many have argued that it, nonetheless, may be reduced through the regulation of weapons, especially firearms.

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The rationale for gun control, of course, includes the assumption that the availability of guns has a significant net positive effect on violence rates. This assumption has not yet been consistently supported by a credible body of evidence, partly because evidence from better studies has largely been negative or mixed regarding the assumption and partly because so much of the evidence is too weak to be credible one way or the other (see overviews by Wright *et al.*, 1983, pp. 129–137; Kleck and McElrath, 1991). There are a number of possible effects which gun availability could have on violence rates. If a gun is available, it could encourage attacks, especially by weaker attackers on stronger victims, and could facilitate attacks from a distance or attacks by persons too squeamish to attack with messier weapons such as knives or too timid to attack at close quarters. Similarly, guns may enable some people to attempt robberies they could not complete unarmed (Newton and Zimring, 1969; Cook, 1976). The sight of a gun might “trigger” attacks by angered persons, due to the learned association between guns and violence (Berkowitz and LePage, 1967). On the other hand, research also indicates that the presence of guns usually inhibits the expression of aggression, reducing the likelihood of attack (Kleck and McElrath, 1991; Kleck and DeLone 1993). There is support for the claim that once an injury is inflicted, it is more likely to result in death if a gun was used, due to the weapon’s greater lethality (Newton and Zimring, 1969; Block, 1977; Kleck and McElrath, 1991), although part of the higher fatality rates of gun attacks is probably due to greater seriousness of intent on the part of those using guns, rather than just the weapon itself (Wright *et al.*, 1983). Regarding suicide, some authors argue that guns provide a uniquely quick, easy, and sure means of self-destruction which reduces the chances of successful outside intervention (Newton and Zimring, 1969). On the other hand, many highly lethal and otherwise satisfactory means for committing suicide are even more widely available than guns, and can easily be substituted where guns are not available.

Prior studies of the aggregate relationship between gun availability and violence rates have used a variety of measures, none entirely satisfactory (Cook, 1982, pp. 264–272). These studies have failed to generate consistent evidence of a net positive effect of gun availability on violent crime rates (Kleck, 1984a, 1991, Chap. 5). The present study measures gun levels through the use of multiple indirect indicators, for two purposes: (1) to assess the impact of gun availability on violence rates and (2) to assess the effects of gun laws on violence rates, including both direct effects and indirect effects operating through the impact of gun control on gun availability. The study addresses every major form of gun control and every major form of violence involving firearms, including not only the violent crimes of homicide, robbery, assault and rape, but also suicides and fatal gun accidents.

2. METHODS OF PRIOR RESEARCH

Two general strategies have been used to assess the impact of gun control laws on violence rates: interrupted time series designs and cross-sectional designs. In the typical time series design, monthly violence rates for a single jurisdiction are analyzed with ARIMA or regression time series methods to see if there is a significant downward shift in crime around the time a new gun law goes into effect. Cross-sectional designs compare legal jurisdictions, usually states, with each other to see if those having a given type of gun law have lower levels of violence than those lacking the law.

Studies of gun control's impact on violence have been characterized by a variety of methodological flaws. The first is the failure to control adequately for other determinants of violence rates besides gun control laws, before attributing crime reduction effects to gun regulation. This is at least as much of a problem for time series studies as for cross-sectional ones. Careful modeling of preintervention trends in violence is required in time series studies, rather than simple before-and-after comparisons, because the time when an intervention is most likely to be implemented is at, or shortly after, the time when the target problem peaks, i.e., when it is most likely to stimulate attempts to combat it. Thus, one would expect to find decreases in the problem after an intervention even if the intervention were ineffective, due to this simple timing issue—the problem was peaking and thus was going to decline at the time of intervention anyway, even if nothing was done about it. Unfortunately, if this reasoning applies to the intervention being evaluated, it also applies to other “interventions” as well. Other efforts, public or private, collective or individual, to reduce the target problem would also be most likely to start (or peak) at about the same time. Time series modelers attempting to isolate the impact of gun laws necessarily assume that the evaluated intervention was the only new element in the causal structure generating trends in violence rates. This is, at best, a convenient simplification; at worst, an implausible one.

Cross-sectional designs can take advantage of considerable data in census years for cities, metropolitan areas, or states on extraneous determinants of crime rates, while time series data on most such variables, except at the national level, are nonexistent. Consequently, time series designs usually do not explicitly control for any other important determinants of crime which might show changes coincident with changes in gun laws. Thus, they do not allow the analyst to rule out explicitly any alternative explanations of violence decreases. Instead they, at best, make do with comparisons to “control” jurisdictions which, it is assumed, would show crime trends similar to those in the intervention jurisdiction, were it not for the impact of the gun law changes. This was the strategy followed by Pierce and Bowers (1981). Other time series studies use trends in

nongun violence rates within the impact jurisdiction as internal controls, relying on the implicit, and implausible, assumption that gun and nongun rates would follow similar trends were it not for changes in gun regulation (e.g., Loftin and McDowall, 1981, 1984). Evidence from the present study (Table III) indicates that gun violence and nongun violence rates are driven by different sets of exogenous variables (apart from gun laws and gun prevalence), suggesting that they are likely to show divergent trends even in the absence of new gun laws.

Cross-sectional studies of a large number of jurisdictions offer clear advantages over longitudinal designs if one wants to identify which specific features of gun regulation are likely to generally produce violence reductions. The former tests the average effect of many specific instances of a form of regulation, while the latter tests only the effects of a single new gun law in a single jurisdiction, allowing little generalizability. With the former design it is possible to separate the effects of different types of gun controls which are sometimes lumped together in a single new law, while this is impossible in the latter.

Further, it is impossible to state for certain, *a priori*, *when* the effect of a new law should become evident, rendering the gun law efficacy hypothesis difficult to falsify with a time series design. For example, some analysts have assumed that any impact should begin at the law's "effective date," while others assert that effects can begin earlier, due to an "announcement effect" (Pierce and Bowers, 1981). Loftin and his colleagues (1991) even concluded that local handgun bans reduced homicide in the District of Columbia, even though the declines in both gun homicides and total homicides began 2 years before the law went into effect! One could just as easily argue that effects would only become evident after a lag of indeterminate length. In contrast, with a cross-sectional design the corresponding question is *where* the law would have its effects, and there is little doubt that the effects should be most pronounced in the jurisdiction which implemented the regulation.

The principal weakness of cross-sectional studies is one shared by time series studies—the difficulty of meeting the *ceteris paribus* condition by correctly specifying a model of how crime rates are generated. It should, however, be noted that the cross-sectional design does *not* require, as Wright *et al.* (1983, p. 285) assert, that "the investigator have a fairly complete understanding of how the particular crime rates are generated." This is an impossible standard to meet and fortunately, an unnecessary one. Instead, unbiased estimates of the impact of a gun control measure can be obtained if one includes in the model only those extraneous variables which affect crime rates *and* which also have nontrivial correlations with the gun control measures. It turns out that none of the known

causes of variation in violence rates are strongly correlated with gun laws, making this a less crucial empirical issue than it seemed.

With only two exceptions (Geisel *et al.*, 1969; Cook, 1979), prior cross-sectional studies have exclusively used states as their unit of analysis. This exacerbates the problem of aggregation bias. States are larger units than cities and, also, more heterogeneous with regard to levels of violence and variables affecting violence rates. Consequently, the best level of aggregation to use would be the lowest and most homogeneous one at which gun law is made—the city level.

Another problem with state-level analyses is that they cannot incorporate measures of local gun controls. Only one prior study has measured gun regulation at both the state level and the city level (Geisel *et al.*, 1969), yet the most restrictive gun laws in the nation are at the local level. Many, even most, of the residents of a given state might be subject to very strong gun laws, at the city level, yet be subject to little or no state regulation. Consequently, studies failing to measure local ordinances seriously mismeasure the degree of gun control to which much of the population is subject.

For some gun laws, one presumed reason for any effects on violence they may have is that they reduce levels of gun prevalence or availability, which in turn affects violence rates. Indeed, regardless of the way the laws were designed to work, almost any restriction on guns could in practice discourage gun ownership, by reinforcing public perceptions of guns as dangerous objects. Conversely, most gun laws could hypothetically reduce violence in ways other than by reducing gun ownership, e.g., by making carrying or criminal use more risky or reducing the immediate availability of guns in violence-prone situations. Only three of the studies published to date explicitly measured gun prevalence or availability (see column 5 in Table I). Thus it was usually impossible to tell whether observed effects were produced through reductions in gun ownership or through some other causal mechanism. Further, if high gun prevalence makes it harder to pass gun laws, and also contributes to higher violence rates, failing to control for gun prevalence could result in a spurious negative association between gun laws and violence rates.

None of the three gun law studies which measured gun levels treated the gun–violence relationship as a simultaneous reciprocal one. This is problematic because there is both individual-level and aggregate-level evidence that violence rates can motivate gun acquisition and increase aggregate gun ownership levels (Lizotte and Bordua, 1980; Lizotte *et al.*, 1981; Kleck, 1984a; McDowall, 1986; Smith and Uchida, 1988). If the relationship were a simultaneous reciprocal one, failing to model it properly would result in biased and inconsistent estimates of the gun coefficient, and

Table I. Previous Studies of the Impact of Gun Control on Violent Crime Rates^a

Study	Weakness							Gun control effective?
	1	2	3	4	5	6	7	
Wisconsin (1960)	x	x	x	x	x			No
Krug (1967)	x	x	x	x	x	x		No
Geisel <i>et al.</i> (1969)			(x)	x	x	x		No
Olin Mathieson (1969?)	x	x	x	x	?	x		No
Seitz (1972)	x	x	x	(x)	x	x		Yes
Murray (1975)	x	x	x	(x)	x			No
Zimring (1975)	x	—	—		—	—	x	Mixed
Beha (1977)	x		x	(x)	—	—	x	Mixed ^b
Deutsch and Alt (1977)	x		—	x	—	—	x	Mixed ^b
Cook (1979)			x		?			No
Hay and McCleary (1979)	x		—	x	—	—	x	No ^b
Nicholson and Garner (1980)	x		—	x	—	—	x	Mixed
Sommers (1980)	x	x	x	x	x		x	Mixed
Jones (1981)	x	—	—	x	—	—	x	Mixed
Lester and Murrell (1981)	x		x	x	x	x		No
Pierce and Bowers (1981)	x		—	x	—	—	x	Mixed ^b
Lester and Murrell (1982)	x	x	x	x	x	x		Mixed
Magaddino and Medoff (1982)	x	x	x	x	x			No
DeZee (1983)		x	x	x	x			No
Loftin <i>et al.</i> (1983)	x			x			x	No
Loftin and McDowell (1984)	x			x			x	No
Magaddino and Medoff I (1984)		x	x	x	x			No
Magaddino and Medoff II (1984)		—	—	—	—	—	x	No
McPheters <i>et al.</i> (1984)	x	—	—	x	—	—	x	Yes
Lester and Murrell (1986)	x	x	x	x	x	x		No
Lester (1987)	x	x	x	x	x	x		No
Lester (1988)	(x)	x	x		x	x		Yes
Jung and Jason (1988)	x		—	x	—		x	No
Loftin <i>et al.</i> (1991)	x			x			x	Yes

^aSummary: 4 yes, 8 mixed, 17 no. "Gun control effective?" means "Did gun laws appear to reduce significantly total (gun plus nongun) rates of violence or crime?" Weakness codes: x, problem existed; blank, no problem; —, problem is irrelevant; (x), partial presence of problem or problem inadequately dealt with. Weaknesses: (1) included no, or very few, control variables; (2) state level of analysis used, rather than city; (3) no measure of local gun control laws; (4) no measure of gun ownership included; (5) only one source of information on gun control laws used; (6) lumped heterogeneous mixture of gun laws together, without separate measures of impact of different types of gun laws; (7) studied just one specific law; little generalizability.

^bThese four studies are not independent since they are all evaluations of the same law (the Massachusetts Bartley-Fox law) in the same time period, using the same general methods. They contributed three of the eight studies classified as "mixed." Their findings are classified this way because, taken as a whole, they indicate that the law had no effect on homicide, may have reduced robbery (two studies indicated this, one did not), and reduced gun assaults by a moderate amount, while increasing nongun assaults by a larger amount.

the positive effects of violence on gun levels would be confused with the possible positive effects of gun levels on violence rates.

Finally, close examination of the various surveys and compilations of gun laws reveals significant differences between sources, indicating in many instances that at least one source was in error. Consequently, studies using a single source of information are especially vulnerable to error in measurement of the key variables. This was true of all prior studies of multiple laws.

3. RESULTS OF PRIOR RESEARCH

The Table I summary of prior research on gun law effects indicates that most of the 29 studies found no impact of gun laws on total violence rates. [Throughout this paper, the term “total violence rate” refers to rates of gun violence plus nongun violence in a given violence category. For example, the term could refer to total homicide (gun homicide plus nongun homicide) or to total robbery (gun robbery plus nongun robbery), and so on. It does not refer to homicide plus robbery plus assault and so on.] Of the 12 studies yielding favorable or mixed results, 3 were time series evaluations of the same law, the Bartley–Fox carrying law. Of these three, the Pierce and Bowers (1981) study found a drop in violence which *preceded* the law’s effective date, casting doubt on the authors’ favorable assessment of the law. Further, a fourth study of this same law concluded that evidence regarding the law’s impact was inconsistent and that the optimistic conclusions of previous researchers were premature (Hay and McCleary, 1979). The middle columns in Table I indicate that most of the rest of the studies offering at least mixed support for gun control efficacy are seriously flawed. Taking prior research as a whole, it would be fair to say at this point that a consistent, credible case for gun control efficacy in reducing violence has not yet been made.³ [For reviews of research on the impact of gun

³Assessments of the studies’ implications regarding gun control efficacy are based on their empirical findings, not necessarily on their authors’ conclusions. As an example of conclusions diverging from data, Geisel *et al.* (1969) concluded that increased gun control severity would save lives, based on analyses using an index which lumped together all forms of gun control. Construction of this index involved a weighting scheme which, contrary to the author’s claims, biased results in favor of finding a stronger correlation with violence rates (see p. 659). Even so, the results of analyses using the index did not generally support the author’s conclusions. Of the seven violence rates studied, only two showed a significant negative association with the index: gun suicides (but not total suicides, indicating nothing more than a substitution effect) and accidental death by firearm (p. 663). Further, buried in the last page of their Appendix was a one-paragraph summary of the results of their more appropriate analysis (which even the authors described as “more refined”), using separate dummy variables for each type of gun control: “We could obtain no significant or even meaningful results” (p. 676).

prevalence on crime, suicide, and gun accident rates, see Kleck (1991, pp. 187–188, 214–214, 248–250, 265, 303–304).]

4. METHODS OF THE PRESENT STUDY

The present study is a city-level cross-sectional study. Data were gathered on all 170 U.S. cities which had a population of 100,000 or larger in 1980, i.e., all large cities. Cities were chosen as the unit of analysis because they are the smallest, most homogeneous unit or area to which gun laws apply, and analyses which use larger units necessarily must ignore laws passed by smaller constituent areas. A majority of the reported violent crimes in the United States occurred in these 170 cities [U.S. Federal Bureau of Investigation (FBI), 1981, p. 173]. Smaller cities could not be included because person-level vital statistics mortality data do not identify locations of deaths for cities with populations smaller than 100,000 [U.S. National Center for Health Statistics, (NCHS), 1983, p. 8]. These data were needed to obtain city counts of gun homicides and gun suicides, data which were essential both as components in dependent variables and as indirect indicators of gun prevalence.

The dependent variables are the rates per 100,000 resident population of homicide, suicide, aggravated assault, robbery, rape, and fatal gun accidents. For all but the last two of these, we had data allowing separate analyses of rates of violence with guns, without guns, and with gun and nongun events combined.

The violence rates were averaged over 3 years, 1979 to 1981, thus bracketing the Census year of 1980 for which data on most of the control variables were available. Some of the smaller cities had fewer than a half-dozen homicides or suicides per year; thus, misclassification of just one or two homicides or suicides as other kinds of deaths could substantially alter a single year's official count. Therefore, 3 years were covered, to minimize the potential measurement error produced by misclassification and to minimize the instability due to year-to-year fluctuations.

The dependent variables were expressed as natural logs. The transformation produced more normal distributions on the violence rate variables. (Without exception, skewness and kurtosis statistics moved closer to zero after the transformation.) It also helped to stabilize the variance of the residuals, reducing heteroscedasticity.

Models of violence rates were estimated using two-stage least-squares procedures because a simultaneous reciprocal relationship was specified between violence rates and gun prevalence levels, based on the assumption that higher violent crime rates could motivate gun acquisition, in addition to gun prevalence increasing violence rates. No effect of suicide and fatal

gun accident rates on gun acquisition was expected, so models of these violence rates were specified as recursive and estimated using ordinary least-squares methods. Figure 1 illustrates the general form of the models estimated. This is the general causal structure assumed for all models estimated, except that we assumed there was no effect of suicide and gun accidents on gun prevalence. There was a total of 14 models (one for each type of violence rate listed in Table II), and each model consisted of two equations, one for the violence rate and one for the gun prevalence level.

The initial choice of possible control variables to include in the models was based on a review of previous city-level and metro area-level studies. An effort was made to include all predictors which had frequently and consistently been found to significantly predict the violence rates examined here. Most of the violence predictors besides the gun law dummies and gun prevalence indicators were measures of the relative sizes of population groups which have especially high or low violence rates, or were measures of social integration, isolation, or transience, or measured the prevalence of statuses which can give rise to violence, such as divorce, alcoholism, and unemployment. Theoretical rationales for including these variables, and relevant empirical evidence, can be found in numerous sources (e.g., Byrne, 1986; Sampson, 1986; Land *et al.*, 1990, and studies reviewed therein). Exogenous variables which remained in the final models were those whose coefficients in the violence rate equations were significant at the 0.10 level in preliminary screening using OLS.

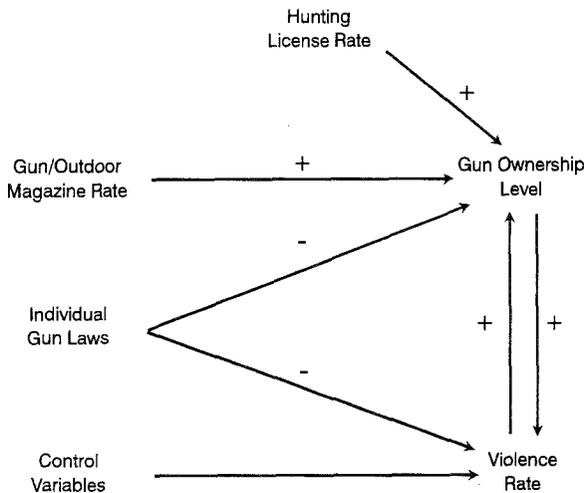


Fig. 1. General causal diagram of violence rate models.

Table II. Descriptive Statistics for Variables Used in Analysis ($N = 170$ Cities)^a

	Mean	SD	Source ^b
Violence rates (1979–1981 average, rates per 100,000 resident population, in natural logs)			
LNMR, Homicides (total)	2.47	0.78	a
LNASLT, Aggravated assaults (total)	5.90	0.58	b
LNROB, Robberies (total)	5.79	0.75	b
LNRAPE, Forcible rapes (total)	4.04	0.54	b
LNSUICID, Suicides (total)	2.63	0.35	a
LNFGA, Fatal gun accidents (total)	0.50	1.35	a
LNGUNMR, Homicides with gun	1.98	0.88	a
LNNGMR, Homicides without gun	1.42	0.72	a
LNGNASLT, Assaults with gun	4.55	0.75	b, c
LNNGASLT, Assaults without gun	5.55	0.60	b, c
LNGNROB, Robberies with gun	4.87	0.76	b, c
LNNGROBR, Robberies without gun	5.22	0.84	b, c
LNGNSUIC, Suicides with gun	1.94	0.56	a
LNNGSUIC, Suicides without gun	1.81	0.47	a
Gun prevalence indicators			
PGH7982, % gun, homicide, 1979–1982	61.48	11.89	d
PCTGNAST, % gun, aggr. assault, 1979–1980	28.31	11.39	c
PCTGNROB, % gun, robbery, 1979–1980	42.00	13.11	c
PGS7982, % gun, suicide, 1979–1982	53.37	14.91	a
GUNSTOL, (\$ value, stolen guns/\$ value, all stolen property) \times 100	1.20	0.75	e
Instrumental variables			
RGUNMAG, Subscription rate top 4 gun/hunting magazines, county	6,564.74	8,656.41	f
HUNTERS, Hunting License holder rate per 100K pop., state	6,985.58	4,252.36	g
NRA, NRA members per 100K pop.	870.90	634.59	t
LIBERAL, % 1972 presidential vote for McGovern, county	38.46	9.90	u

^aUnless otherwise noted, each variable refers to a city, as of 1980. In variable descriptions, “county” indicates variable refers to county in which city was located, and “state” indicates variable refers to state in which city is located. Methods of estimating missing values may be obtained from senior author.

^b(a) Tabulations from Mortality Detail Files (U.S. NCHS, 1983); (b) U.S. FBI (1980–1982); (c) ICPSR (1983); (d) ICPSR (1984a); (e) ICPSR (1984b); (f) Audit Bureau of Circulations (1979–1982); (g) U.S. Fish and Wildlife Service (1980); (h) Blose and Cook (1980); (i) U.S. Bureau of Alcohol, Tobacco and Firearms (1980); (j) Ronhovde and Sugars (1982); (k) Jones and Ray (1980); (l) Wright *et al.* (1983); (m) U.S. Bureau of the Census (1983a); (n) U.S. Bureau of the Census (1983b); (o) Quinn *et al.* (1982); (p) U.S. Bureau of the Census (1981); (q) Gastil (1971); (r) U.S. Bureau of Justice Statistics (1982); (s) U.S. Federal Bureau of Investigation (undated); (t) unpublished membership counts supplied to senior author by National Rifle Association; (u) Scammon (1972).

Table II. Continued

	Mean	SD	Source ^b
Gun control variables			
LICENSE, License to possess gun in home	0.11	0.32	h, i, j
BYPERMIT, Permit to purchase or acquire	0.34	0.47	h, i, j
WAITPER, Waiting period to buy, receive, etc	0.44	0.50	h, j
CRIMINAL, Prohibit possession (poss.)—criminals	0.82	0.38	i, j, k
MENTAL, Prohibit poss., mentally ill, incomp.	0.25	0.43	i, j, k
ADDICT, Prohibit poss., drug addicts, users	0.41	0.49	i, j, k
ALCOHOLIC, Prohibit poss., alcoholics, etc.	0.19	0.40	i, j, k
MINORS, Prohibit purchase by minors	0.98	0.15	i, j
REGISTER, Registration of guns	0.47	0.50	h, i
DEALER, State or city license, gun dealers	0.61	0.49	h, i, j
CARYHIDN, Concealed handgun carrying forbidden or permit hard to get	0.88	0.33	j, k
CARYOPEN, Open handgun carrying forbidden or permit hard to get	0.56	0.50	j
MANDPEN, Mandatory penalty, illegal carrying	0.12	0.33	j
ADDONDIS, Additional penalty for committing crimes with gun, discretionary	0.58	0.50	j
ADDONMND, Additional penalty for committing crimes with gun, mandatory	0.61	0.49	j
RTBRARMS, State constitutional provision—individual right to bear arms	0.43	0.50	j
HGBAN, De facto ban on handgun possession	0.01	0.11	i
SNSBAN, Saturday Night Special sales ban	0.04	0.20	i
HGBYBAN, Ban on handgun sales	0.01	0.11	i
Control variables			
PCTBLACK, % respop, black	19.27	16.69	m
PCTHISP, % respop, Spanish origin	8.82	12.23	m
PCTM1524, % respop, male, age 15–24	10.05	2.30	n
PCTOLD, % respop, age 65 +	11.20	3.53	m
RUNM1624, Unemployment rate males, age 16–24	13.18	6.12	n
RPOV, % respop < poverty line 1979	13.97	5.16	m
MFI, Median family income, \$\$, 1979	19,435.52	3,592.01	m
INEQUALT, % hshlds w. income >\$10K or >\$50K	35.51	6.91	m
OWNEROCC, % housing units owner-occupied	54.14	11.19	m
COLLEGE, College enrollment/100K respop	7,619.66	4,267.42	n
PCTMOVE, % respop age 5+ not in same house as 5 yr before	51.01	8.44	m
TRNSIENT, % respop, born out of state	42.74	15.79	m
PCTFOREN, % respop, foreign born	7.68	8.25	n
POPCHANG, % pop change 1970 to 1980	7.32	20.37	m
CNTDIVRT, Divorces per 100K respop, county	639.20	245.25	m
FEMHEAD, % families headed by females	21.21	10.93	m
CHRCHMEM, Church membership per 100 respop, county	20.38	12.02	o

Table II. Continued

	Mean	SD	Source ^b
ALCHLSM, Alcoholic liver disease deaths per 100K respop	7.77	4.45	a
ADDICTRT, Deaths due to nonmedical accidental poisoning by opiates per 100K respop	0.22	0.52	a
PCTSMSA, City respop as a % of SMSA respop	34.58	22.73	n
VISITORS, Lodging receipts in dollars/100K respop, SMSA	111.00	269.38	p
INVPOP, Inverse population, 1/(respop in 100,000s)	0.56	0.29	m
HSACTRAT, Household activity ratio—fraction of households not of husband–wife, wife not working type	0.71	0.05	n
HOSPITAL, Hospital beds per 100K respop	1,013.90	661.20	m
LIVLONE, % households with 1 person	10.18	2.91	m
STORES, Retail establishments/100K respop	851.72	167.09	m
MAXTEMP, Avg. daily max temperature, July	87.16	6.64	m
CROWDING, Percent of occupied housing units with 1.01 + persons/room	4.89	3.23	m
DENSITY, Persons per square mile	4,334.26	3,375.96	m
STHNBORN, Percent respop born in South	12.93	6.33	n
SOUTH, South region dummy	0.32	0.47	m
WEST, West region dummy	0.28	0.45	
STHNNNESS, Gastil “Southernness Index”	20.24	7.43	q
POLEXP, Police expenditures per capita	70.65	24.92	m
COPS, Sworn police officers/100K respop	207.57	82.40	b
STPRISRT, State prisoners/100K respop	157.90	164.58	r
WEAPARST, Weapons arrests, avg. for 1979–1981, per 100 sworn police officers	58.26	30.83	s
ACCIDENT, Accidental deaths, excl. gun accidents/100K respop	46.43	15.45	a

It is important to stress at this point that the exact combination of control variables included in each model was not critical with respect to the gun control results. Gun law coefficient estimates were not sensitive to the choice of control variables to include because correlations between the gun law variables and the control variables were almost all weak. Of 290 bivariate correlations between gun law variables and control variables, none exceeded 0.4, and only 7 even reached 0.3. Multicollinearity involving the gun law variables was generally minor. In the final violence rate equations, variance inflation factors (VIF) for each of the 19 gun law variables were under 10, and all but two were under 4. [Kennedy (1985, p. 153) suggests that a VIF over 10 indicates harmful collinearity.] Thus, regardless of which theoretical perspectives might be used to inform the specification of control variables, the key coefficient estimates were not

substantially affected by specification decisions concerning which control variables to include in the models.

A few of the control variables are sufficiently uncommon to require comment. Like nearly all aggregate analyses of violence, the present study uses ratio variables, with city population being the denominator in many variables, both exogenous and endogeneous. Some critics have argued that the presence of common components in ratio variables can lead to biased or artifactual associations. Firebaugh and Gibbs (1985, p. 715) recommended that if one seeks unbiased coefficient estimates in a regression model containing both endogeneous and exogenous variables with a common component (commonly population size) in the denominator, one should also include one divided by the common component as another predictor. Thus we have included, in all models, one divided by resident population (in 100,000's) as a predictor.

Computing aggregate crime variables as per capita rates is conventionally done to control for the size of the population at risk of either committing crimes or being victimized in crime. Standard city resident population figures, however, are not completely adequate for this purpose because they do not count nonresident persons at risk, including daily commuters and visitors such as tourists and business travelers. We roughly controlled for the omission of commuters by including as a separate predictor the city population as a fraction of the surrounding metropolitan area, on the assumption that cities located in much larger metro areas are likely to have more commuters, in which case resident population would be a more serious underestimate of the population at risk [see Gibbs and Erickson (1976) for a fuller rationale]. We controlled for the contribution of short-term visitors by including as a separate predictor a "visitors index": the per capita total receipts for hotels, motels, and other lodging places, for the metropolitan area in which a city is located, in 1977. This is an especially important control for cities with large numbers of tourists relative to resident population, such as Las Vegas, Orlando (Disney World), and Miami.

4.1. Measurement of Gun Laws

Table II lists all of the variables which are included in later tables, as well as control variables which were evaluated but found to be unrelated to violence rates, along with the sources of the data. The following four sources were used for gun law coding, in descending order of importance: U.S. Bureau of Alcohol, Tobacco, and Firearms (BATF) (1980), Jones and Ray (1980), Blöse and Cook (1980), and Ronhovde and Sugars (1982). Multiple sources were used wherever possible because each source provided

some information the others did not, and each served as a reliability check on the others. When sources conflicted, state statute books were consulted.

Both state laws and city ordinances were coded. Nineteen major categories of existing gun laws which could affect violence rates were included in the analysis. The philosophy guiding coding of the gun law variables was to code them so that each variable would measure the presence or absence of a given form of regulation, regardless of what other elements might have accompanied it in a given law, and regardless of what governmental level imposed the restriction. Thus a gun law variable was coded 1 if the form of regulation applied in 1980 to a given city, either due to a city ordinance or because the city was located in a state with such a law, whether the law applied to all types of guns or, as was usually the case, only to handguns; the city was coded 0 otherwise. A single law therefore might result in a city being coded 1 on two or three different gun control variables.

The gun law variables were constructed in such a way that any city subject to a gun license law was also subject to purchase permit requirements, since existing license laws all include as a component a requirement that a license be presented in order to buy guns from licensed dealers, in addition to requiring a license for home possession of guns. On the other hand, a city could be subject to a purchase permit requirement without requiring a license for home possession of firearms.

The gun registration variable was coded 1 if gun sales were recorded in such a way that a governmental agency received a record of a specific gun being sold to a specific person or if all persons currently possessing a gun were required to record their ownership of each gun with an agency.

The codings for most gun law variables were simply 1 for the regulation being present at either the state or the local level and 0 if they were absent. However, for the gun carrying law variables (CARYHIDN, CARYOPEN), 1 indicated that gun carrying (concealed or open, respectively) was either completely unlawful or required a license which was hard to get and rarely issued, while 0 indicated that the city was located in a so-called "shall issue" state—carry permits are fairly easy to get because they must be granted to applicants unless they have certain specified disqualifying attributes (Blackman, 1985).

4.2. Measurement of Gun Prevalence

We measured gun prevalence using a principal-components factor based on multiple indirect indicators. For cities, Cook (1979) used a simple index consisting of the average of two indicators: the percentage of suicides committed with guns and the percentage of nonfelony homicides com-

mitted with guns. He showed this measure to be highly correlated with survey measures of urban household gun prevalence, aggregated over eight regions, indicating validity for purposes of cross-sectional analyses. Earlier researchers had used similar indirect measures (Brearley, 1932, p. 71; Seitz, 1972; Curtis, 1974, p. 110; Brill, 1977, p. 20).

We improved on these measures by using as many as five indicators of city gun prevalence levels: (1) percentage of suicides committed with guns, 1979–1982; (2) percentage of nonfelony homicides committed with guns, 1979–1982; (3) percentage of aggravated assaults known to the police committed with guns, 1979–1980; (4) percentage of robberies known to the police committed with guns, 1979–1980; and (5) percentage of the dollar value of all stolen property reported to the police which was due to firearms thefts, 1979–1981. We also evaluated three other indicators: the fatal gun accident rate, the rate of National Rifle Association members, and the rate of contributors to the Second Amendment Foundation, another gun owners' group. However, in a factor analysis these did not load with the other indicators. A simple explanation would be that the latter group of indicators reflects mainly gun prevalence among noncriminals, while the first five measures reflect mainly gun prevalence among criminals.

In each model, when the dependent variable could have an artifactual association with one of the gun prevalence indicators, that indicator was deleted. Thus, for example, the percentage of homicides involving guns was omitted from the homicide model, the gun percentage of assaults was omitted from the assault model, etc.

All these indicators but the suicide item relate on their face to criminal gun possession. Therefore, we interpret the gun index as an indirect measure of gun prevalence among criminals. For conceptual and theoretical purposes, and at the individual level of empirical analysis, it is important to maintain the distinction between criminal and noncriminal gun possession. However, at the city level it is doubtful whether the two can be distinguished, as we suspect they are highly correlated. One simple reason would be the high rate of illegal gun transfers (Wright and Rossi, 1986)—cities with high noncriminal gun ownership will also have high criminal gun ownership because criminals steal guns from noncriminals. Therefore, as a practical matter, our indicators probably necessarily serve as indicators of noncriminal gun prevalence, as well as gun prevalence among criminals.

4.3. Validation of the Gun Prevalence Measure

Following Cook (1979), we assessed the validity of our gun indicators by measuring their associations with survey-based measures of gun

prevalence. We combined the results of three national surveys, the General Social Surveys for 1980, 1982 and 1984, to compute reported gun prevalence figures for the nine major U.S. census regions, among persons living in places of 100,000 or larger population. Comparable measures were computed for each of our gun indicator variables by weighting each city measure by the city's population and calculating a weighted average for our cities in each of the nine regions.

All but one of the indirect indicators was strongly correlated across regions with the regional survey measures of gun prevalence, and the indicators were highly correlated among themselves. The only indicator about which there was some doubt is one of the two used by Cook (1979)—the percentage of homicides committed with guns. It was correlated only 0.38 with the survey-based percentage of households reporting a gun, over the nine regions, which was not significantly different from zero. The other indicators showed the following significant correlations with the percentage of households reporting a gun: 0.69 for percentage of aggravated assaults committed with a gun, 0.83 for percentage of robberies committed with a gun, 0.86 for percentage of suicides committed with guns, and 0.90 for the percentage of the value of reported stolen property attributable to guns. This last measure, not previously used in gun research, appeared to be the best single indicator of gun prevalence. These same results were confirmed using survey-based measures of respondent (as opposed to household) gun prevalence and both household and respondent prevalence of handguns. An important finding of this validity test was that all of the indicators were more strongly associated with survey measures of handgun prevalence than with gun prevalence in general. Thus our indicators may reflect handgun prevalence more strongly than longgun prevalence. This is probably advantageous, since handguns are the predominant gun type involved in crime (U.S. Bureau of Justice Statistics, 1987).

4.4. Reciprocal Effects

Levels of violence might influence how much gun control a city has, as well as the reverse. If violence levels and the presence of gun laws had a simultaneous reciprocal relationship, a nonrecursive model would be called for, using an appropriate estimation procedure. However, gun laws were not passed frequently enough for violence levels in 1979–1981 to influence the passage of any significant number of gun laws during the same period [see Jones and Ray (1980, Appendix III) regarding the pace of gun law changes]. Rather, the level of gun control strictness in 1979–1981 was almost entirely a cumulative product of legislative activity before 1979. Further, there is no evidence that actual or measured violence

rates have any impact on legislative decisions regarding gun controls. Nevertheless, the relationship was treated as a simultaneous one in supplementary estimations, and recursive models were specified.

We always treated the relationships between gun prevalence and violent crime rate as simultaneous reciprocal ones, expecting that while gun levels may affect crime levels, crime may also simultaneously stimulate gun acquisitions (Kleck, 1984a). We used the rate of subscriptions to gun-related magazines and the state hunting license rate as measures of recreational interest in firearms. They served as instruments which should have a direct effect on gun prevalence but not on violence or crime rates, allowing identification of the model. [For a good introduction to identification problems, see Maddala (1988, pp. 293–304).]

This study improves on previous work in the following ways: (1) we modeled the two-way relationship between gun levels and violence levels, (2) we measured gun prevalence, and used multiple, validated indicators of gun prevalence levels, instead of just one or two, (3) we used extensive controls for possible sources of spuriousness, (4) we used cities as the unit of analysis, a smaller, more homogeneous unit than states, (5) we took account of both city and state gun laws, (6) we used four different sources for measuring gun laws, (7) we assessed 19 different types of gun laws instead of just 1 or 2, (8) we assessed whether the effectiveness of gun laws depends on the level of enforcement of weapons laws, and (9) we used a large sample of 170 cases, rather than the 50 or fewer common in prior studies.

5. INFERENCE LOGIC

The conditions under which one could tentatively conclude that gun laws reduce violence are as follows: If gun laws are effective, they should have (1) a significant negative association with the *gun* violence rate (e.g., the rate of homicides committed with guns), (2) a significant negative association with the *total* violence rate [e.g., the total homicide (gun homicide plus nongun homicide) rate], and, preferably, (3) a weaker association with the *nongun* violence rate (e.g., the rate of homicides not committed with guns) than with the gun violence rate.

If 1 is true, but not 2, it would generally indicate that gun laws merely shift people from guns to nongun weapons, with no net reduction in deaths or crimes. If 2 is true, but 1 is not, it suggests that gun laws are merely associated with some omitted variables which have an effect on total violence rates but that gun laws themselves have no effect, since they should have their effects by, at minimum, reducing rates of violence committed with guns. Interpretation is ambiguous if 1 and 2 are true, but 3 is

not (i.e., gun laws are as strongly negatively associated with nongun rates as with gun rates). This would suggest that either (a) the gun control variable is simply a correlate of some omitted variable which affects the violence rate, since there is no strong a priori reason why gun controls should reduce the rate of violent acts without guns, or (b) the gun control does reduce acts of violence with guns but is also a correlate of some factor which reduces violent acts without guns as well. Interpretation is also ambiguous if 1 is true, 2 is not true, *and* the gun control was not significantly associated with the nongun violence rate. As noted, the first two circumstances would ordinarily suggest substitution of nongun means for guns, with no net effect on total violence. However, the fact that the gun law did not show any evidence of increasing the nongun violence rate would seem to contradict this interpretation, making a clear interpretation impossible.

Note that this logic is irrelevant to the analyses of rape and fatal gun accidents since there were no data available to separately measure gun and nongun rates of rape, and the inferential logic is irrelevant to gun accidents. For these two, interpretations had to be based entirely on findings concerning the total rape and fatal gun accident rates.

6. FINDINGS

Table III reports two-stage least-squares (2SLS) parameter estimates of the effects of gun laws, gun prevalence, and control variables on rates of total (gun plus nongun) violence, gun violence, and nongun violence. To clarify interpretation of Table III, consider A, pertaining to homicide rates. It reports estimates for three homicide models, with each pair of columns referring to a two-equation model of a given type of homicide. For example, the columns 2 and 3 present estimates of a two-equation model, column 2 pertaining to the total (gun plus nongun) homicide equation and column 3 pertaining to the gun prevalence equation.

Now consider estimates pertaining to a particular predictor variable. The row of numbers for BYPERMIT is estimates of coefficients reflecting the effects of laws requiring gun purchase permits on: (column 2) the total homicide rate, (column 3) gun prevalence in the total homicide model, (column 4) the rate of homicides committed with guns, (column 5) gun prevalence in the gun homicide model, (column 6) the rate of homicides not committed with guns, and (column 7) gun prevalence in the nongun homicide model, respectively. These estimates indicate that this type of gun control appears to have a significant negative effect on the total homicide rate, no significant negative effect on the gun homicide rate, and a significant negative effect on the nongun homicide rate. The interpreta-

Table III. Two-Stage Least-Squares Estimates (Standardized Coefficients)

(A) Homicide models						
	Total homicide	Gun prevalence	Gun homicide	Gun prevalence	Nongun homicide	Gun prevalence
PCTHISP	-0.035	-0.017	-0.041	-0.005	-0.030	-0.028
RPOV	0.762***	-0.257	0.704***	-0.298	0.746***	-0.175
COLLEGE	-0.299***	0.034	-0.302***	0.068	-0.254***	-0.017
CNTDIVRT	0.243***		0.164***		0.325***	
PCTSMSA	-0.135**	0.030	-0.132**	0.033	-0.121*	0.022
INVPOP	-0.223***		-0.213***		-0.232***	
DENSITY	-0.037	-0.266***	-0.008	-0.268***	-0.056	-0.275***
STHNNESS	0.253*	0.472***	0.289**	0.400***	0.129	0.582***
RGUNMAG		0.150**		0.131**		0.174**
HUNTERS		0.247***		0.237***		0.255***
LICENSE	-0.077	-0.028	-0.083	-0.011	-0.047	-0.052
BYPERMIT	-0.150**	-0.13	-0.095	-0.030	-0.248***	0.012
WAITPER	-0.060	0.049	-0.041	0.046	-0.088	0.055
CRIMINAL	-0.035	-0.150**	-0.026	-0.138**	-0.032	-0.167***
MENTAL	-0.018**	0.029	-0.177***	0.046	-0.020**	0.021
ADDICT	0.112	0.072	0.114	0.053	0.092	0.099
ALCOHOLIC	0.037	0.028	0.035	0.020	0.033	0.040
MINORS	0.015	0.049	0.020	0.041	-0.010	0.064
REGISTER	0.124*	0.079	0.120*	0.068	0.127*	0.091
DEALER	-0.065	-0.133	-0.079	-0.117	-0.039	-0.155*
CARYHIDN	0.077	0.075	0.033	0.078	0.143	0.070
CARYOPEN	-0.056	-0.078	-0.058	-0.064	-0.023	-0.105
MANDPEN	-0.050	0.003	-0.075	0.025	-0.027	-0.013
ADDONDIS	-0.088	-0.058	-0.115**	-0.027	-0.033	-0.095
ADDONMND	-0.023	-0.071	-0.030	-0.054	0.019	-0.094
RTBRARMS	-0.047	-0.003	-0.038	-0.005	-0.031	-0.012
HHGBAN	0.087	0.014	0.093	-0.002	0.073	0.298
SNSBAN	0.083	-0.086	0.089*	-0.094	0.088	-0.082
HGBYBAN	0.001	0.005	-0.013	0.011	0.028	-0.003
LNMR		0.487**				
LNGUNMR				0.561**		
LNMGMR						0.413*
Gun prevalence ^a	-0.283		-0.111		-0.525*	
Gun Law Index ^b	0.409**	-0.775	0.408**	-0.714	0.324*	-0.799

Table III. Continued

(B) Aggravated assault models						
	Total assault	Gun prevalence	Gun assault	Gun prevalence	Nongun assault	Gun prevalence
RPOV	0.626***		0.487***		0.591***	
COLLEGE	-0.154***		-0.116*		-0.132*	
CNTDIVRT	0.247***	0.078	0.168***	0.079	0.264***	0.077
ALCHLSM	0.232***		0.253***		0.210***	
PCTSMSA	-0.124*		-0.111		-0.116	
INVPOP	0.087		-0.036		0.128*	
STHNESS	0.103	0.640***	0.159	0.580***	0.109	0.659***
RGUNMAG		0.133**		0.143***		0.127**
GUNTERS		0.177***		0.158***		0.183***
LICENSE	-0.040	-0.083	-0.029	-0.075	-0.068	-0.083
BYPERMIT	0.114	-0.064	0.129	-0.069	0.072	-0.056
WAITPER	-0.014	0.013	-0.028	-0.021	-0.033	-0.003
CRIMINAL	-0.028	-0.105*	-0.167**	-0.079	0.051	-0.114*
MENTAL	0.109	-0.118*	0.112	-0.125*	0.093	-0.112
ADDICT	0.093	0.050	0.161	0.026	0.049	0.057
ALCOHOLIC	0.082*	0.130**	0.017	0.128**	0.019	0.132**
MINORS	-0.044	0.064	-0.036	0.061	-0.043	0.065
REGISTER	0.013	0.019	0.111	-0.002	0.134	0.027
DEALER	-0.167	-0.086	-0.225**	-0.056	-0.137	-0.096
CARYHIDN	0.045	0.025	0.040	0.020	0.017	0.028
CARYOPEN	0.118	-0.060	0.004	-0.049	0.166*	-0.061
MANDPEN	-0.026	-0.025	-0.050	-0.020	-0.024	-0.024
ADDONDIS	-0.078	-0.118**	-0.096	-0.103*	-0.026	-0.127**
ADDONMND	0.014	-0.109	0.068	-0.111	-0.011	-0.111
RTBRARMS	0.098	-0.008	0.046	-0.007	0.122	-0.009
HGBAN	0.022	-0.026	0.045	-0.037	0.017	-0.024
SNSBAN	0.069	-0.064	0.156**	-0.075	0.043	-0.065
HGBYBAN	-0.106	0.038	-0.103	0.044	-0.084	0.034
LNASLT		0.126				
LNGNASLT				0.190**		
LNNASLT						0.107
Gun prevalence ^c	-0.021		0.277		-0.194	
Gun Law Index ^b	0.095	-0.607**	0.014	-0.711***	0.107	-0.531**

Table III. Continued

(C) Robbery models						
	Total robbery	Gun prevalence	Gun robbery	Gun prevalence	Nongun robbery	Gun prevalence
PCTBLACK	0.525*	0.541**	0.375	0.446***	0.610*	0.550***
PCTM1524	-0.073		-0.101		-0.051	
INEQUALT	0.458***		0.385***		0.438***	
COLLEGE	-0.197***		-0.087		-0.236***	
ADDICTRT	0.082		0.096*		0.070	
PCTMSA	-0.201**	0.085	-0.311***	0.103	-0.010	0.089
VISITORS	0.257***	0.042	0.278***	0.004	0.212***	0.046*
INVPOP	-0.277***		-0.252***		-0.276***	
WEST	0.176		0.219**		0.160	
RGUNMAG		0.082		0.105		0.064
HUNTERS		0.100		0.108		0.085
LICENSE	-0.013	-0.078	0.012	-0.085	-0.029	-0.072
BYPERMIT	-0.089	-0.143*	-0.081	-0.132	-0.077	-0.129
WAITPER	0.033	-0.175	0.066	-0.227**	-0.024	-0.150
CRIMINAL	-0.070	0.034	-0.107*	0.031	-0.033	0.038
MENTAL	-0.142	-0.292***	-0.035	-0.321***	-0.234	-0.273***
ADDICT	0.164	0.249***	0.160	0.233***	0.180	0.234**
ALCOHOLIC	0.066	0.040	0.047	0.037	0.059	0.038
MINORS	-0.002	0.013	-0.008	0.016	0.004	0.012
REGISTER	-0.007	-0.126	0.020	-0.145*	-0.065	-0.122
DEALER	-0.143*	-0.125	-0.126*	-0.110	-0.155	-0.121
CARYHIDIN	0.063	0.094	0.088	0.077	0.049	0.089
CARYOPEN	-0.032	-0.112	0.008	-0.126	-0.082	-0.106
MANDPEN	-0.147**	-0.066	-0.124**	-0.062	-0.164**	-0.066
ADDONDIS	-0.167**	-0.114	-0.110*	-0.102	-0.181**	-0.113
ADDONMND	0.018	-0.003	0.054	-0.011	-0.017	0.000
RTBRARMS	0.032	0.137	0.014	0.119	0.062	0.138
HGBAN	0.104	-0.031	0.194***	-0.052	0.051	-0.031
SNSBAN	0.060	0.019	0.070	0.020	0.074	0.019
HGBYBAN	-0.105*	0.007	-0.095*	0.034	-0.095	-0.003
LNROB		-0.149				
LNGNROB				0.012		
LNNGROBR						-0.206*
Gun prevalence ^d	-0.538		0.197		-0.793*	
Gun Law Index ^b	0.140	-0.216	-0.062	-0.538***	-0.043	-0.197***

Table III. Continued

(D) Rape and fatal gun accident models				
	Rape	Gun prevalence	Fatal gun accidents	Gun prevalence
PCTBLACK	0.750***		0.296***	0.384***
CNTDIVRT	0.249***			
INVPOP	-0.242***		-0.117	-0.064
WEST	0.340***	-0.310*		
DENSITY	-0.168		0.088	
MFI		0.340		
OWNEROCC		0.556**		
ALCHLSM			-0.143	
ACCIDENT			0.217**	
RGUNMAG		0.187		0.155***
HUNTERS		-0.065		0.178***
LICENSE	0.079	-0.191*	-0.101	-0.129
BYPERMIT	-0.109	0.079	0.025	-0.189**
WAITPER	-0.061	-0.050	0.053	-0.248**
CRIMINAL	0.053	-0.106	0.123	0.023
MENTAL	-0.045	-0.076	-0.157	-0.287***
ADDICT	0.215	-0.038	0.001	0.176*
ALCOHOLIC	0.103	-0.127	0.030	0.068
MINORS	0.087	-0.057	-0.062	-0.033
REGISTER	-0.097	-0.059	-0.018	-0.039*
DEALER	-0.063	0.114	0.098	-0.159*
CARYHIDN	0.078	0.111		
CARYOPEN	-0.015	-0.098		
MANDPEN	-0.096	0.113		
ADDONDIS	-0.066	-0.038		
ADDONMND	0.133	-0.237*		
RTBRARMS	0.182**	-0.144		
HGBAN	-0.092	0.138	0.009	-0.028
SNSBAN	0.084	-0.128	0.063	0.000
HGBYBAN	-0.112	0.055	-0.099	0.061
LNRAPE		1.088***		
Gun prevalence ^c	-0.249		0.121	
Gun Law Index ^b	-0.051	-0.593	0.111	-1.262***

Table III. Continued

(E) Suicide models (OLS estimates)				
	Total suicide	Gun suicide	Nongun suicide	Gun prevalence
TRNSIENT	0.240***	0.098*	0.286***	
CNTDIVRT	0.159**	0.165***	0.004	0.134
ALCHLSM	0.332***	0.255***	0.275***	
INVPOP	0.020	-0.071	0.125*	
DENSITY	-0.237***	-0.386***	0.017	-0.197*
HOSPITAL	0.069	0.101*	0.008	
LIVLONE	0.183**	0.065	0.257***	
PCTOLD	0.138*	0.064	0.113	
RGUNMAG				0.065
HUNTERS				0.063
LICENSE	-0.033	-0.062	0.008	-0.171*
BYPERMIT	-0.089	-0.146**	0.053	-0.005
WAITPER	0.005	-0.025	0.008	-0.211*
CRIMINAL	0.071	0.090	-0.056	-0.129
MENTAL	-0.071	-0.134*	0.014	-0.095
ADDICT	0.058	-0.008	0.154	0.240***
ALCOHOLIC	-0.038	-0.010	-0.087	0.041
MINORS	-0.038	-0.018	-0.048	0.036
REGISTER	-0.063	-0.089	0.016	-0.139
DEALER	-0.229***	-0.140**	-0.207**	0.001
CARYHIDN				
CARYOPEN				
MANDPEN				
ADDONDIS				
ADDONMND				
RTBRARMS				
HGBAN	-0.062	-0.095	-0.037	0.114
SNSBAN	0.094	-0.014	0.148**	-0.013
HGBYBAN	-0.066	0.051	-0.093	0.107
Gun prevalence ^f	0.132**	0.252***	-0.101	
Gun Law Index ^b	-0.242	-0.319*	0.005	-0.084

^aPrincipal-components factor with indicators PCTGNAST, PCTGNROB, PGS7982, and GUNSTOL.

^bPrincipal-components factor with indicators: all gun laws.

^cPrincipal-components factor with indicators PGH7982, PCTGNROB, PGS7982, and GUNSTOL.

^dPrincipal-components factor with indicators PGH7982, PCTGNAST, PGS7982, and GUNSTOL.

^ePrincipal-components factor with indicators PCTGNAST, PCTGNROB, PGS7982, GUNSTOL, and PGH7982.

^fPrincipal-components factor with indicators PGH7982, PCTGNROB, PCTGNAST, and GUNSTOL.

* $P < 0.10$.

** $P < 0.05$.

*** $P < 0.01$.

tion of this pattern of results is that the law is ineffective in reducing homicide, since it did not have a significant negative association with the rate of gun homicide.

6.1. Effects of Gun Prevalence Levels on Violence Rates

Estimates of the impact of gun prevalence on violence rates can be found in Table III in the penultimate row of each column referring to a violence rate. For example, the 2SLS coefficient estimating the impact of gun prevalence on the total murder rate is a nonsignificant -0.283 (column 2 in A).

Gun prevalence had an apparent significant positive effect on total rates of suicide, but not on any of the other five types of violence. The apparent effect of gun prevalence on suicide rates, however, is not entirely stable, being evident only when the suicide models were estimated with OLS. Some would argue that high suicide rates could discourage gun acquisition among people living in households with a person they believed to be suicide-prone. If this were true, then gun prevalence should be treated as endogeneous in the suicide models, just as in the other models (though for different reasons). When gun prevalence was treated as endogeneous, and the model was estimated with 2SLS, the results indicated no significant impact of gun prevalence on suicide. We tentatively conclude that gun prevalence rates *may* increase total suicide rates but have no effect on total rates of homicide, robbery, aggravated assault, rape, or fatal gun accidents.

6.2. Effects of Violence Rates on Gun Prevalence Levels

Coefficients estimating these effects can be found in the Gun Prevalence columns in Table III, in the rows near the bottom of each panel labeled with the names of the various violence rates. For example, in column 3 in A, the LNMR coefficient is a significant 0.487 , indicating that the total homicide rate appears to have a positive impact on gun prevalence.

Homicide (gun, nongun, and total), gun assault, and rape rates all had significant positive coefficients in the gun prevalence equations. This supports the hypothesis that some violence rates encourage the acquisition of firearms for self-defense, accounting at least partially for bivariate positive associations observed between gun prevalence levels and violence levels. That rape in particular should have this effect is consistent with survey evidence that women's gun ownership, while lower than men's, is disproportionately likely to be motivated by self-defense concerns and with county-level findings that female gun ownership rates are more responsive to violence rates than men's ownership rates are (Bordua and Lizotte,

1979, p. 172). More generally, the results support the simple idea that rates of more serious violent crimes are more likely to increase gun acquisition.

6.3. Effects of Gun Controls on Gun Prevalence Levels

The effects of 19 types of gun regulations on gun prevalence levels are summarized in Table IVA. The effect of each gun restriction on gun prevalence was estimated multiple times, once in each of six violence rate models. Because the exact set of gun prevalence indicators used varied from one model to the next, it therefore was possible for estimated effects of gun controls on gun prevalence levels to vary somewhat from one violence rate model to the next. None of the gun controls appeared to have any impact on gun prevalence. Each law's effect on gun prevalence was initially estimated six times, but only bans on gun possession by criminals and mentally ill persons showed significant effects in even half of the initial tests.

Table IV. Summary of Effects of Gun Prevalence and Gun Controls on Violence Rates

	(A) Significant negative impact of gun controls on gun prevalence? ^a					
	Violence rate model					
	Homicide	Aggrvtd. assault	Robbery	Rape	Gun accidents	Suicide
LICENSE	No	No/Yes	No/Yes	Yes	No/Yes	Yes
BYPERMIT	No	No/Yes	Yes	No	Yes	No
WAITPER	No	No	No	No	Yes	Yes
CRIMINAL	Yes	Yes	No	No	No	No/No/Yes
MENTAL	No	Yes	Yes	No	Yes	No
ADDICTS	No	No	No	No	No	No
ALCOHOLIC	No	No	No	No	No	No
MINORS	No	No	No	No	No	No
REGISTER	No	No	No/No/Yes	No	Yes	No
DEALER	No	No	No	No	Yes	No
CARYHIDN	No	No	No	No		
CARYOPEN	No	No	No	No		
MANDPEN	No	No	No	No		
ADDONDIS	No	Yes	No	No		
ADDONMND	No	No	No	Yes		
RTBRARMS	No	No	No	No		
HGBAN	No	No	No	No	No	No
SNSBAN	No	No	No	No	No	No
HGBYBAN	No	No	No	No	No	No

Table IV. Continued

	Violence rate model					
	Homicide	Aggrvtd. assault	Robbery	Rape	Gun accidents	Suicide
Significant positive effect of gun prevalence?	No	No	No	No	No	(Yes) ^b
Significant negative effect of gun laws? ^a						
LICENSE	No/Yes/Maybe	No	No	No	No	No/Maybe/No
BYPERMIT	No/Maybe/No	No	No	No	No	Maybe
WAITPER	No	No	No	No	No	No
CRIMINAL	No	Maybe	Maybe	No	No	No
MENTAL	Yes	No	No	No	No	Maybe
ADDICT	No	No	No	No	No	No
ALCOHOLIC	No	No	No	No	No	No
MINORS	No	No	No	No	No	No
REGISTER	No	No	No	No	No	No
DEALER	No	Maybe	Yes	No	No	Maybe
CARYHIDN	No	No	No	No	No	No
CARYOPEN	No	No	No	No	No	No
MANDPEN	No	No	Maybe	No	No	No
ADDONDIS	Maybe/ /Yes	No	Maybe	No/ /Yes	No	No
ADDONMND	No	No	No	No	No	No
RTBRARMS	No	No	No	No	No	No
HGBAN	No	No	No	No/Yes/Yes	No	No/No/Maybe
SNSBAN	No	No	No	No	No	No
HGBYBAN	No	No	Yes	No	No	No
Gun Law Index	No	No	No	No	No	No

^aWhere more than one interpretation appears in a cell, it means that interpretations became more supportive of the gun control efficacy hypothesis when different specifications were used. (1) The first (and usually the only) interpretation pertains to models containing all 19 gun laws and no provision for interactions; (2) the second one pertains to results when using a reduced set of four gun control variables; (3) the third one pertains to results when multiplicative terms testing for interactions between gun laws and enforcement levels were specified (see text). Unsupportive results which remained unsupportive (No) under the latter two alternative specifications are not shown, to simplify the table.

^bAn effect of gun prevalence on total suicide rates was evident only when the model was estimated with OLS. When gun prevalence was treated as endogenous and the model was estimated with 2SLS, results did not indicate an impact of gun prevalence.

We checked to see if gun control effects on gun prevalence would become evident if we used a reduced set of four of the stronger gun laws (listed in a later section). The results for just one type of gun control changed (indicated by Yes appearing after one slash in a given cell in Table IVA)—gun owner licensing appears to reduce gun prevalence in five of the six violence models. However, since this apparent effect is evident only when there are no controls for other gun laws, this result may reflect the cumulative, albeit apparently slight, effects of other, correlated, gun laws as well as the effects of licensing itself. Therefore, interpretation of this result must remain ambiguous.

We also checked for interactions between gun laws and police enforcement effort by adding to each gun prevalence equation a multiplicative term for each gun control variable, consisting of the gun control variable multiplied times the weapons arrest rate. Of 108 tests for interactions, only 2 suggested an effect of gun controls on gun prevalence which was contingent upon enforcement effort, where no impact of the controls had been evident in the additive analysis. These are denoted by Yes appearing after two slashes in any of the cells in Table IVA (see CRIMINAL in the Suicide model and REGISTER in the Robbery model). Given the large number of tests, we believe that these two deviant results could be the product of chance. Thus, our evidence generally fails to support the hypothesis that the impact of gun controls on gun levels depends on the level of police enforcement.

6.4. Effects of Gun Control Laws on Violence Rates

Table III contains detailed results on this issue, which are summarized in Table IV. The findings indicate that most gun restrictions appear to exert no significant negative effect on total violence rates, though some gun controls do seem to be effective. Of 102 possible effects tested, 7 were consistently supportive of, and 11 others were at least partially consistent with, a hypothesis of gun control effectiveness, albeit using fairly generous evaluative criteria. As described below, each gun law's effect on a given form of violence was estimated under three conditions: (1) with all gun law variables specified in the models but with no measure of enforcement effort included, (2) with all gun control variables specified in the models and with interactions of gun laws and enforcement effort included, and (3) with a reduced set of four especially strong gun control variables included in the models. In the subsequent discussion, each law is assessed based on the most supportive of the three sets of results, i.e., the results most supportive of a violence-reducing impact of the law. Thus, the gun control efficacy hypothesis was given 18 chances at confirmation for any one form of gun

control, with hypothesis tests in three sets of circumstances, in each of six violence rate models. (There were, however, no tests of the impact of carry laws, add-on penalties for committing a crime with a gun, or right-to-bear-arms provisions on suicide or gun accident rates, as these regulations were considered irrelevant to suicides or accidents. For example, nearly all gun suicides are committed in a private location and thus are unlikely to be affected by carry laws.)

6.4.1. Results with All 19 Gun Control Variables Included, No Enforcement Interactions

Because we could not know in advance which gun control measures affected violence rates, we initially specified all 19 gun control variables in each violence rate equation (with the exceptions described in the previous paragraph). As noted previously, collinearity among these variables was generally slight, so this was not a serious statistical problem. We first present interpretations based on these specifications, followed by discussion of any results which were modified when a reduced set of gun laws were used or when interactions with enforcement levels were specified.

Requiring permits to buy guns (BYPERMIT) may reduce rates of suicide. Bans on possession of guns by convicted criminals (CRIMINAL) may reduce rates of aggravated assault and robbery. Bans on possession of guns by mentally ill persons (MENTAL) appear to reduce homicide and may reduce suicide. Requiring a state or local license to be a gun dealer (DEALER) appears to reduce rates of robbery and may reduce aggravated assaults and suicides. Laws that provide mandatory penalties for unlawful gun carrying (MANDPEN) may reduce robbery. Laws providing discretionary additional penalties for committing crimes with a gun (ADDONDIS) may reduce murder and robbery. Finally, local bans on the purchase of handguns appear to reduce robbery rates.

6.4.2. Results Using a Reduced Set of Gun Law Variables

While the problem is mild, there is some collinearity among the gun law variables which could inflate standard errors somewhat and thereby bias hypothesis tests in favor of the null hypothesis. Therefore the violence rate models were reestimated with just four gun law variables thought to be especially likely to show effects, since they were fairly strong measures—licenses, purchase permits, handgun possession bans, and bans on sale of “Saturday Night Specials.” When this was done, four of the previous results were altered so as to strengthen, to varying degrees, support for the hypothesis of gun control efficacy. (Two results changed mildly from No to Maybe, while two changed substantially from No to Yes.) With the reduced set of gun law variables, estimates indicated that owner licensing

appears to reduce homicides and may reduce total suicides. Purchase permits may reduce homicides (there was still, however, a stronger negative association of permits with nongun homicide than with gun homicide). These estimations also indicated that handgun bans appear (somewhat implausibly, given how rarely rapists use guns) to reduce rapes, but not any other forms of violence. The rest of the gun law assessments were unaffected. Gun prevalence still showed no positive effect on any of the violence rates except the gun suicide and total suicide rates, the same as with models including the full set of gun laws. (Results are summarized in Table IV; estimates are not reported here but are available from the senior author.)

6.4.3. Interactions with Enforcement Level

It could be argued that gun laws are not always given a fair chance to work because in many places they are not adequately enforced. We tested this idea by forming multiplicative interaction terms between each gun law variable and a measure of police enforcement effort, the number of weapons arrests per 100 sworn police officers (WEAPARTS), and adding these terms into our models of violence rates. The resulting estimates generally confirmed the previous results. The coefficients for the interaction terms were rarely negative and significant, indicating that the effects of gun laws apparently were not dependent on the level of police enforcement effort, at least not based on the measure of effort used and not within the range of enforcement effort currently exerted in large U.S. cities. Of 102 possible interaction effects tested, only 5 suggested possible gun law effectiveness contingent upon the level of law enforcement effort: (1) laws providing discretionary add-on penalties for committing crimes with a gun appear to reduce the total homicide rate when accompanied by sufficient enforcement effort, (2) the same appears to be true for rape, (3) owner licensing may have such a contingent effect on homicide (4) handgun bans appear to have a contingent effect on the rape rate, and (5) handgun bans may have such an effect on the suicide rate. Given the large number of tests for interaction effects, however, five “significant” results might be little more than a product of chance. (Interaction test results are summarized in Table IV; estimates are available from the senior author.)

6.5. Gun Control as a Single Endogenous Variable

As noted before, we consider it unlikely that there is a simultaneous reciprocal relationship between gun laws and violence rates. Nevertheless, we estimated models of violence rates which assumed that such a relationship was possible. To do this, a Gun Law Index (GLI) was created

from all 19 gun control variables, using principal components analysis. This variable was treated as endogenous, in a model which assumed that simultaneous relationships existed among the GLI, the violence rate, and gun prevalence. Two instrumental variables were assumed to affect directly the GLI but not violence rates or gun ownership: LIBERAL, the percentage of a city's voters who voted for George McGovern in the 1972 presidential election (a measure of political liberalism), and NRA, the city's rate of membership in the National Rifle Association.

Estimates of the GLI coefficient are reported near the bottom of each violence rate column in Table III. Note that these are estimates from separate models which did *not* include the individual gun control variables and, thus, are not a part of the models to which the rest of the coefficients in Table III correspond. These estimates indicate that the overall level of gun control in a city does not appear to exert a significant negative effect on any of the six violence rates. The only hint of a possible exception was with suicide. Although the GLI was not related to the total suicide rate, its coefficient was negative and marginally significant ($0.05 \leq P < 0.10$) in the gun suicide equation and nonsignificant in the nongun suicide equation. Thus, treating gun control as a single endogenous variable did not strengthen support for the gun control efficacy hypothesis.

7. DISCUSSION

These results generally support the view that (1) existing gun control laws do not reduce gun prevalence in U.S. cities, (2) gun prevalence does not have any measurable net positive effect on violence rates except for a possible effect on suicide rates, and (3) most gun control laws do not reduce violence rates, though a few may do so.

For many gun regulations, such as carry controls or add-on penalties, it is not surprising that they do not reduce gun ownership, since they were not intended to do so. Still other gun controls may operate to restrict ownership only among "high-risk" groups such as criminals or alcoholics. However, results indicated that most gun controls fail to reduce gun use in acts of violence, undercutting the idea that controls reduce gun prevalence even in criminally involved subsets of the population. One simple explanation for this failure would be the huge size of the U.S. gun stock. With over 200 million guns in private hands, it is hard to keep guns away from anyone who strongly desires one.

Few of the tests unambiguously supported the gun law efficacy hypothesis. However, it increases confidence in some of these few supportive findings to know that they correspond closely with similar results in past research. (1) The present study found partial support for the claim

that laws establishing additional penalties for committing felonies with a gun may reduce total robbery rates, and prior research by McPheters *et al.* (1984) indicated the same thing. (2) Bans on gun possession by mentally ill persons may reduce suicide, consistent with the findings of Sommers (1984). (3) Mixed evidence suggested that handgun bans *may* reduce suicide, though this weak result reflected such controls in only two cities (New York City and Washington, DC). This is consistent with results of Loftin *et al.* (1991). (4) Finally, a previous study indicated that a mandatory penalty carry law, the Bartley–Fox law, appeared to reduce robbery (Deutsch and Alt, 1977), and the present research also indicates that such laws may reduce robbery.

As actually administered, “mandatory penalty” carry laws do not impose penalties in a truly mandatory fashion but, rather, merely in a relatively less discretionary one (Beha, 1977). Rather than mandatory penalties being viewed as essential, a more plausible interpretation of these results is that the mandatory penalty provision serves as an indicator of strong support among court actors for relatively severe punishment of unlicensed gun carrying. Where such laws exist, prosecutors may devote more resources to prosecuting illegal weapons carriers, and may be more likely to seek stiff penalties, even though they could evade the mandatory provisions if they chose to do so.

One type of gun law which clearly appeared to have some beneficial effect was a somewhat surprising one. Laws requiring a state or local license to be a firearms dealer were negatively related to aggravated assault, robbery, and suicide rates, with the results being strong (i.e., a Yes conclusion) for robbery. Because dealers everywhere in the United States are required to have a federal gun dealer license, additional state or local licensing requirements might seem trivial. However, if these requirements are more stringent or require high licensing fees, they can reduce the number of retail gun outlets and possibly reduce casual acquisition of guns among persons not sufficiently motivated or persistent to seek out less convenient stores or nonretail sources (Blose and Cook, 1980, p. 20). Although results summarized in Table IVA do not support the idea that this law reduces aggregate gun prevalence levels, it may affect a subset of weakly motivated buyers.

7.1. Gun Prevalence Effects

Why do gun prevalence levels have no apparent net positive effect on violence rates, with the possible exception of suicide? The absence of any net effects of gun levels could be due to counterbalancing effects of opposite sign, with criminal ownership increasing the rates and noncriminal

ownership decreasing them, due to deterrent effects of ownership among prospective victims (Kleck, 1988). If this were so, it might still be useful to reduce gun levels among criminals if measures used to accomplish this did not also reduce gun levels among noncriminals by an equal or greater amount.

Ordinary least-squares results indicated that gun prevalence may influence the choice of method in suicides and also the overall frequency of suicide. Gun prevalence was positively associated with both total suicide rates and gun suicide rates and negatively (though nonsignificantly) related to the nongun suicide rate.

No impact of gun prevalence on fatal gun accident rates was detected. Given the random component in accident causation and the rarity of fatal gun accidents (one or two a year in most cities), the absence of a relationship is perhaps not that surprising. It may also be that many cities with a higher gun prevalence, especially smaller cities and those in the South and West, have gun owners more thoroughly socialized from childhood into safe handling of guns, as opposed to getting guns as adults, without training.

The present results confirm those of the two best previous studies of city gun ownership and robbery rates, which also found no evidence of a net impact of gun ownership levels on the total robbery rate (Cook, 1979; McDowall, 1986). The present findings indicate that gun ownership levels increase (albeit nonsignificantly) gun robbery and decrease nongun robbery, suggesting that where guns are not available, robbers substitute other weapons, with no net effect on total robbery rates. Gun ownership levels also may have no net effect on total robbery because they may have a mixture of both positive and negative effects. On the one hand, guns make it possible for larger numbers of people to rob, including those too timid to rob without a gun, and expand the number of targets a given robber can successfully tackle. On the other hand, guns also enable robbers to rob more lucrative targets, increasing the average "take" per robbery and allowing them to gain a given amount of income with fewer robberies (Cook, 1976; Wright *et al.*, 1983). Also, gun ownership by prospective victims, especially retail store owners, may deter some robbers (Wright and Rossi, 1986, pp. 141–159; Kleck, 1988). The findings are consistent with an interpretation that these effects of opposite sign cancel each other out, with no net effect on the total robbery rate.

In assaultive crimes such as homicide and aggravated assault, gun availability also seems to have a mixture of positive and negative effects. In an individual-level analysis of violent incidents, Kleck and McElrath (1991) found that an aggressor's possession or use of a gun appears to reduce the probability of a physical attack (as opposed to a mere threat) on the victim

and appears to reduce the probability that the attack will result in a physical injury, while increasing the probability that an injury will be fatal. Further, possession of guns by prospective victims may exert a modest deterrent effect on would-be aggressors (Wright and Rossi, 1986; Kleck, 1988). The present aggregate level findings are consistent with a claim that the negative, violence-reducing effects of gun ownership may roughly cancel out the violence-increasing effects, consistent with the findings of previous time series research indicating no net effect, positive or negative, of gun ownership levels on the homicide rate (Kleck, 1984a).

7.2. Gun Law Effects

Why do most of 19 different major varieties of gun control laws appear to have no impact, with a few exceptions, on the types of violence which frequently involve guns? Many explanations are suggested by both our own results and those of prior research. First, some gun laws are intended to have their effects by reducing gun ownership levels, so some gun laws may fail because they do not achieve their proximate goal of reducing gun ownership (Table IVA). However, our results also generally indicate that gun prevalence levels do not have a net positive effect on violence rates (top row, Table IVB). Consequently, gun laws may fail simply because, even if they did reduce gun prevalence, this would not produce a reduction in violence rates.

On the other hand, the rationale for some gun regulations does not rely on an assumption that gun ownership levels affect violence. For example, carrying laws are intended to make guns less immediately available in public places rather than to reduce overall gun ownership levels; the rationale for such laws assumes only that the immediate availability of guns in public places is relevant to some violence rates, especially robbery. Likewise, add-on penalties are intended to discourage criminals from choosing guns to use in their crimes. It is also possible that gun laws have only a short-term effect on violence rates when they are passed and that the effect then fades. Most of the laws we have evaluated were implemented well in the past, so we cannot assess this idea.

Most gun laws regulate only handguns, or regulate handguns more stringently than the more numerous longguns such as rifles and shotguns (Kleck, 1991, Chap. 8). This permits the substitution of relatively unregulated longguns for the more heavily regulated handguns. While longguns are larger than handguns, and thus not so easily concealed or conveniently carried on the person, such a limitation is rarely relevant for suicides and is also irrelevant for many violent crimes, because either (1) the crime is committed in or near a private place, in a way which

does not require carrying or concealment of the gun, or (2) the crime was committed after some advance planning, in a way which would require only short-term carrying or which could involve use of a longgun whose barrel and stock had previously been cut down to render it concealable. Longguns are generally more lethal than handguns. Thus, while restrictions on handgun availability could cause some violent persons to go without guns of any kind, they may also have the undesirable effect of encouraging others to substitute more lethal longguns. The implication for the homicide rate would be that these effects would cancel out or, worse, produce a net increase in homicides (Kleck, 1984b).

No matter how severe current measures are, it is always possible that stronger measures are needed. However, even fairly strong measures such as banning sales of "Saturday Night Specials" and de facto bans on handgun possession appear generally to exert no negative effect on violence rates. Nevertheless, the findings reported herein cannot inform us about the effectiveness of gun control measures not yet tried.

It has been argued that many gun laws fail because they are local and that guns from more lenient jurisdictions "leak" into the stricter jurisdictions. Thus, federal measures regulating acquisition of guns might work (Newton and Zimring, 1969). Research on existing federal regulations has failed to generate consistent evidence of their effectiveness (Zimring, 1975; Magaddino and Medoff, 1984), but these controls were very weak, loophole-ridden measures. Some of the few measures found in this study to be effective were controls which are not vulnerable to this "leakage" problem. "Leakage" is an issue relevant mainly to regulations aimed at the acquisition of guns, rather than their use. In contrast, laws forbidding possession of handguns, regulating the carrying of guns, or providing for add-on penalties for using guns in crimes are not affected by interjurisdictional leakage because the legal risks of possessing or carrying a gun or using it in a crime in a given jurisdiction are the same regardless of whether bordering areas have similar measures.

It cannot be argued that the effects of gun ownership and gun control could not be detected due to a lack of meaningful variation in these variables. It is clear from the standard deviations for the gun prevalence indicators and the means for the gun law dummies in Table II that levels of both gun prevalence and gun control strictness vary enormously across U.S. cities. Direct survey measures of gun prevalence in very large cities indicate that the fraction of households reporting a gun varies from extremely low levels, such as 6% in New York City and Washington, DC (lower than in many Western European nations), to high levels, such as 61% in Houston (unpublished tabulations from specially geocoded General Social Surveys for 1973–1989).

Three limitations of this study should be noted. First, we had no measures of how strictly permit and license laws are administered, e.g., how narrowly authorities interpret rules defining which applicants are qualified, as distinct from how much effort is put into apprehending and punishing violators. Second, analysts always need to be skeptical about restrictions used to achieve identifiability in structural equation models. The key identification restrictions needed to model the assumed reciprocal relationship between gun prevalence and violence rates were the exclusion of gun magazine subscription rates and hunting license rates from the violence equations. Interest in hunting and other gun-related sports was assumed to affect gun prevalence rates but to not directly affect violence rates. One might argue that such interests may reflect, or even generate, proviolent attitudes, but Eskridge (1986) and Bordua (1986) have found county hunting license rates to have small to moderate *negative* associations with violence rates. Finally, it is possible that we have failed to control for some confounding variable which suppresses a guns–violence or gun law–violence association, though we do not know what that variable might be.

8. CONCLUSIONS

While the results are generally negative for the violence control effectiveness of gun control, the significance of the few supportive results should not be overlooked. There do appear to be some gun controls which work, all of them relatively moderate, popular, and inexpensive. Thus, there is support for a gun control policy organized around gun owner licensing or purchase permits (or some other form of gun buyer screening), stricter local dealer licensing, bans on possession of guns by criminals and mentally ill people, stronger controls over illegal carrying, and possibly discretionary add-on penalties for committing felonies with a gun. On the other hand, popular favorites such as waiting periods and gun registration do not appear to affect violence rates.

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EXHIBIT 4

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GARY KLECK and MARC GERTZ

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CARRYING GUNS FOR PROTECTION: RESULTS FROM THE NATIONAL SELF-DEFENSE SURVEY

**GARY KLECK
MARC GERTZ**

The article reviews research on gun carrying and reports new findings from the National Self-Defense Survey on the prevalence, incidence, and patterns of adult gun carrying for protection. About 8.8 percent of adults carried guns in the preceding year, 3.7 percent carried guns on their person, and 6.5 percent carried guns in a vehicle. Within a given year, about 16.8 million U.S. adults carry a gun, 7.1 million who carry do so on the person and 12.4 million do so in a vehicle. On an average day, 2.7 million U.S. adults carry a gun for protection on their person and 5.0 million carry one in a vehicle. Less than one in a thousand instances of gun carrying involves a violent gun crime. Carrying was more common among males, Blacks, people in the South and West, people with a job requiring a gun, those who know someone who was recently the victim of a crime, believe that crime is above average in their neighborhood, have been a robbery victim, or believe people must depend on themselves for protection.

Millions of Americans carry firearms in public places, both on their person and in their vehicles. Most of this carrying violates gun carry laws, yet it is not necessarily done by people intending, or even likely, to commit some other crime with the gun. By 1995, at least 31 states had passed laws making it easy for adult residents without a criminal conviction to get a license to carry a concealed firearm (U.S. Bureau of Justice Statistics 1996b:120-1). Yet, because of a narrow research focus on carrying by juveniles, virtually nothing is known about gun carrying by adults. This article reviews research on gun carrying and reports findings from a national survey on the prevalence and incidence of carrying among adults and on the kinds of people who carry.

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WHY GUN CARRYING MATTERS

Criminogenic Effects of Gun Carrying

Carrying guns in public places, as distinct from merely keeping them in private homes, can have significant implications for both legal and illegal activities associated with crime. The frequency of carrying will affect how often criminals have guns available for criminal uses. Occasional carrying may be a part of planned crimes, whereas routine daily carrying may facilitate the commission, or influence the outcomes, of unplanned crimes, such as spontaneous fights or opportunistic robberies committed impulsively in response to contact with vulnerable or lucrative victims. In 1993, there were about 1.02 million crime incidents committed by offenders who possessed guns (but only some of whom actually used the guns) (U.S. Bureau of Justice Statistics 1996a:72). About 77 percent of all violent crimes in 1993 were committed in public places (p. 67) where the offender would have had to carry a gun to use it in the crime.

When guns are used in violent crimes, it increases the likelihood the crime will be completed (e.g., property is taken in a robbery or burglary), reduces the likelihood that the offender will attack and injure the victim, but increases the likelihood that any injury inflicted will be fatal (Cook 1991; Kleck 1991, chap. 5; Kleck and McElrath 1991). Thus, increased gun carrying by those with criminal propensities could contribute to increases in robberies and other violent crimes, such as assaults, committed in public places, and to higher fatality rates in those crimes.

DEFENSIVE USES OF GUNS CARRIED IN PUBLIC PLACES

On the other hand, the frequency of carrying also affects how often prospective crime victims, both criminal and noncriminal, will have guns available for self-defense. It is a mistake to think of gun carrying as something done largely for criminal purposes, except in the definitional sense that most concealed carrying without a permit is itself a crime. As will be documented, most nonrecreational carrying is done for noncriminal purposes of self-defense. Self-defense gun carrying is worth taking seriously for two reasons. First, the empirical literature is unanimous in portraying defensive gun use as effective, in the sense that gun-wielding victims are less likely to be injured, lose property, or otherwise have crimes completed against them than victims who either do nothing to resist or who resist without weapons (for reviews, see Kleck 1997, chap. 5; Kleck and DeLone 1993).

Second, the literature is nearly unanimous (with a single dissenting source of survey information) in indicating that defensive gun use (DGU) is commonplace, though largely invisible to governments.¹ At least 15 surveys have yielded results implying anywhere from 760,000 to 3.6 million DGUs per year, with evidence from the first survey specifically designed to estimate DGU frequency, the National Self-Defense Survey (NSDS), indicating about 2.5 million instances of DGU per year (Kleck and Gertz 1995; for a recent confirming estimate, see Cook and Ludwig 1997:61-3).²

More specifically relevant to current concerns, the NSDS indicated that 26.8 percent of those 2.5 million DGUs occurred in some location away from the user's home, and another 35.9 percent occurred in places near the defender's home (yard, carport, street adjacent to home, etc.) where possession of the gun could be regarded in legal terms as carrying. Thus, anywhere from 670,000 to 1,570,000 DGUs a year occur in connection with gun carrying in a public place. To put this in perspective, in 1993 there were about 1.02 million crime incidents committed by offenders who appeared to possess guns (U.S. Bureau of Justice Statistics 1996a). Because some of these crimes, such as cases of domestic violence, were committed in the offender's home and thus did not entail gun carrying, the estimated number of crimes involving gun carrying would be less than 1 million. Thus, there appear to be about as many defensive uses of guns connected with carrying by victims as there are criminal uses by gun carrying offenders.

DETERRENT EFFECTS OF GUN CARRYING BY PROSPECTIVE VICTIMS

Widespread gun carrying by potential victims may also exert a deterrent effect on rates of criminal behavior, especially for types of crimes commonly committed in public places, such as robberies. That is, quite apart from their effects in disrupting crimes that have already been initiated, gun carrying among prospective victims may discourage some crimes from being attempted in the first place, due to criminals anticipating greater risks of injury to themselves and lower rates of success completing the crimes. Consistent with this hypothesis, Kleck and Patterson (1993:269) found that cities with higher gun prevalence (and presumably higher gun-carrying rates) had lower rates of robbery, a crime typically committed in public places. This association was not significant for total and gun robberies but was significant for nongun robberies. This fits closely with the expectation that robbers lacking guns themselves would be the ones most likely to be deterred by the prospect of victims with guns. Deterring these robbers is especially important in light

of the fact that prior research has consistently indicated that unarmed robbers are more likely to injure victims than are armed robbers (see findings of Kleck and DeLone 1993, and 16 earlier studies summarized on p. 62 of that article).

Likewise, in a comprehensive pooled cross-sections time series analysis of virtually all 3,141 U.S. counties, Lott and Mustard (1997) found that robbery rates, as well as homicide (both with and without guns), rape, and aggravated assaults, declined after states passed laws making it easier for non-criminals to obtain carry permits. They interpreted the results as indicating that allowing more citizens to legally carry guns reduced rates of crimes involving direct offender-victim contact by raising robbers' perception of risk from armed victims. Although it is debatable how much of this pattern reflected causal effects of new laws (Kleck 1997, chap. 6), the results strongly undercut the conclusions of McDowall, Loftin, and Wiersema (1995), based on univariate (or bivariate) analyses of homicide trends in just seven nonrandomly selected counties (clustered into five areas), that such laws increase gun homicides, supposedly because they indirectly stimulate offender gun carrying (see Britt, Kleck, and Bordua 1996 for a critique of interrupted time series evaluations of legal interventions).

PURPOSES AND MOTIVES FOR CARRYING GUNS

Most of the nonrecreational carrying of guns by civilians, whether resulting in a DGU or not, is very likely illegal. Although national surveys of the general population (to be reviewed later) indicate that perhaps 5-11 percent of U.S. adults admit to carrying guns on their person for self-protection, only about 1 percent of the population has a permit to carry a concealed weapon, and only about 2 percent even in states like Florida where it is relatively easy to get one. All but one of the states either prohibit civilians altogether from concealed carrying on the person or require a permit to do so (Cramer and Kopel 1994; National Rifle Association 1996). Therefore, probably about 80-90 percent of those who report carrying guns on their person away from their homes do so illegally. This suggests that there are probably still more carriers who are unwilling to report their illegal activity to surveyors. We assume that this defensive carrying is nearly all concealed, in the absence of any reports of widespread open carrying of guns.

On the other hand, very little of this enormous amount of generally unlawful gun carrying is done for purposes of committing a crime (apart from violations of gun laws themselves). Only a tiny fraction of gun carrying results in a crime committed with a gun. We later present an estimate of 975 million

instances (person-days) of adult gun carrying on the person per year. There are less than a million violent crimes committed with guns (based on victim surveys, and counting both crimes reported to the police and those unreported), and 81 percent of persons arrested for violent crimes in 1994 were aged 18 or older (U.S. Federal Bureau of Investigation 1995:227), implying about 800,000 gun crimes committed by adults. Even if we assumed, somewhat implausibly, that all of these gun crimes involved gun carrying (i.e., occurred in places requiring carrying for a gun to be present), it is still clear that less than one in one thousand instances of gun carrying on the person result in a crime committed with a gun.

If carrying guns is rarely done for the purpose of committing a crime, this suggests that self-protection is a more common motive for any one instance of carrying, among criminals and noncriminals alike. Prior research has found either that most of both illegal carriers and legally permitted carriers express protection-related motives for carrying or that the carrying is associated with crime-related variables such as anticipation of future victimization, prior victimization, fear of crime, or exposure to risk factors for victimization, such as drug-selling or gang membership. These patterns are evident among adults in the general population (Bryant and Shoemaker 1988; Hassinger 1985), juveniles in the general population (Arria, Wood, and Anthony 1995; Bjerregaard and Lizotte 1995; Callahan and Rivara 1992; Fagan 1990; Sheley and Brewer 1995; Sheley, McGee, and Wright 1992; Smith and Sheley 1995; Webster, Gainer, and Champion 1993), adult offenders (Schultz 1962; Wright and Rossi 1986), and juvenile offenders (Ash et al. 1996; Callahan, Rivara, and Farrow 1993; Knox et al. 1994; Sheley 1994; Sheley and Wright 1993, 1995).

None of this implies that gun carrying cannot contribute to crime increases. Some gun crimes are committed in public places by offenders who did not plan the crime but who possessed a gun at the time of the offense only because they were carrying for self-protection. Criminals have a far higher-than-average risk of victimization themselves, and thus should be especially likely to carry guns for defensive reasons (Wright and Rossi 1986). Some of this defensively motivated carrying could increase the number or seriousness of unplanned crimes committed in public places. Gun carrying among criminals could, however, also deter victimization attempts by other criminals just as carrying among noncriminals may do.

The fact that most gun carrying, even by criminals, is done without a concomitant violent crime also does not mean that criminals do not carry guns for criminal purposes. When criminals commit crimes, they often find guns useful for intimidating and controlling their victims, and even for avoiding hurting them (Sheley and Wright 1995:67-9; Wright and Rossi 1986:127-31).

Thus, two perfectly consistent assertions are supported by the evidence: (a) Only a small share of incidents of gun carrying, even by criminals, is done for the purpose of committing violent crimes and (b) on those less frequent occasions when offenders *do* commit violent crimes, they often commit them with guns that were carried to the scene, either because the offenders believed that weapons would be useful in controlling victims and otherwise ensuring a successful outcome of the crime or because the offenders were initially carrying guns for self-protection (or “just in case”) but became involved in an unplanned crime.

SOME CONCEPTUAL DISTINCTIONS

Gun carrying can be divided up into categories according to the carrier’s dominant motivation. Thus, carrying is sometimes done by criminals specifically for the purpose of ensuring that a gun will be available to help carry out a crime. Far more common, even among criminals, is carrying for reasons of self-protection (Sheley and Wright 1995; Wright and Rossi 1986). There is also “carrying” of guns for purely recreational reasons or other reasons unrelated to crime, such as hunting or target shooting. Although this is probably not the sort of carrying that interests most researchers or policymakers, it may well be the kind of carrying that some survey respondents (Rs) have in mind when they report, in response to imprecisely worded questions, that they “carry” guns. This problem will be discussed later at greater length.

Among juveniles, there may also be another common motive that can, for lack of a better term, be labeled “showing off.” A typical scenario might be something like the following: A noncriminal adolescent boy sneaks a parent’s handgun out of the home and takes it to school or to a friend’s house, where he shows it off to his friends. The gun is then returned home without incident. Although this sort of thing is unlikely to be a reason for routine or frequently repeated carrying, or an important or common motive for carrying among adults, it could be a common motive for isolated instances of relatively inconsequential carrying by noncriminal adolescents.

Carrying guns may also be categorized according to the manner in which it is done. Very likely the gun carrying that most researchers are primarily concerned with is concealed carrying of handguns (and primarily loaded handguns), rather than carrying of long guns or the open carrying of handguns. Although some might automatically assume that concealed handgun carrying refers only to carrying on the person, a Gallup survey of adults in 1993 indicated that carrying guns for protection in motor vehicles, which would often include carrying in a glove compartment or similar hidden

location, is even more common than carrying on the person (Table 1). This may be partly due to the fact that the criminal law in many states is less restrictive concerning gun possession in vehicles, in effect treating citizens' vehicles as extensions of their homes (National Rifle Association 1996; Wright, Rossi, and Daly 1983:252-3). Previous surveys usually do not distinguish between carrying in vehicles and carrying on the person, despite the fact that the former is often legal whereas the latter usually is not.

PRIOR RESEARCH

Gun carrying received very little scholarly or public attention before the 1990s. This changed after 1987, when Florida's legislature passed a law making it easier for adult residents without a criminal conviction to get a carry permit, followed by a wave of similar "shall issue" or nondiscretionary carry permit laws enacted elsewhere. By 1996, 31 states had "shall issue" carry laws (U.S. Bureau of Justice Statistics 1996b:120-1). A wave of studies, many funded by the federal Centers for Disease Control and Prevention (CDC) or the Justice Department, soon appeared, beginning around 1992.

Almost all of the resulting publications, however, concerned juveniles (Arria et al. 1995; Ash et al. 1996; Callahan and Rivara 1992; Callahan et al. 1993; Knox et al. 1994; Lizotte et al. 1994; Sheley 1994; Sheley and Brewer 1995; Sheley et al. 1992; Sheley and Wright 1993, 1995; Smith and Sheley 1995; Webster et al. 1993). This was an unfortunately narrow focus, given that the vast majority of carrying is done by adults and the vast majority of gun crimes, presumably including the bulk of those involving gun carrying, are committed by adults—77 percent of persons arrested for weapons violations and 81 percent of persons arrested for violent crimes in 1995 were aged 18 or older (U.S. Federal Bureau of Investigation 1996:224).

Furthermore, with respect to law-making, there is very little at stake in connection with juvenile gun carrying. All concealed carrying of handguns in public places by minors has long been completely illegal virtually everywhere in the United States (excepting Vermont), in that such carrying is, depending on the state, either prohibited for civilians of any age or requires a carry permit that minors are not eligible to receive (National Rifle Association 1996; Sheley and Wright 1995:150). Although there is certainly room for improvement in the enforcement of existing carry laws (Kleck 1991:347-53, 441-2), laws permitting the confiscation of guns from juveniles are already "almost universal" (Blumstein 1995:32-3). This did not, however, prevent at least 18 state legislatures in the early 1990s from passing largely redundant bans on juvenile gun carrying anyway (Toch 1993).

TABLE 1: Prevalence of Gun Carrying in Recent National Surveys

A. Adults									
Date Fielded	Survey Firm	On Person or in Vehicle?	Protection? ^a	Question Asked of:	Percentage Carry ^b				
February 7-10, 1991	Princeton	Any	No	All Rs	10				
May 16-19, 1991	Gallup	Vehicle	No	Personal handgun owners	8.2				
August 18-22, 1991	CBS/NY Times	Any	No	All Rs	5				
April 3-12, 1993	LH Research	Person	No	Rs in gun households	10.5				
December 17-19, 1993	Gallup	Vehicle	Yes	Personal gun owners	7.75				
April 16-19, 1994	L.A. Times	Person	Yes	Personal gun owners	5.27				
November 12, 1994	Chilton	Any	Yes	All Rs	11				
			Yes	Personal gun owners	7.5				
B. Youth									
Year Fielded	Survey	Sample ^c	Recall Period	Protection? ^a	Weapon	Gun	Percentage Carried		
					Weapon on School Property		Gun to School		
1989	NCVS	A 12-19	6 months	Yes			2	.05	
1990	YRBS	G 9-12	Past 30 days	Yes	19.6	4.1 ^d			
1991	YRBS	G 9-12	Past 30 days	No	26.1	2.9 ^e			

1992	YRBS	A 14-17	Past 30 days	No	17.1	
		A 12-19	Past 30 days	No	15.7	
1993	NCES	G 6-12	School year	Yes		3.2
1993	LHRI	G 6-12	c. 8 months	No		15-22
			Past 30 days	No	15	.19
1993 ^f	YRBS	G 9-12	Past 30 days	No	22.1	7.9
1995 ^f	YRBS	G 9-12	Past 30 days	No	20.0	9.8

SOURCES: DIALOG (1995), Bastian and Taylor (1991), U.S. Centers for Disease Control and Prevention (1991, 1992, 1994a, 1994b, 1995, 1996), LH Research (1993a, 1993b), Cook and Ludwig (1997), U.S. National Center for Education Statistics (1996).

NOTE: NCVS = National Crime Victimization Survey, YRBS = Youth Risk Behavior Surveillance, NCES = U.S. National Center for Education Statistics, LHRI = LH Research, Inc.

- a. Did question specify carrying for protection against crime?
- b. Percentage of entire sample reporting carrying.
- c. A = ages, G = grades.
- d. Students were counted as gun carriers only if a gun was the weapon they "usually" carried.
- e. Students were counted as gun carriers only if they carried guns more often than any other weapon.
- f. The 1993 and 1995 YRBS surveys were the first pair of YRBS surveys whose carry results are directly comparable.

One would expect adult carrying to look very different from juvenile carrying. Some of the former is legally authorized, whereas very little of the latter is. Much adult carrying is done in vehicles, whereas low driving rates among juveniles younger than age 16 would imply less juvenile carrying in vehicles. Whereas some carrying of guns by juveniles might be done in schools, very little by adults is done there. A significant minority of adult carrying might be linked to jobs requiring a gun (police officer, security guard), whereas virtually none of juvenile carrying would be so linked. Conversely, a good deal of juvenile carrying would be linked to membership in street gangs (Bjerregaard and Lizotte 1995; Callahan and Rivara 1992; Decker and Pennell 1995), whereas among adults such links are likely to be limited to a few younger adults. Consequently, one might expect the correlates of adult gun carrying to differ from the correlates of juvenile carrying. Broadly speaking, adult carrying is likely to look more legitimate.

The few studies of adult carrying have typically relied on less satisfactory types of samples. Some confined their analyses to small nonprobability samples of carry permit holders or applicants (Hassinger 1985; Northwood, Westgard, and Barb 1978). Because no noncarriers were studied, these studies could shed little light on how carriers differ from noncarriers. Further, permit holders are likely to be especially legitimate gun carriers, unrepresentative of all carriers. For example, Hassinger (1985) found, contrary to the typical profiles of either criminals or crime victims, that permit holders typically were married, well-educated, middle-aged, upper-middle-class Whites.

On the other hand, another study used a sample of 50 persons arrested for weapons carrying (Schultz 1962), cases confined to the opposite end of the legitimacy continuum, resulting in the opposite sample bias. Nevertheless, what permit holders and arrestees had in common is that both were likely to carry weapons because of concerns about future victimization. Among Hassinger's permit holders, the most frequently endorsed reason for carrying a pistol was, "I understand the police cannot be everywhere; the pistol is a prudent precaution" (1985:192). Likewise, 70 percent of Schultz's arrestees carried weapons mainly because they were "anticipating attack," by far the most commonly endorsed reason (1962:477). Note that concerns about future victimization do not necessarily imply either past victimization or fear. Northwood and his colleagues found that only 18.5 percent of their permit applicants claimed prior victimization as a reason for carrying. Likewise, research on handgun ownership indicates an association with residence in high-crime areas and anticipation of future victimization but little consistent relationship with fear or prior victimization (see studies reviewed in Kleck 1997, chap. 3).

Three studies of adult gun carrying used probability samples of state populations. Bryant and Shoemaker (1988) found no association between

gun carrying and prior victimization or fear of crime in a 1984 mail survey of Virginia motor vehicle registrants. The only two significant correlates found were sex and community size: Males and persons from smaller communities were more likely to carry. With a return rate of only 33 percent, it is questionable whether the survey's sample was representative. A mail survey of Louisiana driver's licenses (c. 1985) had the same problem (Bankston and Thompson 1989; Bankston et al. 1990). Although national surveys indicate that only 5-11 percent of adults carry guns for protection (and, according to the present survey, 20 percent of households in the West South Central region of Louisiana, Texas, Oklahoma, Arkansas), 34 percent of the households in this sample reported carrying for protection, suggesting pronounced sample bias. Paralleling the Virginia findings, Bankston and Thompson (1989) found gun carrying to be significantly more common among males, younger persons, and those who perceived guns as effective in reducing crime. Carrying was only weakly and indirectly related to fear or a perception of being at greater risk of future victimization, and was unrelated to prior victimization (see also Bankston et al. 1990).

Finally, Nelson and his colleagues (1996) surveyed Oregon adults by telephone in 1992 to 1993 and found, like Bryant and Shoemaker, carrying a loaded gun to be significantly more common among males in less densely populated areas. They did not measure fear, prior victimization, or similar crime-related variables.

THE MEANING OF GUN "CARRYING" IN SURVEYS

Table 1 summarizes estimates of gun and weapon carrying prevalence in recent national surveys using probability samples. Perhaps even more than with other phenomena, estimates of the frequency of gun carrying appear to be radically affected by seemingly minor variations in question wording. For many survey Rs, imprecisely worded questions about "carrying" guns can be interpreted literally, as referring to any and all physical conveying of guns. Thus, moving a gun from one room of the owner's home to another room, from a drawer to a gun cabinet, or from the cabinet to the owner's vehicle would all entail physically carrying the gun. Even a question confined to locations away from the owner's home could still encompass carrying guns from a gun store to the owner's home, or carrying for recreational purposes such as target shooting or licensed hunting during appropriate hunting seasons. It is unlikely that either the authors of the survey questions or the consumers of research results had these kinds of gun carrying in mind. Whereas

some Rs might guess the surveyors' intended meaning, one would not be justified in assuming that all of them do.

In surveys where the question wordings do not specify the more problematic and often unlawful types of carrying, that is, carrying for criminal or defensive purposes, it is quite possible that the *majority* of Rs reporting carrying may be referring only to recreational or other innocuous types of carrying. Consider, for example, a large-scale national survey of high school students. The 1995 Youth Risk Behavior Surveillance (YRBS) survey, fielded by CDC, found that 7.6 percent of the students reported carrying a gun (anywhere, not just in school) in the preceding 30 days. The carry question did not specify carrying for protection, and thus a student who had done some target shooting or hunting in the previous 30 days could accurately answer "yes." A 1991 national survey indicated that 10 percent of persons aged 16 to 17 had hunted in the previous year (U.S. Fish and Wildlife Service 1993:75), and a 1989 national survey indicated that 12.9 percent of persons aged 12 to 17 had engaged in target shooting in the previous year (American Sports Data Inc. 1989:237). Similarly, among adults, about 8.5 percent hunted with firearms in 1993 (U.S. Bureau of the Census 1995:260) and 7.2 percent engaged in target shooting (American Sports Data Inc. 1989:237). Thus, there are easily enough recreational shooters to potentially account for *all* of those reporting gun carrying in surveys not excluding carrying for recreation (Table 1).

Even a question specifying "for protection" is ambiguous if it does not further specify "against crime or criminals," or words to that effect, because people in rural areas carry guns for protection against poisonous snakes and other dangerous animals. The 1990 YRBS, for example, asked about protection but did not limit the question to protection against human threats. Due to crucial variations in question wordings, none of the carry estimates in Table 1 up through 1993 are strictly comparable with any of the others; even the earlier YRBS surveys each used different question wordings concerning gun carrying. Thus, people who used the YRBS results to judge trends in youth gun carrying are mistaken. For example, Ash et al. (1996:1754) interpreted the 1990 and 1993 YRBS surveys to indicate huge increases in youth gun carrying. Actually, the difference in self-reported carry rates may have been due to nothing more than the fact that the 1990 question was limited to protection-related carrying whereas the 1993 question was not. Further, the 1990 survey only counted gun carriers who carried guns more often than other weapons, whereas the 1993 survey counted all gun carriers (based on unpublished copies of YRBS survey instruments). The first pair of surveys whose results could be directly compared, the 1993 and 1995 YRBS surveys, indicated that weapon and gun carrying among youths was declining slightly (Table 1).

*PREVALENCE OF GUN CARRYING
IN PREVIOUS NATIONAL STUDIES*

The focus here is on national surveys of probability samples of the U.S. population. None of the national surveys of adults (Table 1, panel A) is satisfactory for estimating the prevalence of gun carrying. Some of the surveys did not specify carrying for protection against crime, so they could include a good deal of carrying linked with recreational uses of guns. Two of the surveys that did specifically ask about carrying for protection asked the question only of Rs reporting that they personally owned guns. This procedure excludes people who carry guns belonging to other members of their household, a practice likely to be more common among women. The estimates indicate that between 5 and 11 percent of U.S. adults at least occasionally carry guns in public places. None of the surveys asking carry questions of all adults asked how often carriers carried their guns, so it is not possible to estimate the incidence of carrying or what fraction of the population is carrying on any given day.

One survey fielded after ours yielded national carry prevalence estimates, but they are flawed in important ways. Due to errors in the questionnaire, a Police Foundation (PF) survey fielded in November-December 1994 asked the gun carrying questions only of Rs who reported personally owning a gun (Chilton Research Services 1994). Because our survey indicated that nearly a quarter of carriers claimed (accurately or not) to not personally own a gun, that flaw alone could have caused the PF survey to miss about a quarter of gun carriers. Furthermore, the PF questions pertaining to whether guns were carried on the person or in a vehicle were not asked of persons who carried guns while commuting to and from their jobs or for other work-related reasons (about 28 percent of carrying was for “work-related” reasons in the PF survey—Cook and Ludwig 1997:54-5). Thus, that survey did not yield estimates of all gun carrying on the person or in vehicles and cannot be compared with ours. The PF survey was also afflicted by an unacceptably low interview completion rate of 42 percent (completions divided by completions plus refusals—see Cook and Ludwig 1997:7), compared to, for example, 61 percent (computed the same way) in the present survey.

THE NATIONAL SELF-DEFENSE SURVEY

Methods

The data presented here are drawn from the National Self-Defense Survey, the first national survey ever devoted to the subject of armed self-defense. We

used the most anonymous possible national survey format, that of the anonymous random digit dialed telephone survey. We did not know the identities of those who were interviewed and made this fact clear to the Rs. We interviewed a large, nationally representative sample covering all adults (aged 18 and over) in the lower 48 states and living in households with telephones. The quality of sampling procedures was well above the level common in national surveys. Our sample was not only large and nationally representative, but it was also stratified by state. That is, 48 independent samples of residential telephone numbers were drawn, one from each of the lower 48 states, providing 48 independent, albeit often small, state samples. To gain a larger raw number of sample DGU cases, we oversampled in the South and West regions, where previous surveys have indicated gun ownership is higher. We also oversampled within contacted households for males, who are more likely to own and carry guns, by initially asking to speak to the male head of household. Finally, because the survey was designed to yield information on defensive use of guns, we oversampled for persons who reported, early in the interview, a DGU by interviewing all of them whereas interviewing only a randomly selected one in three of all other Rs. Data were later weighted to adjust for oversampling by region, sex, and involvement in a DGU. The results reported here are based on responses of all 1,832 persons who were given the full interview.

A professional telephone polling firm, Research Network, of Tallahassee, Florida, did the sampling and interviewing. Interviews were conducted from February through April of 1993. Only the firm's most experienced interviewers were used on the project. Interviews were monitored at random by survey supervisors. Up to 10 calls were made in an attempt to contact initial sample members. Of all eligible residential telephone numbers called where a person (rather than an answering machine) answered, 61 percent resulted in a completed interview (i.e., a 39 percent refusal rate among persons contacted). A 20 percent random sample of interviews was validated by supervisors with call-backs. Our sample's demographic distribution (weighted) closely resembled that of the U.S. adult (18+) population: 47 percent male (48 percent in the U.S. population), 84 percent White and 9 percent Black (85 percent and 11 percent, respectively, in the population), and 14 percent aged 18-24 (14 percent), 23 percent aged 25-34 (23 percent), 25 percent aged 35-44 (21 percent), 27 percent aged 45-64 (26 percent), and 12 percent aged 65 and older (17 percent). A fuller description of the methods is in Kleck and Gertz (1995), and a full copy of the questionnaire and the data can be obtained from the senior author.

Following directly after questions about gun ownership, the questions on gun carrying were phrased as follows: "*In the last 12 months, have you ever*

carried a gun away from home, either on your person or in a vehicle, for protection against crime? Do not count carrying for recreation or in connection with duties in law enforcement, work as a security guard, or in the armed forces” (emphases in original survey instrument). Those who replied “yes” were then asked, “Was this carrying done on your person—for example, in a pocket, holster, or bag—or was it only in a motor vehicle?” Those responding “on person” or “both” were then asked, “About how many days in the past 12 months did you carry a gun on your person for protection against crime?” Those responding “in vehicle” or “both” were asked, “About how many days in the past year did you carry a gun in a motor vehicle for protection against crime?” The frequency questions were open-ended—interviewers recorded the number of days Rs reported, from 0 to 365.

Because this was a survey of the general population of adults, it is unlikely to include many Rs who carry guns for criminal purposes. Thus, this study contributes information primarily about the largest, but least studied, segment of the carrying population, largely noncriminal adults. In this way, it adds to, but is distinct from, the substantial body of knowledge concerning carrying among adolescents and criminal adults.

Results—Prevalence and Incidence of Protective Gun Carrying among U.S. Adults

Table 2 presents the data pertaining to the frequency of gun carrying among U.S. adults. There were 1,832 total Rs, and 1,799 who answered the initial question about carrying, of whom 159 (8.8 percent) reported gun carrying and 1,640 did not. Of the 159 carriers, 29 carried on the person but not in a vehicle, 39 carried both ways (for a total of 68 who carried on the person), 80 carried only in a vehicle (for a total of 119 who carried in a vehicle), and 11 carried a gun but would not say whether they carried on their person or in a vehicle (weighted frequencies). The weighted prevalence results indicate that 8.8 percent of U.S. adults carry a gun in some way for protection each year (95 percent confidence interval: 7.5-10.1 percent), 3.8 percent carry on their person (2.9-4.7 percent), 6.6 percent do so in a vehicle (5.5-7.8 percent), and 2.1 percent carry in both ways (these last are a subset of the previous two segments, not an additional segment). Applying these percentages to the estimated 1993 U.S. resident adult (age 18+) population of 190,673,523 (U.S. Bureau of the Census 1995:13) indicates that about 16.8 million adults carried guns for protection that year, 7.1 million adults carried on their person, 12.4 million carried guns in a vehicle, and 4.0 million did both. In comparison, applying the 1993 YRBS estimate of high school-aged gun carrying prevalence (7.9 percent) to the estimated U.S. population aged 13-17 of

TABLE 2: Prevalence and Incidence of Adult Gun Carrying in the United States, 1993—Results from the National Self-Defense Survey

	<i>Type of Carrying</i>			
	<i>On Person</i>	<i>In Vehicle</i>	<i>Both</i>	<i>Any</i>
Prevalence—				
percentage who carry	3.8	6.6	2.1	8.8 ^a
Estimated number of carriers in population	7,054,920	12,393,779	4,004,144	16,779,270
Mean number of days per carrier per year	138.18	145.92		
Annual person-days of carrying	974,848,894	1,808,500,232		
Estimated number carrying on average day	2,670,819	4,954,795		

a. Includes persons who carry but would not say whether it was on the person or in a vehicle.

17,746,048 (pp. 12-13) implies only about 1.4 million adolescent carriers in the past month, only a fraction of whom carry for protection. Even taking account of the difference in recall periods, adults almost certainly account for the vast majority of defensive gun carrying.

As with most surveys, Rs can fail to report events that did occur or report events that occurred prior to the recall period, that is, “telescope” events into the recall period. Based on technical studies of the National Crime Victimization Survey (NCVS), Kleck and Gertz reported that reports of crime victimization experiences could be no more than 21 percent too high due to telescoping. This problem, however, is balanced out by a roughly equal amount of failure to recall events that did occur (1995:171-2). Assuming reports of gun carrying are the same as reporting of crime incidents in this respect, there is no reason to believe that telescoping was common enough to make carry estimates too high.

It is worth stressing that we told Rs not to include carrying done as part of their work duties as police officers, security guards, or in the military. However, even if one speculated that some Rs ignored this instruction and reported such carrying anyway (and we have no reason to believe that any Rs did this), it could inflate our prevalence estimates by no more than a factor of 1.07, in that only 7 percent of the gun carriers ($n = 11$) had such an occupation (Table 3).

The data on frequency of carrying, among those who carry guns, indicate that those who carry on the person do so an average of about 138 days a year,

TABLE 3: Comparison of Gun Carriers with Other People (weighted percentages)

	<i>Sample</i>					
	<i>All Gun Carriers</i>	<i>Carry on Person</i>	<i>Carry in Vehicle</i>	<i>Own Gun, No Carry</i>	<i>No Carry</i>	<i>All Persons</i>
Personally owns gun	76.1	82.4	79.0	100.0	19.6	24.6
Gun in household	81.1	86.8	84.9	100.0	32.6	36.9
Burglary victim, past year	11.4	7.4	10.2	4.0	4.9	5.5
Robbery victim, past year	5.1	6.5	4.2	1.6	2.3	2.6
Assault victim as adult	31.0	41.2	30.5	31.0	21.5	22.4
Know crime victim?	50.0	54.4	47.5	33.6	28.1	30.1
Nights away from home, monthly average						
0	8.4	7.5	6.8	5.6	8.2	8.2
1-6	27.9	25.4	31.4	24.7	31.5	31.2
7-13	24.7	19.4	27.1	27.5	23.7	23.8
14+	39.0	47.8	34.7	42.2	36.6	36.8
Must depend on self rather than cops	85.4	88.2	84.0	64.7	52.8	55.7
Supports death penalty	82.9	83.8	85.7	82.2	69.3	70.5
Courts not harsh enough	82.8	91.2	84.7	76.4	73.2	74.0
Gender (percentage male)	62.9	70.6	63.9	76.1	44.9	46.7
Age						
18-24	11.3	11.8	10.1	11.8	14.0	13.7
25-34	27.7	25.0	30.3	22.0	22.3	22.8
35-44	27.0	32.4	26.9	23.9	25.1	25.3
45-64	28.3	29.4	26.9	30.1	26.4	26.5
65+	5.7	1.5	5.9	12.1	12.2	11.6
Race						
White	79.9	79.1	83.9	90.6	84.4	84.0
Black	11.9	11.9	9.3	5.0	8.8	9.1
Hispanic	4.4	4.5	4.2	3.8	4.8	4.7
Other	3.8	4.5	2.5	.6	2.1	2.3
Place of residence						
Large city (more than 500,000)	24.7	27.9	22.0	14.0	22.4	22.6
Small city	31.6	29.4	29.7	31.5	29.1	29.4
Suburb of large city	26.6	23.5	30.5	28.7	31.4	31.0
Rural area	17.1	19.1	17.8	25.9	17.1	17.1
Marital status						
Married	65.4	64.2	66.7	67.2	59.3	59.8
Widowed	4.5	3.0	6.8	1.9	6.1	6.0
Divorced/separated	12.1	13.5	10.2	15.8	12.1	12.1
Never married	17.9	19.4	16.2	15.2	22.5	22.1

(continued)

TABLE 3: Continued

	<i>Sample</i>					
	<i>All Gun Carriers</i>	<i>Carry on Person</i>	<i>Carry in Vehicle</i>	<i>Own Gun, No Carry</i>	<i>No Carry</i>	<i>All Persons</i>
Annual household income						
Less than \$15,000	9.1	11.5	8.2	8.1	14.0	13.5
\$15,000-29,999	23.1	14.8	22.7	25.7	27.5	27.1
\$30,000-44,999	25.2	27.9	27.3	30.6	24.4	24.4
\$45,000-59,999	17.5	18.0	19.1	18.0	19.3	19.2
\$60,000-79,999	11.9	11.5	11.8	10.9	8.6	8.9
\$80,000 or more	13.3	16.4	10.9	6.7	6.2	6.9
Gun-related occupation	7.0	13.2	5.9	4.1	2.8	3.2

or 38 percent of the days, whereas those who carry in vehicles do so about 146 days a year, or 40 percent of the days. The figures imply that each year in the United States, there are about 980 million person-days of carrying on the person and about 1.8 billion person-days of carrying in vehicles. It was impossible to tell from our results how much overlap there was between these two sets of numbers, though there almost certainly were more than a billion person-days of carrying total. Because the annual number of crimes committed by persons with guns is less than 1 million, there are less than a million person-days of carrying linked with gun crimes, implying that less than one in a thousand instances of gun carrying involve a violent crime committed with a gun.

One might speculate that some instances of carrying were done by persons ready and willing to commit crime but that they just did not come across a provocation or suitable opportunity for doing so. Although this is undoubtedly true for some carrying, the only way it could reasonably be thought to characterize much carrying is if one assumed that persons of this sort came across criminal opportunities or provocations, by plan or by chance, less than one in a thousand times. We think the one-in-a-thousand figure is more compatible with the interpretation that most of this carrying is done without any intention of committing a crime or even any inclination to do so.

Note also that it was estimated that there are about 670,000 to 1,570,000 DGUs connected with instances of gun carrying (Kleck and Gertz 1995:174, 184-5). This implies that there are more than a thousand times as many instances of carrying guns outside the home as would be needed to account for all of the DGUs away from the home, thereby strengthening the plausibility of the DGU estimates.

Results—Gun Carriers Compared to Other People

Table 3 shows how persons who carry guns for protection in various ways differ from those who personally own a gun but who do not carry, from all those who do not carry (regardless of gun ownership), and from the adult population as a whole. Three groups of carriers are distinguished: all who carry guns in any way, those who carry on the person (including some who also carry in a vehicle), and those who carry in a vehicle (including some who also carry on the person).

An example will aid in interpretation. The first row of Table 3 shows that 76.1 percent of gun carriers reported personally owning a gun, compared to 24.6 percent of the entire sample. The fact that considerably less than 100 percent of gun carriers personally own a gun shows why the PF survey, which asked the carry question only of Rs reporting personal gun ownership, missed many gun carriers, and it indicates that some carriers apparently carry guns belonging to other people, such as a spouse. The fact that 19 percent of gun carriers claim there was no gun belonging to anyone in their household could indicate either that some were carrying guns belonging to people outside their household (e.g., guns borrowed from a friend or relative) or that some carriers were falsely denying gun ownership. Some may also have understood the gun ownership question as pertaining only to guns kept inside the home and failed to report guns kept in a vehicle or place of business.

Gun carriers were more likely to have been the victim of a burglary, robbery, or assault than noncarriers, though they were the same as noncarrying gun owners with respect to assaults. Those who carried on their person, but not vehicle carriers, spent more nights away from home than noncarriers, and thus were more at risk of crimes committed in public places. Not surprisingly, carriers are more likely to believe they have to depend on themselves for protection rather than on the police, even compared to gun owners who do not carry.

Two measures of punitiveness toward criminals were included: whether Rs supported the death penalty for murderers and whether they thought the courts were not harsh enough toward criminals. Gun owners are more likely to endorse the punitive views, regardless of whether they carry. Carriers are only slightly more likely to support capital punishment than noncarrying gun owners. On the other hand, carriers were more likely to believe that the courts are not harsh enough, compared to noncarrying gun owners. Whether this association reflects a causal effect will have to await results of the multivariate analysis.

Although gun owners in general are overwhelmingly male, this is much less true for those who carry guns, as 37 percent of carriers are women. This means that given personal ownership of a gun, women are more likely to

carry it for protection than are men. This is consistent with an observation of Lizotte and Bordua (1980) that women gun owners are especially likely to own primarily for defensive reasons. It also mirrors, and helps explain, the finding from the present survey that women account for a surprisingly large 46 percent of reported DGUs (Kleck and Gertz 1995:178).

The age distribution of gun carriers resembles that of gun owners and the general population, except that the elderly account for much less than their share of carrying, especially carrying on the person. This may reflect a lower level of activity outside the home.

Blacks are less likely than Whites to own guns, but they claim more than their share of carrying. Thus, given gun ownership, Blacks are more likely to carry a gun. Paralleling the findings for women, this reflects the larger share of Black gun ownership that is due to defensive motives (Lizotte and Bordua 1980).

Unlike the distribution of crime, gun ownership is more common in rural areas and small towns. Carrying of guns, however, is much more common in big cities than one would expect based on gun ownership levels. Compared to noncarrying gun owners, carriers are more likely to live in big cities.

Mirroring the findings from studies of carry permit holders, results indicate carriers are disproportionately likely to be married and to have higher incomes, contrary to what one would expect based on the distribution of crime victimization. This may simply reflect the fact that gun ownership is higher among those better able to afford to buy them, an idea that can be tested in the multivariate analysis by controlling for income.

Finally, although persons with gun-related occupations such as police officer, security guard, or member of the military account for only 7.0 percent of the carriers, and 13.2 percent of those who carry on the person, they are much more likely to carry than either noncarrying gun owners or the general population. Given that Rs were instructed not to report job-related carrying, carrying among these Rs should reflect carrying off the job, but it could also reflect either Rs who carry job-related guns to and from work or Rs simply failing to follow instructions.

Table 4 displays carry prevalence rates in subsets of the U.S. adult population. They are interesting and potentially useful in their own right but nonetheless reflect simple bivariate associations and should not be interpreted as necessarily indicating causal effects. Tentative causal interpretations should await the multivariate analysis. Some of the associations survive multivariate controls, whereas others do not. In particular, many of the patterns in this table are likely to primarily reflect patterns of gun ownership, without necessarily revealing anything useful about gun carrying itself.

Carrying guns for protection is more common among gun owners (though not nonexistent among nonowners); men; Blacks; younger adults; separated

TABLE 4: Carry Prevalence Rates by Population Subgroups

	<i>Percentage Who Carry</i>		
	<i>Any Way</i>	<i>On Person</i>	<i>In Vehicle</i>
Entire population	8.8	3.7	6.5
Gun in household?			
Yes	19.5	8.8	15.1
No	2.6	.8	1.5
Personally own gun?			
Yes	27.3	12.5	21.0
No	2.8	.9	1.8
Sex			
Male	12.0	5.6	8.9
Female	6.1	2.0	4.4
Race			
Black	11.8	5.0	6.9
White	8.5	3.5	6.5
Hispanic	8.3	3.5	5.8
Other	15.4	7.7	7.3
Age			
18-24	7.4	3.3	4.9
25-34	10.8	4.2	8.8
35-44	9.6	4.8	7.0
45-64	9.5	4.1	6.6
65+	4.3	.5	3.3
Marital status			
Married	9.6	4.0	7.2
Widowed	6.5	1.8	7.3
Divorced	8.0	3.7	4.9
Separated	11.3	5.6	7.4
Never married	7.1	3.3	4.8
Income			
\$0-15,000	6.3	3.3	4.3
15,001-30,000	8.0	2.1	6.0
30,001-45,000	9.6	4.5	8.0
45,001-60,000	8.5	3.7	7.1
60,001-80,000	12.5	5.1	9.5
80,000+	18.1	9.4	11.3
Region			
New England	3.2	2.1	.0
Middle Atlantic	5.1	3.2	2.5
East North Central	2.2	1.3	1.6
West North Central	3.0	.7	3.0
South Atlantic	11.9	4.7	8.7
East South Central	14.3	3.6	11.5
West South Central	20.0	7.1	16.2

(continued)

TABLE 4: Continued

	<i>Percentage Who Carry</i>		
	<i>Any Way</i>	<i>On Person</i>	<i>In Vehicle</i>
Region			
Mountain	17.9	9.4	13.4
Pacific	8.0	3.6	6.4
Size of place			
City of 500,000+	9.7	4.6	6.3
Suburb of large city	7.6	2.8	6.4
Small city	9.5	3.7	6.6
Rural area, place < 10,000	8.8	4.2	6.8
Gun occupation?			
Yes	19.6	15.8	12.3
No	8.5	3.4	6.4
Robbery victim?			
Yes	17.4	6.5	10.9
No	8.6	3.6	6.3
Assault victim?			
Yes	12.2	6.8	8.8
No	7.8	2.8	5.8
Burglary victim?			
Yes	18.4	5.0	12.0
No	8.2	3.6	6.1
Must depend on self?			
Yes	13.5	5.9	9.8
No	2.9	1.8	2.3
Favor death penalty?			
Yes	10.4	4.5	8.0
No	5.1	2.1	3.2
Courts not harsh enough?			
Yes	10.0	4.7	7.5
No	5.9	1.3	3.9

persons; wealthier people; those living in the South and West; people with a job requiring a gun (police, security guards, military); people who have been victims of robbery, assault, or burglary; those who believe they must rely on themselves, rather than the police, for protection; supporters of the death penalty for murder; and those who feel the courts are not harsh enough toward criminals.

Results—Multivariate Analysis of Gun Carrying

A logistic regression analysis was performed to estimate separate causal effects on gun carrying of the attributes discussed in the previous section.

TABLE 5: Variables Used in Logistic Regression Analysis^a

<i>Variable Name</i>	<i>Description^b</i>	<i>Mean</i>	<i>SD</i>
CARRY	Carries gun for protection	1.09	.28
CARYPERS	Carries gun on person	1.04	.19
CARYVEH	Carries gun in vehicle	1.06	.25
MALE	R is male	1.47	.50
BLACK	R is African American	1.09	.29
AGE	Age in years	42.10	15.72
MARRIED	R is presently married	1.60	.49
INCOME	Household income (six-point scale)	3.03	1.41
SOUTH	R lives in South	1.34	.48
WEST	R lives in West	1.21	.40
BIGCITY	R lives in city with more than 500,000 population	1.23	.42
GUNHSLD	R lives in household with gun(s)	1.36	.48
GUNOCC	Employed as police officer, security guard, or in military	1.03	.17
ROBVICT	Victim of robbery in past year	1.03	.16
ASLVICT	Victim of assault as adult	1.22	.42
BURGVICT	Victim of burglary in past year	1.05	.23
KNOWVICT	R knows victim of serious crime	1.30	.46
CRIMNBHD	R sees crime higher/lower in neighborhood? (five-point scale)	2.18	1.03
CRIMWORK	R sees crime higher/lower in area where R works? (five-point scale)	2.52	1.12
MUSTDEP	R believes must depend on self for protection rather than police	1.56	.50
FAVORDP	R favors death penalty for murder	1.71	.46
CRTSNHE	R feels courts not harsh enough	1.74	.44

a. Descriptive statistics are based on weighted data for all cases with valid data on a given variable.

b. Except where noted, variables were coded 2 for cases with the indicated attribute, 1 for cases without.

Table 5 lists the variables used in the analysis, and Table 6 shows the resulting parameter estimates. Any variables shown in Table 5 but not appearing in Table 6 were found to not be significantly associated at the .20 level with any form of gun carrying, controlling for the other variables in the equations.

It should be stressed that all analyses control for whether there was a gun in the R's household. Failing to do this would result in findings that could reflect patterns of gun ownership rather than carrying. Thus, the findings in Table 6 show how variables are associated with carrying, controlling for gun ownership. All Rs with the requisite data were included in the samples analyzed, regardless of whether they owned guns, because people can carry guns belonging to others.

There were three analyses: one for all forms of gun carrying combined, one for carrying on the person, and one for carrying in a vehicle. Note that some Rs reported carrying a gun but would not say whether they carried it on their person or in a vehicle. These Rs would be coded as carriers on the variable measuring any kind of carrying but would be missing on the two more specific carry measures.

Gun carriers are, other things being equal, more likely to be male, from the South or West, to hold a job requiring a gun, to be Black, or to believe that people must depend on themselves for protection rather than on the police. Whether a belief in self-reliance for protection encourages gun carrying or is a view strengthened by the experience of carrying, or both, is impossible to tell in a one-time survey.

Carriers are not more likely to have been crime victims than noncarriers. The one minor exception is that prior assault victimization shows a near-significant association with carrying guns on the person. These findings also raise the issue of causal order—it is possible that victimization stimulates gun carrying, but that once initiated, the carrying deters further victimization. The result would be that in a cross-sectional survey conducted at a single point in time, the prior victimization experiences of carriers would look much like those of noncarriers. The same issue has been raised in connection with the link between gun ownership and fear and victimization (Kleck 1991:29; Wright et al. 1983:129).

Once other correlated predictors are controlled, the measures of punitiveness do not show consistent significant associations with gun carrying. Persons who carry guns on the person are significantly more likely to believe that the courts are not harsh enough, whereas persons who carry in a vehicle are not. Support for the death penalty is unrelated to carrying on the person (whether or not the courts' harshness measure was included in the model) while showing a near-significant association with carrying in a vehicle. Thus, a view of gun carriers as vengeful vigilantes set on punishing criminals receives weak, mixed support at best.

Finally, controlling for other determinants of carrying, residents of big cities (a half million or more people) are significantly more likely to carry guns on the person. Given that robbery rates of big cities exceed those of smaller places to an especially pronounced degree, even more than with other crime types (U.S. Federal Bureau of Investigation 1995:196-7), this association may reflect higher rates of robbery and other violent crimes committed in public places. The fact that big city residents are more likely to carry on the person but not in vehicles may reflect the greater amount of walking and lower motor vehicle ownership among people living in densely populated areas.

TABLE 6: Multivariate Correlates of Gun Carrying—Logistic Regression Estimates

<i>Dependent Variable: Independent Variable</i>	<i>Carrying</i>					
	<i>Any Way</i>	<i>OR^a</i>	<i>On Person</i>	<i>OR</i>	<i>In Vehicle</i>	<i>OR</i>
GUNHSHLD	1.8976 (.227)	6.67	2.2147 (.378)	9.16	2.0227 (.274)	7.56
SOUTH	1.1719 (.244)	3.23	.5635 (.337)	1.76	1.6039 (.301)	4.97
WEST	.9757 (.279)	2.65	.8297 (.374)	2.29	1.3825 (.336)	3.98
MUSTDEP	1.1775 (.247)	3.25	1.4167 (.414)	4.12	.9630 (.269)	2.62
BLACK	.6903 (.320)	1.99	.6483 (.440)	1.91		
MALE	.4559 (.193)	1.58	.6117 (.288)	1.84	.4556 (.216)	1.58
GUNOCC	.9681 (.407)	2.63	1.7799 (.466)	5.93	.6521 ^b (.471)	1.92
KNOWVICT	.6013 (.189)	1.82	.7056 (.270)	2.03	.4939 (.209)	1.64
CRIMAREA	.2256 (.087)	1.25				
FAVORDP	.3988 ^b (.251)	1.49			.4527 ^b (.289)	1.57
CRTSNHE			.9332 (.443)	2.54		
BIGCITY			.5718 (.305)	1.77		
Constant	-14.7846		-18.1646		-14.5416	
-2 log likelihood	790.873		428.448		660.485	
Model chi-square improvement	252.715		138.829		202.850	
Sample size	1,712		1,726		1,772	

NOTE: Estimates of coefficients, with standard errors in parentheses. Variables appearing in Table 5 but not appearing in this table were found to have no significant association with any form of gun carrying at even the .20 level (one-tailed).

a. OR = Odds ratio. For example, the odds ratio of 6.67 for GUNHSHLD in the Carrying Any Way equation means that persons in a household with a gun are 6.67 times more likely, other things being equal, to carry a gun than persons in a household without a gun.

b = .05 < p < .20, one-tailed. All other coefficients: p < .05.

As suggested earlier, the higher levels of carrying among higher income persons disappears once gun ownership is controlled, indicating that, whereas having more money increases one's ability to purchase guns, it otherwise has no net effect on gun carrying.

When the 11 gun carriers with gun carrying occupations were removed from the sample and the multivariate estimations were repeated, the results were almost all substantively identical (i.e., no change in the sign of the coefficient or whether it was significant). The only exceptions were in the equation for carrying on the person, where the marginally significant results for courts' harshness and big city residence became definitely nonsignificant (results available from senior author).

Two limitations should be especially salient in interpreting these results. First, given that most gun carrying, especially on the person, is unlicensed and usually illegal, many Rs probably falsely denied carrying. A large body of research on the validity of self-reports in surveys addressing illegal behavior indicates that it is usually underreported, that is, that false negative responses outnumber false positives (see studies reviewed in Kleck and Gertz 1997). Leaving aside one-sided speculation about false positives (e.g., Hemenway 1997), there is no basis for believing that survey reporting of (mostly illegal) gun carrying or defensive use of guns is any different in this respect. Therefore, on the assumption that illegal gun carrying is like other illegal behaviors in this respect, false reports of carrying should be less common than false denials, and the prevalence and incidence estimates should be regarded as conservative.

Second, all patterns observed in any survey reflect both reality and patterns of response bias. We suspect that underreporting of carrying is not random, but rather is likely to be highest among persons who perceive themselves as especially vulnerable to arrest and punishment for unlawful behavior. Thus, underreporting may be most common among lower income persons, members of racial and ethnic minorities, people in areas where carry laws are more aggressively enforced, and perhaps males in general. If this suspicion is correct, it means that carry rates are higher than reported in these groups and patterns of carrying are accordingly distorted to some degree.

CONCLUSION

Carrying guns in public places is common in the United States, is primarily done for protection, and is rarely done for purposes of committing a violent crime. About 17 million U.S. adults report carrying a gun for protection in the past year, carrying firearms on more than a billion different person-days, whereas fewer than a million instances of gun carrying result in the carrier committing a violent crime with the gun. There are about as many defensive uses of guns by crime victims carrying guns as there are violent crimes committed by gun-carrying criminals. Nevertheless, most of the carrying is

probably illegal, done by persons lacking the permit required to carry a concealed weapon.

Controlling for gun ownership, gun carrying for protection is more common among males, Blacks, residents of the South and West regions, and persons who have a gun-related occupation such as police officer or security guard. Carrying on the person is also more common in big cities. There are only weak, inconsistent hints that gun carrying is associated with greater punitiveness toward criminals. Generally, carrying is not associated with prior victimization, though causal order assumptions are clouded by the possibility that past carrying deterred past victimization attempts.

The present survey of the general population reveals at least 17 million adults carrying guns for protection in public, only a small fraction of whom have permits allowing them to do this legally. Almost none of the billion-plus instances of gun carrying are done in connection with committing a violent crime with a gun. This suggests some difficulties in enforcing laws prohibiting unlicensed carrying of guns, in that those violating the laws are almost never carrying the gun on the way to committing a violent crime. Technological developments are making it easier for concealed guns to be detected at a distance (Sherman and Rogan 1994), but these cannot distinguish guns carried for criminal purposes from those carried for genuinely defensive ones. Unless police officers are very good at distinguishing, on the basis of visible cues alone, those suspects who are unlawfully carrying guns for criminal purposes from those who are carrying unlawfully, but solely for purposes of self-protection, this implies that most of those stopped and frisked for weapons will be guilty of a weapons charge, but otherwise innocent of violent intentions. This in turn suggests limits on the value of enforcing carry laws.

Many have advocated increased enforcement of carry laws as a way of reducing violent crime (Blumstein 1995:32-3; Kleck 1991:441-2; Sherman and Rogan 1994; Wilson 1994). One component of such a policy would be seizure of guns carried in the streets, in addition to making arrests for unlawful carrying. Sherman and Rogan (1994) claimed that in a 1992 police experiment, police seizure of just 29 more guns than normal caused a 49 percent drop in gun crimes in a single police beat of Kansas City, allegedly with no displacement to surrounding areas. The results are, however, less impressive than portrayed by the authors, in that the drop of 83 gun crimes in the target area was in fact accompanied by an increase of 52 gun crimes in contiguous beats, with the possibility of other crimes displaced to noncontiguous beats. Furthermore, their detailed trend data suggest that the seemingly impressive drop was little more than a return to the average gun crime level that had prevailed up until about a year before the beginning of the experiment. The year immediately preceding the start of the experiment (June 1991 to June 1992)

had an unusually high gun crime rate, which exaggerated the postexperiment drop. Excluding this anomalous period, the postintervention gun crime level was no lower than the preintervention level. Whether either increased gun seizures or increased carry arrests can actually reduce gun crime therefore remains to be seen.

Although those recommending improved enforcement have addressed the issue of successfully identifying which potential suspects are carrying weapons, they have not taken full account of the sheer volume of carrying that is unlicensed but done for otherwise noncriminal purposes. If a large share of carry arrests are of generally noncriminal, albeit unlicensed, gun carriers, this is a serious cost that may deter some police departments from pursuing an increased enforcement policy as aggressively as advocates might like. Some hints of what may happen are provided by research on a 1976 Massachusetts law that established a mandatory penalty for unlicensed carrying. Interviews with Boston police officers indicated that 89 percent of them became more selective about whom to frisk for weapons because they did not want to risk having to arrest "otherwise innocent" persons (Carlson 1982:6). At a minimum, this suggests an awareness by police officers that many of those they might arrest for unlawful carrying are otherwise not serious public threats. Nevertheless, even after Boston police became more selective about searches, 33 percent of those charged with carry violations had no prior court record (Beha 1977:133).

One way out of this dilemma is to sharpen the distinction between carriers the police would want to arrest, because they represent a significant threat to public safety, and those they would not want to arrest, by increasing the share of noncriminal carriers that have carry permits. Violence among carry permit holders appears to be extremely low. Nine years after Florida made permits easily available to noncriminal adult residents, after 239,666 persons had been issued permits (excluding renewals), a total of 72 had had their permits revoked for convictions for crimes in which a firearm was used, or about 1 in 3,329 persons ever issued a permit. This was about eight gun crime revocations per year, that is, 1 in 24,294 of the permits valid as of October 31, 1996 (Florida Department of State 1996), or about 4.12 per 100,000.

Likewise, expanding noncriminal access to carry permits is not generally followed by violence increases. Based on a sophisticated multivariate pooled cross-sections time series analysis of virtually all U.S. counties, Lott and Mustard (1997) found that state laws loosening access to carry permits for adult residents without a criminal record were generally followed by *decreases* in violence, including gun violence. These laws did not necessarily increase the total number of carriers but may instead have allowed more noncriminal carriers to legitimate their carrying. The higher the share of

noncriminal carriers who have licenses to carry, the less cost there will be to increased enforcement of laws forbidding unlicensed carrying and the more enforcement of carry laws can be concentrated on persons likely to use guns to commit violent crimes.

NOTES

1. The single survey supposedly indicating few defensive uses of guns (DGU) is the National Crime Victimization Survey (NCVS), which does not, however, directly ask about DGUs. For a detailed explanation of why the NCVS estimate is grossly inaccurate, see Kleck and Gertz (1995):

One assertion made in defense of the NCVS estimates is that they are based on enormous sample sizes. Larger samples have no implications with respect to whether a prevalence estimate will be larger or smaller, but rather is relevant only to the precision of the estimate. For example, Kleck's (1988) analysis of the 1979-1985 NCVSs was based on interviews in about 400,000 households with about 700,000 persons, while the cumulative sample size of the 15 gun use surveys on which Kleck and Gertz based their DGU estimates is slightly more than 20,000. If one estimates the frequency of a behavior with a 1.3% annual prevalence (as was estimated for DGUs) using a sample of 700,000 cases, the 95% confidence interval estimate, assuming simple random sampling, would be $1.3\% \pm 0.03\%$. However, with a sample of 20,000 cases, it is $1.3\% \pm 0.16\%$. In short, the gain in estimation precision from increasing sample size from 20,000 to 700,000 is negligible, especially in comparison with nonsampling errors. (Pp. 153-7)

2. There has been virtually no empirically based challenge to the claim that DGUs are common. Challenges instead have consisted almost entirely of one-sided speculations about possible sources of overestimation (e.g., Cook and Ludwig 1996; Cook, Ludwig, and Hemenway 1997; Hemenway 1997). A detailed rebuttal of these critiques may be found in Kleck and Gertz (1997).

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EXHIBIT 5

GUN CONTROL AFTER *HELLER*: THREATS AND SIDESHOWS
FROM A SOCIAL WELFARE PERSPECTIVE

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What will happen after District of Columbia v. Heller? We know that five justices on the Supreme Court now oppose comprehensive federal prohibitions on home handgun possession by some class of trustworthy homeowners for the purpose of, and maybe only at the time of, self-defense. Perhaps the justices will push further and apply Heller's holding to state and local governments via the Fourteenth Amendment. But the majority opinion in Heller offered limited guidance for future cases. It did not follow a purely originalist method of constitutional interpretation, nor did it establish a constraining doctrinal framework for evaluating firearms regulation—although the opinion did gratuitously suggest that much existing gun control is acceptable. There is significant room for judges to maneuver after Heller. In the absence of more information from the Supreme Court, we identify plausible legal arguments for the next few rounds of litigation and assess the stakes for social welfare.

Based on available data, we conclude that some salient legal arguments after Heller have little or no likely consequence for social welfare. For example, the looming constitutional fight over local handgun bans—an issue on which we present original empirical data—seems largely inconsequential. The same can be said for a right to carry a firearm in public with a permit. On the other hand, less prominent legal arguments could be quite threatening to social welfare. At some point judges might draw on free speech doctrine and presumptively disfavor taxation or regulation targeted especially at firearms. This could have serious

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consequences. In addition, and perhaps most important, Second Amendment doctrine might deter innovative regulatory responses to the problem of gun violence. The threat of litigation may inhibit useful policy experimentation ranging from personalized firearms technology and the microstamping of shell casings, to pre-market review of gun design, social-cost taxation, gun-owner insurance requirements, and beyond.

INTRODUCTION	1042
I. GUNS, RISKS, AND REGULATION IN THE UNITED STATES	1045
A. Gun Ownership.....	1045
B. Gun Violence.....	1047
C. Gun Regulation by Ordinary Law.....	1050
1. Interstate Transactions and Access Restrictions.....	1050
2. Gun Design.....	1052
3. Gun Possession and Use	1054
4. Record Keeping	1054
5. Mass Tort Litigation	1055
II. <i>HELLER</i> AND THE NEXT LITIGATION FRONTIER	1057
A. <i>Heller's</i> Demilitarized Message	1058
B. <i>Heller's</i> Core Right and Suggested Limits	1061
C. Models for Judicial Review After <i>Heller</i>	1064
III. ON THREATS AND SIDESHOWS TO SOCIAL WELFARE.....	1068
A. Incorporation	1069
B. Handgun Bans.....	1071
1. A Political Perspective	1071
2. A Policy Consequence Perspective	1073
a. Gun Prevalence, Crime, and Public Health	1073
b. Will Handgun Prevalence Increase in the District?.....	1076
C. Public Places and Concealed Carry	1079
D. Gun-Targeted Taxes, Safety Programs, and Policing.....	1083
E. Judicial Review and Innovation.....	1088
CONCLUSION.....	1093

INTRODUCTION

Judicial opinions on supreme law, no matter how backward-looking their reasoning might appear, are occasions to look forward. They indicate the position of today's judges on issues faced by other institutions, and they signify commitments that these judges are most unwilling to revise. On the other hand, no opinion can fully chart the future path of judicial doctrine any more than regulatory, statutory, or constitutional text can provide undisputed guidance to all readers. Each of these texts must be used by decisionmakers in

the future. In fact, the identity of the relevant decisionmakers is bound to change over time, with no guarantee that the new group will mimic the judgments of the old.

Our goal is to consider the plausible future of gun regulation after *District of Columbia v. Heller*.¹ *Heller* actually decided little about the Second Amendment's scope or implementing doctrine. The majority opinion establishes that a certain class of trustworthy citizens has a judicially enforceable right to an operable handgun in the home for the purpose of self-defense—perhaps only at the time of self-defense—as against a flat federal ban on handgun possession.² The holding leaves many questions undecided. Nor was this case the best test of judicial courage. Opinion polls showed large national majorities opposing such bans.³ Equally telling, majorities in the United States Senate and House signed an amicus brief arguing that the District's regulations were unconstitutional.⁴ Thus the political environment intimated little resistance to the narrow outcome in *Heller*.⁵ And after 50,000 words of argument, counterargument, and apparent compromise, the justices delivered not much more than a new beginning for Second Amendment arguments in court.⁶

Understanding the hazards of prediction under these circumstances, we attempt a realistic assessment from a social welfare perspective. Our interest is in policy that best serves the overall welfare of the public, including both gun owners and those at risk from gun-related crimes and accidents. We care about judicial decisions that may advance or retard such policymaking, but we are less interested in evaluating the Supreme Court's work according to conventional standards of legal argument or ideal theories of constitutional interpretation. We would investigate the social welfare consequences of judicially enforceable gun rights even if these rights

1. 128 S. Ct. 2783 (2008).

2. See *infra* Part II.A (discussing readings of *Heller*'s holding).

3. See Lydia Saad, *Shrunk Majority Now Favors Stricter Gun Laws*, GALLUP NEWS SERV., Oct. 11, 2007, available at <http://www.gallup.com/poll/101731/Shrunk-Majority-Now-Favors-Stricter-Gun-Laws.aspx>.

4. See Brief for Amici Curiae 55 Members of United States Senate, the President of the United States Senate, and 250 Members of United States House of Representatives in Support of Respondent, at app. 1a–10a, *District of Columbia v. Heller*, 128 S. Ct. 2783 (2008) (No. 07-290) [hereinafter Brief for Amici Curiae]. Given their opposition to the District's regulation, one might ask why these legislators did not prefer to legislate. For a partial answer to this question, see *infra* note 250.

5. Although neither major party candidate for president took issue with *Heller*'s outcome after the fact, see 2008central.net, McCain and Obama Statements on DC v. Heller, June 26, 2008, <http://2008central.net/2008/06/26/mccain-and-obama-statements-on-dc-v-heller>, it is worth noting that John McCain signed the aforementioned amicus brief while Barack Obama did not. See Brief for Amici Curiae, *supra* note 4, at app. 1a–3a.

6. See *infra* notes 138–141 (collecting examples of litigation in *Heller*'s wake).

were plainly dictated by justified fidelity to the true meaning of the Constitution, and even if such rights ought to be understood as trumping any further cost-benefit analysis.⁷

Although this social welfare perspective is wide-ranging in some respects, it leads us to significant—and perhaps surprising—conclusions about the future of sound gun control policy. To be sure, some of the constitutional questions emerging after *Heller* will be relevant to good public policy. The majority's list of “presumptively” valid regulations will have to be confirmed,⁸ and its view of Second Amendment rights might be extended to state and local governments. These legal questions are obvious and worth debating. But certain Second Amendment issues that are likely to be litigated in the near future might be largely irrelevant to social welfare. An example is the looming fight over state and local handgun bans—an issue on which we present some original empirical data—and the possibility of a qualified Second Amendment right to carry a firearm in public with a permit. On the other hand, some legal questions that have received less attention might have much higher stakes from a social welfare perspective. An example is the validity of firearms taxes or safety programs developed especially for firearms. Finally, *Heller* might be used to dampen enthusiasm for innovative responses to the ongoing clash of gun rights advocates and gun control proponents. We will briefly discuss this concern, along with a faint hope for a better result.⁹

Our analysis proceeds in three steps. Part I offers some data on gun ownership in the United States and a sketch of the country's gun control regime before *Heller*. Part II explains what was decided and left open by the majority's opinion, and discusses various models that the Supreme Court

7. See, e.g., Ronald Dworkin, *Rights as Trumps*, in THEORIES OF RIGHTS 153, 153, 158, 165–66 (Jeremy Waldron ed., 1984).

8. *District of Columbia v. Heller*, 128 S. Ct. 2783, 2817 & n.26 (2008); see *infra* text accompanying note 130.

9. This Article relies on many empirical studies. They will be unfamiliar to most lawyers, and some readers might wish to minimize the studies' value for constitutional decisionmaking. Indeed, the facial plausibility of the data might be influenced by the reader's feelings about gun control. See, e.g., Dan M. Kahan & Donald Braman, *The Self-Defensive Cognition of Self-Defense*, 45 AM. CRIM. L. REV. 1, 18–19 (2008). But for our purposes, these empirical studies are essential. We have made best efforts to accurately recount the findings therein and to draw only logically supportable conclusions therefrom. The data will not, however, perfectly measure the psychological or emotional impact of gun rights and gun ownership. The happiness, satisfaction, fear, and distress arising from the prevalence of guns in America are difficult to measure precisely.

Note also that judicial understandings of constitutional rights can influence the rendering of ordinary law. Statutory interpretation may be influenced by constitutional doubt, and *Heller* might instigate new constitutional doubt when courts interpret statutes. We set aside the difficult project of predicting and estimating these effects after *Heller*.

has used to modulate supreme judicial review in other fields. Part III considers potential consequences of continued judicial oversight of firearms regulation. Much of the analysis is provisional, but we suggest danger zones where aggressive judicial intervention would most likely result in troubling consequences for social welfare. We also identify disputes that seem unimportant to social welfare based on current knowledge. The analysis closes with a brief discussion of the potentially complex relationship between judicial review and innovation in gun control.

I. GUNS, RISKS, AND REGULATION IN THE UNITED STATES¹⁰

A. Gun Ownership

In America, gun ownership is concentrated. Our best estimate is that there are 200–250 million firearms in private circulation,¹¹ meaning that there are nearly enough guns for every adult to have one. But about 75 percent of all adults do not own any guns.¹² Recent survey data suggests that about 42 percent of males, 9 percent of females, and 35 percent of all households have at least one gun.¹³ It seems that the prevalence of gun ownership by

10. This Part draws on material from Philip J. Cook & Jens Ludwig, *The Social Costs of Gun Ownership*, 90 J. PUB. ECON. 379 (2006).

11. This estimate is based on two sources: federal tax records on sales and a survey. First, the number of new guns added each year is taken from tax data kept by the federal government on manufactures, imports, and exports. The annual count of net additions can be cumulated over, for example, the last century, with some assumption about the rate of removal through such mechanisms as off-the-books exports, breakage, and police confiscation. See GARY KLECK, *TARGETING GUNS: FIREARMS AND THEIR CONTROL* 63–64 (1997); Philip J. Cook, *The Technology of Personal Violence*, in *CRIME AND JUSTICE: A REVIEW OF RESEARCH* 1, 37–38 (Michael Tonry ed., 1991). The second basis for estimating the stock is the one-time National Survey of the Personal Ownership of Firearms (NSPOF), conducted in 1994. This is the only survey that has attempted to determine the number of guns in private hands. A number of other surveys, including the General Social Survey, provide an estimate of the prevalence of gun ownership among individuals and households but do not attempt to determine the average number of guns per gun owner. “The NSPOF estimate for the number of guns in 1994 was 192 million, a number that is compatible with the ‘sales accumulation’ method, assuming that just 15 percent of the new guns sold since 1899 have been discarded or destroyed.” Philip J. Cook & Jens Ludwig, *Aiming for Evidence-Based Gun Policy*, 25 J. POL’Y ANALYSIS & MGMT. 691, 699 n.9 (2006). Since the NSPOF survey, the annual rate of net additions to the gun stock has been about 4–5 million per year, or 50–60 million by 2006. See BUREAU OF ALCOHOL, TOBACCO & FIREARMS, *FIREARMS COMMERCE IN THE UNITED STATES* exhibits 1–3 (2002). Given a continued removal rate of just 1 percent, the stock as of 2006 would be about 220 million.

12. See PHILIP J. COOK & JENS LUDWIG, *GUNS IN AMERICA: RESULTS OF A NATIONAL COMPREHENSIVE SURVEY ON FIREARMS OWNERSHIP AND USE* 12 tbl.2.3 (1996).

13. See *id.* at 14, 32.

household has been in long-term decline,¹⁴ partly because households are becoming smaller and less likely to include an adult male. On the other hand, most people who own one gun own many. In 1994, about 75 percent of all guns were owned by those who owned four or more, and this slice of gun owners amounted to only 10 percent of the adult population.¹⁵

Firearms ownership is not only concentrated but also associated with particular geographic locations and socioeconomic indicators. The prevalence of gun ownership differs widely across regions, states, and localities, as well as across different demographic groups. For example, while it appears that about 13 percent of Massachusetts households own a gun, a full 60 percent of Mississippi households own one.¹⁶ Residents of rural areas and small towns are far more likely to own a gun than residents of large cities, partly because of the importance of hunting and sport shooting in those communities.¹⁷ And this geographic skew is consistent with a concentration of ownership among middle-aged, middle-income households.¹⁸ These attributes are associated with relatively low involvement in criminal violence,¹⁹ and it is reasonable to suppose that most guns are in the hands of people who are unlikely to misuse them. Still, gun owners as a group are more likely than other adults to have a criminal record.²⁰

Of the subset of Americans who own firearms, handguns are somewhat popular but by no means the dominant type of weapon. Around 33 percent of America's privately held firearms are handguns, which are more likely than long guns to be kept for defense against crime.²¹ In the 1970s, about 33 percent of new guns were handguns, a figure which grew to nearly 50

14. See *id.* at 9; TOM W. SMITH, PUBLIC ATTITUDES TOWARDS THE REGULATION OF FIREARMS fig.2 (2007).

15. See COOK & LUDWIG, *supra* note 12, at 13–14, 32.

16. See Deborah Azrael, Philip J. Cook & Matthew Miller, *State and Local Prevalence of Firearms Ownership: Measurement, Structure, and Trends*, 20 J. QUANTITATIVE CRIMINOLOGY 43, app. at 58–59 tbl.AIV (2004).

17. See COOK & LUDWIG, *supra* note 12, at 31–32, 50 tbl.5.6.

18. *Id.* at 32–35.

19. See CRIMINAL JUSTICE SERVS. DIV., U.S. DEP'T OF JUSTICE, CRIME IN THE UNITED STATES 2007, tbl.38 (2008), http://www.fbi.gov/ucr/cius2007/data/table_38.html (indicating that only about 23 percent of violent crimes are committed by people between ages thirty and forty-nine); Ching-Chi Hsieh & M.D. Pugh, *Poverty, Income Inequality, and Violent Crime: A Meta-Analysis of Recent Aggregate Data Studies*, 18 CRIM. JUST. REV. 182, 198 (1993) (showing a correlation between poverty, income inequality, and violent crime).

20. See COOK & LUDWIG, *supra* note 12, at 35.

21. See *id.* at 13 (noting that, according to the NSPOF estimate, sixty-five million of the total 192 million privately owned firearms are handguns); *id.* at 39 tbl.4.6 (noting that 74.4 percent of handgun owners own a gun for self defense, while 14.9 percent of long gun owners own a gun for self defense).

percent by the early 1990s and then fell back to around 40 percent by the end of that decade.²² Despite the long-term increase in the relative importance of handgun sales, a mere 20 percent of gun-owning individuals have only handguns; 44 percent have both handguns and long guns, reflecting the fact that most people who have acquired guns for self-protection are also hunters and target shooters.²³ Less than 50 percent of gun owners say that their primary motivation for having a gun is self-protection against crime.²⁴

Most Americans get their guns from regulated dealers, but a significant number of acquisitions are either less regulated or criminal. The majority of guns acquired in a recent two year period were obtained by their owners directly from a federally licensed firearm dealer (FFL).²⁵ However, the 30 to 40 percent of all gun transfers that do not involve licensed dealers—the so-called secondary market²⁶—accounts for most guns used in crime.²⁷ Despite the prominence of gun shows in contemporary policy debates, the best available evidence suggests that such shows account for only a small share of all secondary market sales.²⁸ Another important source of crime guns is theft. Over 500,000 guns are stolen each year.²⁹

B. Gun Violence

Including homicide, suicide, and accidental deaths, 30,694 Americans died by gunfire in 2005.³⁰ This amounts to a gun-related mortality rate of 10.4 deaths per 100,000 people for the year.³¹ The mortality rate is down

22. See BUREAU OF ALCOHOL, TOBACCO & FIREARMS, COMMERCE IN FIREARMS IN THE UNITED STATES 7 fig.5 (2000) (dating the decline at 1997).

23. See COOK & LUDWIG, *supra* note 12, at 39 tbl.4.6.

24. See *id.* at 38.

25. See *id.* at 26.

26. See Philip J. Cook, Stephanie Molliconi, & Thomas B. Cole, *Regulating Gun Markets*, 86 J. CRIM. L. & CRIMINOLOGY 59 (1995).

27. See JAMES D. WRIGHT & PETER H. ROSSI, ARMED AND CONSIDERED DANGEROUS: A SURVEY OF FELONS AND THEIR FIREARMS 4 (expanded ed. 1994); Philip J. Cook & Anthony A. Braga, *Comprehensive Firearms Tracing: Strategic and Investigative Uses of New Data on Firearms Markets*, 43 ARIZ. L. REV. 277, 291–92 (2001); see also JOSEPH F. SHELEY & JAMES D. WRIGHT, IN THE LINE OF FIRE: YOUTH, GUNS, AND VIOLENCE IN URBAN AMERICA 46–50 (1995) (identifying non-dealer sources for acquisition of guns by juveniles).

28. See COOK & LUDWIG, *supra* note 12, at 25 tbl.3.11.

29. See *id.* at 41; KLECK, *supra* note 11, at 90.

30. See Ctrs. for Disease Control & Prevention, Nat'l Ctr. for Injury Prevention & Control, WISQARS Injury Mortality Reports, 1999–2006, [hereinafter WISQARS], available at http://webappa.cdc.gov/sasweb/ncipc/mortrate10_sy.html (last visited May 23, 2009).

31. See *id.*

substantially from 1990, when it was 14.9 per 100,000, but is still much higher than the observed rate in, say, 1950.³²

Intentional violence is the major exception to the general decline in death by injury during the last fifty years.³³ More Americans die each year by gun suicide than gun homicide.³⁴ However, more people suffer nonfatal gun injuries from crime than from unsuccessful suicide attempts.³⁵ The case fatality rate, which is much higher for attempted suicide than for gunshot wounds from criminal assaults, accounts for this difference. In addition, about eight hundred people per year die from unintentional gunshot injuries, although this figure is heavily influenced by coroners' standards concerning what constitutes an accident as opposed to a homicide or suicide.³⁶

Although everyone shares in the costs of gun violence to some extent, the shooters and victims are not a representative slice of the population. In 2005, the gun homicide victimization rate for Hispanic men ages 18–29 was six times the rate for non-Hispanic white men of the same age.³⁷ And the gun homicide rate for black men in this age group—99 per 100,000—was a remarkable twenty-four times the rate for white males in the same age group.³⁸ In addition, there appears to be considerable overlap between the populations of potential offenders and victims: The large majority of both groups have prior criminal records.³⁹ The demographics of gun suicide look somewhat different. While suicides and homicides both occur dispropor-

32. See NAT'L OFFICE OF VITAL STATISTICS, U.S. DEP'T OF HEALTH, EDUC. & WELFARE, VITAL STATISTICS OF THE UNITED STATES 1950, at 74–75 (1950), available at http://www.cdc.gov/nchs/data/vsus/VSUS_1950_3.pdf; PHILIP J. COOK & JENS LUDWIG, GUN VIOLENCE: THE REAL COSTS 19 fig.2.2 (2000).

33. See COOK & LUDWIG, *supra* note 32 at 21–27.

34. See MELONIE P. HERON ET AL., U.S. DEP'T OF HEALTH AND HUMAN SERVS., NATIONAL VITAL STATISTICS REPORTS: DEATHS: PRELIMINARY DATA FOR 2006, at 20 (2008), available at http://www.cdc.gov/nchs/data/nvsr/nvsr56/nvsr56_16.pdf.

35. See Ctrs. for Disease Control & Prevention & Nat'l Ctr. for Injury Prevention & Control, WISQARS Nonfatal Injuries: Nonfatal Injury Reports, available at <http://webappa.cdc.gov/sasweb/nrcip/nfirates.html> (last visited May 23, 2009).

36. See HERON ET AL., *supra* note 34, at 19 tbl.2 (reporting data); Ctrs. for Disease Control & Prevention, *Operational Criteria for Determining Suicide*, 37 MORBIDITY & MORTALITY WKLY. REP. 773, 773, 779 (1988), available at <http://www.cdc.gov/mmwr/preview/mmwrhtml/00001318.htm> (observing that coroner standards for identifying suicides vary and may be error-prone).

37. See WISQARS, *supra* note 30.

38. See *id.*

39. See Philip J. Cook, Jens Ludwig & Anthony A. Braga, *Criminal Records of Homicide Offenders*, 294 J. AM. MED. ASS'N 598 (2005); David M. Kennedy, Anne M. Piehl & Anthony A. Braga, *Youth Violence in Boston: Gun Markets, Serious Youth Offenders, and a Use-Reduction Strategy*, L. & CONTEMP. PROBS., Winter 1996, at 147, 191 tbl.2; Michael D. McGonigal et al., *Urban Firearm Deaths: A Five-Year Perspective*, 35 J. TRAUMA 532 (1993); Don B. Kates & Daniel D. Polsby, *The Myth of the "Virgin Killer": Law-Abiding Persons Who Kill in a Fit of Rage 19* (2005) (unpublished manuscript), available at http://www.hoffmang.com/firearms/kates/Myth_of_the_Virgin_Killer-Kates-Polsby.pdf.

tionately among those with low incomes or educational attainment, gun suicides are more common among whites than blacks, and more common among the old than among young or middle-aged adults.⁴⁰ Men are vastly overrepresented in all categories.

However, the costs of gun violence to society are more evenly distributed across the population than victimization statistics might suggest. The threat of being shot prompts private citizens and public institutions to undertake a variety of costly measures to reduce this risk, and many people live with anxiety arising from the lingering chance that they or a loved one could be shot. As one local district attorney notes, “Gun violence is what makes people afraid to go to the corner store at night.”⁴¹ As a result, the threat of gun violence in some neighborhoods is an important disamenity that depresses property values and economic development. Gun violence, then, is a multifaceted problem that has notable effects on public health, crime, and living standards.

While quantifying the magnitude of these social costs is difficult, one contingent-valuation (CV) survey estimate found that the costs of gun violence were on the order of \$100 billion in 1995.⁴² Most of these costs (\$80 billion) come from crime-related gun violence.⁴³ Dividing by the annual number of crime-related gunshot wounds, including homicides, implies a social cost per crime-related gun injury of around \$1 million.⁴⁴

40. See COOK & LUDWIG, *supra* note 32, at 23–24.

41. J.M. Kalil, *New Approach: Prosecutors Take Aim at Gun Crimes*, LAS VEGAS REV.-J., Mar. 8, 2002, at 1B.

42. See COOK & LUDWIG, *supra* note 32, at 11.

43. See *id.* at 10.

44. See Jens Ludwig & Philip J. Cook, *The Benefits of Reducing Gun Violence: Evidence From Contingent-Valuation Survey Data*, 22 J. RISK & UNCERTAINTY 207, 213–14 (2001). This estimate is intended to capture the costs of gun misuse and so ignores the benefits to society of widespread gun ownership—in the same way that studies of the social costs of automobile accidents ignore the benefits of driving. The figure comes, in part, from contingent-valuation (CV) responses about what people say they would pay to reduce crime-related gun violence by 30 percent. One potential concern is that these estimates assume that societal willingness to pay to reduce gun violence is linear with the proportion of gun violence eliminated, which may not be the case. And in practice there remains some uncertainty about the reliability of the CV measurement technology. In any case, most of the estimated costs of gun violence in the United States appear to come from crime, insofar as suicide is treated as a private concern, and the estimated costs of gun crime fits comfortably next to more recent CV estimates for the social costs of crime more generally. See COOK & LUDWIG, *supra* note 32, at 10–11; see also Mark A. Cohen et al., *Willingness-to-Pay for Crime Control Programs*, 42 CRIMINOLOGY 89, 105 (2004).

C. Gun Regulation by Ordinary Law

While far less stringent than regulation in other wealthy nations,⁴⁵ state and federal law in the United States regulates most aspects of firearms commerce and possession. It should be noted here, however, that gun regulation in the United States is almost entirely a product of legislation rather than rulemaking processes in administrative agencies. The latter would tend to place greater demands on the decisionmakers to solicit alternative viewpoints and to show a serious consideration of costs and benefits. The legislative process tends to have no such formal requirements before enactment.

1. Interstate Transactions and Access Restrictions

The balance between benefit and cost in gun possession and regulation differs widely across states. Accordingly, a primary objective of federal gun regulation is to minimize policy spillover across state lines. Federal law aims to ensure that stringent regulations on firearms commerce in some states are not undercut by relatively lax regulation in other states.⁴⁶ The citizens of rural Montana understandably favor a more permissive system than those living in Chicago, and both can be accommodated if transfers between them are effectively limited. In response to such concerns, the Gun Control Act of 1968⁴⁷ established the framework for the current system of controls on gun transfers. All shipments of firearms, including mail-order sales, are limited to federally licensed dealers. These dealers are required to obey applicable state and local ordinances and to observe certain restrictions on sales of guns to out-of-state residents.⁴⁸

In addition to controlling regulatory spillover between states, federal law establishes a national regulatory floor of restrictions on the acquisition and possession of guns. Thus, the Gun Control Act specifies several categories of people who are denied the right to receive or possess a gun, including: illegal aliens; people convicted of a felony or an act of domestic violence; people under indictment; illicit drug users; and those who have at some

45. See DAVID HEMENWAY, *PRIVATE GUNS, PUBLIC HEALTH* 2–3 (2004).

46. See Franklin E. Zimring, *Firearms and Federal Law: The Gun Control Act of 1968*, 4 J. LEGAL STUD. 133, 175 (1975).

47. Pub. L. No. 90-351, § 902, 82 Stat. 226 (1968) & Pub. L. No. 90-618, § 102, 82 Stat. 1214 (1968) (codified at 18 U.S.C. §§ 921–930 (2006)).

48. See 18 U.S.C. § 922(b)–(e) (2006). The McClure-Volkmer Amendment of 1986 eased the restriction on out-of-state purchases of rifles and shotguns. *Id.* §§ 922–923. Such purchases are now legal as long as they comply with the regulations of both the buyer's state of residence and the state in which the sale occurs.

time been involuntarily committed to a mental institution.⁴⁹ In addition, federally licensed dealers may not sell handguns to people younger than age twenty-one, or long guns to those younger than eighteen.⁵⁰ Dealers are required to ask for identification from all would-be buyers, have them sign a form indicating that they are not within a proscribed category, and initiate a criminal history check.⁵¹ Finally, dealers are required to keep a record of each completed sale and to cooperate with authorities when they need to access those records for gun-tracing purposes.⁵²

Notably omitted from federal regulation are gun sales by people not in the business. Such sellers, whether at a gun show or elsewhere, may transfer a gun without keeping a record of sale or performing a background check.⁵³ This private sale loophole is a major gap in federal regulation and helps the used-gun market thrive.

State regulation provides another layer of restrictions on transfer, possession, and use of firearms. Twelve states require handgun buyers to obtain a permit or license before taking possession, a process that typically entails a fee and a waiting period.⁵⁴ All but a few of these transfer-control systems are permissive, however, in that most people are legally entitled to obtain a gun. In the few permitting and licensing jurisdictions that do not have permissive standards, including Massachusetts and New York City, it is difficult to obtain a handgun legally. Chicago and Washington, D.C. have largely prohibited handgun ownership as a matter of formal law since 1982 and 1976, respectively—although the District’s handgun ban became unenforceable in at least some circumstances after *Heller*.⁵⁵ State legislatures have enacted a variety of more modest restrictions on firearms commerce as well. For example, California, Maryland, and Virginia bar dealers from selling more than one handgun a month to any one buyer.⁵⁶

49. See *id.* § 922(d)(1), (3), (4), (5)(A), (9).

50. See *id.* § 922(b)(1).

51. See *id.* § 922(s)(1)(A)(i)(I), (s)(3)(A)–(B), (t)(1).

52. See *id.* § 923(g)(1)(A)–(B); LEGAL CMTY. AGAINST VIOLENCE, REGULATING GUNS IN AMERICA: AN EVALUATION AND COMPARATIVE ANALYSIS OF FEDERAL, STATE, AND SELECTED LOCAL GUN LAWS 86 (2006) [hereinafter LCAV REPORT]; Jon S. Vernick & Stephen P. Teret, *A Public Health Approach to Regulating Firearms as Consumer Products*, 148 U. PA. L. REV. 1193, 1195–96 (2000).

53. See 18 U.S.C. § 921(a)(21)(C) (2006).

54. See LCAV REPORT, *supra* note 52, at 113–18.

55. See *infra* Part II.A–II.B. On the District’s revised rules, see *infra* note 118.

56. See CAL. PENAL CODE §§ 12072(a)(9), (c)(6), 12071(b)(7)(F) (West Supp. 2009); MD. CODE ANN., PUB. SAFETY § 5-128(a)-(b) (LexisNexis 2003); VA. CODE ANN. § 18.2-308.2:2(P) (Supp. 2008); see also LCAV REPORT, *supra* note 52, at 140–41.

2. Gun Design

Federal law also imposes some restrictions on gun design, and certain types of firearms are effectively prohibited. The National Firearms Act of 1934 (NFA)⁵⁷ was intended to eliminate Prohibition-era gangster firearms, including sawed-off shotguns, hand grenades, and automatic weapons capable of continuous rapid fire with a single pull of the trigger.⁵⁸ All such weapons had to be registered with the federal government and transfers were subject to a tax of \$200,⁵⁹ which at the time of enactment was confiscatory. While some of these weapons have remained in legal circulation, the NFA—now amended to ban the introduction of new weapons of this sort⁶⁰—appears to have been quite effective at reducing the use of automatic weapons in crime.⁶¹

Furthermore, the Gun Control Act of 1968 included a ban on the import of small, cheap handguns,⁶² sometimes known as “Saturday Night Specials.” This ban uses criteria to assign points to a gun model depending on its size and other qualities.⁶³ Handguns that fail to achieve a minimum score on the factoring criteria, or that fail to meet size and safety criteria, cannot be imported. However, domestic manufacturers may lawfully assemble guns, often from imported parts, that would fail the factoring criteria. This market niche has been well supplied. One study found that one-third of new domestically manufactured handgun models did not meet the size or quality requirements applied to imports.⁶⁴

In 1994, Congress temporarily banned the importation and manufacture of certain assault weapons (military-style semi-automatic firearms). The Crime Control Act⁶⁵ banned nineteen such weapons by name, and others were

57. See 26 U.S.C §§ 5801–72 (2006).

58. See *id.* § 5845.

59. See *id.* § 5811.

60. See *id.* § 5861.

61. See GARY KLECK, POINT BLANK: GUNS AND VIOLENCE IN AMERICA 67–70 (1991).

62. See Philip J. Cook, Mark H. Moore & Anthony A. Braga, *Gun Control*, in CRIME: PUBLIC POLICIES FOR CRIME CONTROL 291, 312 (James Q. Wilson & Joan Petersilia eds., 2002); Zimring, *supra* note 46, at 154–56. “An important loophole allowed the import of parts of handguns that could not meet the ‘sporting purposes’ test of the Gun Control Act. This loophole was closed by the McClure-Volkmer Amendment of 1986.” Cook, Moore & Braga, *supra* at 291, 616 n.24.

63. See Zimring, *supra* note 46, at 165; see also TRUDY A. KARLSON & STEPHEN W. HARGARTEN, REDUCING FIREARM INJURY AND DEATH: A PUBLIC HEALTH SOURCEBOOK ON GUNS 74 (1997) (listing some of the factoring criteria for imported guns).

64. See John S. Milne et al., *Effect of Current Federal Regulations on Handgun Safety Features*, 41 ANNALS EMERGENCY MED. 1, 5 (2003); see also GAREN WINTEMUTE, RING OF FIRE: THE HANDGUN MAKERS OF SOUTHERN CALIFORNIA 11–17 (1994).

65. Violent Crime Control and Law Enforcement Act of 1994, Pub. L. No. 103-122, 108 Stat. 1796 (repealed 2004).

outlawed if they possessed some combination of design features such as a detachable magazine, barrel shroud, or bayonet mount.⁶⁶ The Act also banned manufacture and import of magazines holding more than ten rounds.⁶⁷ However, then-existing assault weapons and large-capacity magazines were grandfathered.⁶⁸ And in 2004, the ban was allowed to expire.⁶⁹

Aside from these design prohibitions, federal law has been permissive. It leaves unregulated those types of firearms that are not specifically banned. Furthermore, firearms and ammunition are excluded from the purview of the Consumer Product Safety Commission, and no federal agency is responsible for reviewing the design of firearms.⁷⁰ Nor is any mechanism in place for identifying unsafe models that could lead to a recall and correction.⁷¹

But some states have acted independently. In 2000, the Massachusetts Attorney General announced that firearms would henceforth be regulated by a state agency with jurisdiction over other consumer products, and firearms judged unacceptable would be taken off the market.⁷² Massachusetts is unique in asserting broad state authority to regulate gun design and safety per se, though a handful of other state legislatures have restricted the design of new guns in more limited fashion. The first important instance occurred in Maryland, which enacted its own ban on Saturday Night Specials.⁷³ The legislature was responding to a successful suit against a gun manufacturer. In exchange for relieving manufacturers of small, cheap handguns from liability, the legislature created a process for reviewing handgun designs and specifying which models would be ruled out due to size and safety concerns.⁷⁴ As of 2008, eight states have some version of a ban on Saturday Night

66. See *id.* § 110102.

67. See *id.* § 110103(b)(31)(A).

68. See Christopher S. Koper & Jeffrey A. Roth, *The Impact of the 1994 Federal Assault Weapon Ban on Gun Violence Outcomes: An Assessment of Multiple Outcome Measures and Some Lessons for Policy Evaluation*, 17 J. QUANTITATIVE CRIMINOLOGY 33, 36 (2001).

69. See Violent Crime Control and Law Enforcement Act of 1994, Pub. L. No. 103-122, 108 Stat. 1796 § 110105.

70. See Vernick & Teret, *supra* note 52, at 1196.

71. See COMM. ON INJURY PREVENTION & CONTROL, DIV. OF HEALTH PROMOTION & DISEASE PREVENTION, REDUCING THE BURDEN OF INJURY: ADVANCING PREVENTION AND TREATMENT 126 (Richard J. Bonnie, Carolyn Fulco & Catharyn T. Liverman eds., 1999).

72. The new rules effectively ban Saturday Night Specials and require that handguns sold in Massachusetts include childproof locks, tamper-proof serial numbers, and safety warnings. The new gun safety regulations affect manufacturers as well as retailers. See 940 MASS. CODE REGS. 16.01-09 (2008).

73. See MD. CODE ANN., PUB. SAFETY §§ 5-405 to -406 (LexisNexis 2003 & Supp. 2008).

74. See *id.* § 5-405; see also Jon S. Vernick et al., *Effects of Maryland's Law Banning Saturday Night Special Handguns on Crime Guns*, 5 INJ. PREVENTION 259 (1999).

Specials.⁷⁵ California has also been active in recent years, instituting a ban on assault weapons and establishing a number of handgun safety requirements.⁷⁶

3. Gun Possession and Use

States and some localities also specify the rules under which guns may be carried in public. Every state except Alaska and Vermont places some restriction on carrying a concealed firearm.⁷⁷ However, the trend over the past several decades has been to ease restrictions on concealed carry, replacing prohibition with a permit system and easing the requirements to obtain a permit. Currently, in most states adults who are entitled to possess a handgun can obtain a permit to carry after paying a fee.⁷⁸

In addition, there has been some effort to regulate firearms storage. Since 2005, federal law has required all handguns sold by licensed dealers to come equipped with a secure storage device.⁷⁹ Eleven states and the District of Columbia have laws concerning firearm locking devices.⁸⁰ Massachusetts and the District require that all firearms be stored with a lock in place.⁸¹ And the Maryland legislature recently adopted a pioneering requirement: All handguns manufactured after 2003 and sold in the state must be “personalized” with a built-in locking device that requires a key or combination to release.⁸²

4. Record Keeping

Some gun regulations are designed to assist law enforcement in solving crimes. In particular, federal law requires that all licensees in the chain of commerce—manufacturers, distributors, retail dealers—keep records of transfers and provide them to law enforcement for tracing purposes.⁸³ For example, if a police department confiscates a firearm that may have been used in a crime, it can submit a trace request through the National Tracing Center of the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF). The ATF will attempt to trace the chain of commerce using the serial number and other

75. See LCAV REPORT, *supra* note 52, at 145 (listing states that require “design and/or safety standards” that serve to ban Saturday Night Specials).

76. See *id.* at 17, 146–48.

77. See *id.* at 136.

78. See *id.* at 132; JOHN R. LOTT, JR., MORE GUNS, LESS CRIME: UNDERSTANDING CRIME AND GUN CONTROL LAWS 43 (2000).

79. See Protection of Lawful Commerce in Arms Act, 18 U.S.C. § 922(z) (2006).

80. See LCAV REPORT, *supra* note 52, at xiii.

81. See *id.* at 152.

82. See MD. CODE ANN., PUB. SAFETY § 5-132 (LexisNexis 2003).

83. See 18 U.S.C. § 923(g)(1)(A)–(B) (2006).

characteristics of the gun. If all goes well, the retail dealer who first sold the gun will be identified and will supply information from the form that the buyer filled out. Unfortunately, this system is inefficient and error-prone, and even if successful it usually leaves the investigators far short of the information they really want: the identity of the most recent owner of the firearm.⁸⁴ But a more direct system of national registration has been politically impossible to implement—except in the case of Title II weapons regulated by the National Firearms Act of 1934,⁸⁵ which include machine guns, sawed-off shotguns, and grenades.⁸⁶

A few states do have registration requirements, however. California requires registration of handgun transactions, even if they occur between private parties.⁸⁷ This requirement complements a new regulation that all semiautomatic pistols sold in the state after 2010 be designed with micro-stamp capability. Microstamping means that the firearm will print the serial number, make, and model of the gun on the shell casing when the gun is fired.⁸⁸ Shell casings are ejected from pistols and often left at the scene, where they can be collected by investigators and, under the new law, used to initiate a trace even when the gun itself is not in custody.

5. Mass Tort Litigation

Thus far, our regulatory review shows a baseline of federal legislation with a second layer of state legislation which varies significantly across the country. If the gun policy process is functioning well, the policy diversity we see should reflect the different values and circumstances of different states. Yet much differentiation in the cost-benefit balance for gun control occurs within states, at the local level. Residents of heavily populated cities tend to suffer relatively high rates of violent crime and have little interest in gun sports, while the reverse is true in rural areas and small towns. As a result, the most extreme gun control measures tend to be adopted by cities rather than states.⁸⁹ But this

84. See Cook & Braga, *supra* note 27, at 301.

85. 26 U.S.C. §§ 5801–72 (2006).

86. See *id.*

87. See CAL. PENAL CODE § 12072(d) (West 2008).

88. See *id.* § 12126(b)(7).

89. See, e.g., Jon S. Vernick & Lisa M. Hepburn, *State and Federal Gun Laws: Trends for 1970–1999*, in *EVALUATING GUN POLICY: EFFECTS ON CRIME AND VIOLENCE* 345, 363, 367 (Jens Ludwig & Philip J. Cook eds., 2003) (comparing numbers of gun laws at different levels of government, and noting more restrictive regulation in certain Ohio cities than at the state level).

degree of decentralized policymaking is often thwarted by state law: Over forty states preempt at least some local laws affecting firearms.⁹⁰

In the 1990s, several cities facing tremendous costs from gun-related crime tried an alternative. Frustrated by their inability to change gun regulations through legislation, they filed mass tort lawsuits that had the potential to impose higher standards of conduct on the gun industry. These suits asserted unsafe and defective gun design under state law,⁹¹ or claimed that the industry was creating a public nuisance through failure to police the supply chain by which guns were marketed and often found their way into dangerous hands.⁹² These suits were inspired by, and had parallels with, the lawsuits against the cigarette industry filed by state attorneys general. The cigarette manufacturers ultimately settled those suits, agreeing to restrictions on marketing practices and to \$240 billion in damages paid out over twenty-five years.⁹³ One difference is that in the gun industry suits most of the plaintiffs were cities rather than states. Another difference is that the firearms industry is both smaller and more diffuse than the tobacco industry, so that the financial stakes were much lower. Indeed, the primary motivation for the municipal plaintiffs was probably not money damages, but to force the gun industry to assume greater responsibility for reducing the damage done with its products.

In any event, the cities' arguments did not fare well in court. A case brought by New Orleans, for instance, was halted by the Louisiana Supreme Court after that state's legislature enacted a statute barring such suits.⁹⁴ Of the city lawsuits, the "great majority have been dismissed or abandoned prior to trial, and of the few favorable jury verdicts obtained by the plaintiffs, all but one have been overturned on appeal. A handful of claims have been settled prior to trial."⁹⁵

90. See James A. Beckman, *Preemption Laws*, in 2 GUNS IN AMERICAN SOCIETY: AN ENCYCLOPEDIA OF HISTORY, POLITICS, CULTURE, AND THE LAW 478, 478 (Gregg Lee Carter ed., 2002).

91. See *Morial v. Smith & Wesson Corp.*, 785 So. 2d 1, 5–6 (La. 2001).

92. See *City of Chicago v. Beretta U.S.A. Corp.*, 821 N.E.2d 1099 (Ill. 2004); Brian J. Siebel, *City Lawsuits Against the Gun Industry: A Roadmap for Reforming Gun Industry Misconduct*, 18 ST. LOUIS U. PUB. L. REV. 247, 248–49 (1999); see also Jon S. Vernick & Stephen P. Teret, *New Courtroom Strategies Regarding Firearms: Tort Litigation Against Firearm Manufacturers and Constitutional Challenges to Gun Laws*, 36 HOUS. L. REV. 1713, 1746–49 (1999). Thirty other cities and counties filed suits against the gun industry, claiming negligence in marketing practices, product design, or both. See generally Timothy D. Lytton, *Introduction: An Overview of Lawsuits Against the Gun Industry*, in *SUING THE GUN INDUSTRY* 1, 1–35 (Timothy D. Lytton ed., 2005).

93. See Milo Geyelin, *Forty-Six States Agree to Accept \$206 Billion Tobacco Settlement*, WALL ST. J., Nov. 23, 1998, at B13.

94. See *Morial*, 785 So. 2d at 6.

95. Lytton, *supra* note 92, at 5.

Then, on October 26, 2005, President George W. Bush signed the Protection of Lawful Commerce in Arms Act (PLCAA).⁹⁶ It provided an important degree of legal immunity to the firearms industry, while preserving the possibility of traditional tort actions against the industry. For example, injuries from defects in design or manufacture can be compensated in private suits. But the industry is now exempt from liability for injuries resulting from criminal misuse of its product. While PLCAA might itself be subject to constitutional challenge,⁹⁷ efforts to enhance gun regulation through litigation have failed for the most part. And today the litigation opportunities are running in the opposite direction.

II. HELLER AND THE NEXT LITIGATION FRONTIER

As of 2007, there was little else to say about the general character and dynamics of gun control policy. Certainly federal constitutional litigation was a matter of minimal significance. For most of our country's history, the Second Amendment was absent from the Supreme Court's agenda. When arguments based on the amendment reached the Court, they were ineffectual. In the late 1800s, the Court confirmed that the amendment could not be used to challenge state regulation.⁹⁸ And in 1939, *United States v. Miller*⁹⁹ concluded that the federal government was free to restrict possession of sawed-off shotguns.¹⁰⁰ *Miller* seemed to link Second Amendment rights to state organized militias, rather than to individual preferences about gun ownership. Lower federal courts followed this notion and the amendment was a dead letter in litigation.¹⁰¹

Attraction to Second Amendment arguments gained strength in other contexts, however. The gun rights movement made the amendment a central rhetorical element in its organizing efforts.¹⁰² Many lawmakers were

96. 18 U.S.C. § 922(z) (2006).

97. See Timothy D. Lytton, *Afterword: Federal Gun Industry Immunity Legislation*, in *SUING THE GUN INDUSTRY*, *supra* note 92, at 339, 339–54.

98. See *Presser v. Illinois*, 116 U.S. 252, 264–66 (1886); *United States v. Cruikshank*, 92 U.S. 542, 553 (1876).

99. 307 U.S. 174 (1939).

100. See *id.* at 178 (seeking evidence that a sawed-off shotgun “has some reasonable relationship to the preservation or efficiency of a well regulated militia”).

101. See, e.g., *Gillespie v. City of Indianapolis*, 185 F.3d 693, 710–11 (7th Cir. 1999). Results from litigation involving state constitutions were not dramatically different. State supreme courts invoked state gun rights to invalidate only a few state regulations after World War II. See Adam Winkler, *Scrutinizing the Second Amendment*, 105 MICH. L. REV. 683, 716–26 (2007).

102. For a view of the gun rights movement, political institutions, and *Heller*, see Reva B. Siegel, *Dead or Alive: Originalism as Popular Constitutionalism in Heller*, 122 HARV. L. REV. 191 (2008).

sympathetic. And by the late twentieth century, scholarship on the amendment was booming. Some legal academics supported an understanding of federal gun rights beyond anachronistic state militias.¹⁰³ There were also judicial rumblings. In 1997, Justice Thomas suggested that the amendment might have provided another basis for invalidating the Brady Act's mandate that local officials conduct background checks on handgun purchasers.¹⁰⁴ In 2001, a federal appeals court declared that the Second Amendment included a personal right to keep and bear arms unrelated to militia service, although the court upheld the regulation at issue.¹⁰⁵ The United States Department of Justice then amended its litigation position and endorsed the lower court's logic.¹⁰⁶

A. *Heller's* Demilitarized Message

In 2008, the Supreme Court changed its message, too. *District of Columbia v. Heller*¹⁰⁷ became the first successful Second Amendment challenge in the Court's history—a full 207 years after the amendment was ratified.¹⁰⁸ This time lag between ratification and adjudication must have influenced the Court's decision. Notwithstanding a lengthy discussion of legal meaning as it stood in 1791, crucial features of the majority opinion bend to develop-

103. See, e.g., Randy E. Barnett & Don B. Kates, *Under Fire: The New Consensus on the Second Amendment*, 45 EMORY L.J. 1139 (1996); Robert J. Cottrol & Raymond T. Diamond, *The Second Amendment: Toward an Afro-Americanist Reconsideration*, 80 GEO. L.J. 309 (1991); Sanford Levinson, *The Embarrassing Second Amendment*, 99 YALE L.J. 637 (1989); Eugene Volokh, *The Commonplace Second Amendment*, 73 N.Y.U. L. REV. 793 (1998). For contrary views from historians, see, for example, SAUL CORNELL, *A WELL-REGULATED MILITIA: THE FOUNDING FATHERS AND THE ORIGINS OF GUN CONTROL IN AMERICA* 2–4, 7 (2006); Jack N. Rakove, *The Second Amendment: The Highest Stage of Originalism*, 76 CHI.-KENT L. REV. 103 (2000), reprinted in *THE SECOND AMENDMENT IN LAW AND HISTORY* 74, 113 (Carl T. Bogus ed., 2000) (“[I]t is completely anachronistic to expect the disputants of the eighteenth century to have comprehended, much less addressed, the problem of firearms regulation in its modern form.”). On competing theories for the gist of the amendment's meaning, see MARK V. TUSHNET, *OUT OF RANGE: WHY THE CONSTITUTION CAN'T END THE BATTLE OVER GUNS* (2007).

104. See *Printz v. United States*, 521 U.S. 898, 938–39 (1997) (Thomas, J., concurring) (joining the majority opinion, which relied on federalism principles, but pointing to a Second Amendment argument).

105. See *United States v. Emerson*, 270 F.3d 203, 260–61 (5th Cir. 2001) (upholding a conviction for gun possession while the defendant was subject to a domestic violence restraining order), cert. denied, 536 U.S. 907 (2002).

106. See Memorandum from the Attorney General to All United States Attorneys (Nov. 9, 2001), available at <http://www.usdoj.gov/ag/readingroom/emerson.htm>. When Emerson sought review in the Supreme Court, the Solicitor General abandoned the militia-related view of the amendment. See Brief for the United States in Opposition at 20 n.3, *United States v. Emerson*, 536 U.S. 907 (2002) (No. 01-8780) (accepting, however, “reasonable restrictions designed to prevent possession by unfit persons or to restrict the possession of types of firearms that are particularly suited to criminal misuse”).

107. 128 S. Ct. 2783 (2008).

108. For an analysis of such time lags, see Adam M. Samaha, *Originalism's Expiration Date*, 30 CARDOZO L. REV. 1295, 1308–10 (2008) (estimating the average lag between formal amendment and Supreme Court interpretation at forty years).

ments that occurred long after ratification. At the end of the day, the opinion begins the process of accommodating an individualistic gun rights vision to the modern tradition of gun regulation.

The case involved a police officer who wanted to keep an operable handgun in his home and to “carry it about his home in that condition only when necessary for self-defense.”¹⁰⁹ But the District was an urban jurisdiction where the gun rights movement enjoyed little success in ordinary politics. One District law prohibited possession of handguns by private citizens, with only narrow exceptions.¹¹⁰ A second regulation required all firearms to be either unloaded and disassembled or trigger-locked at all times.¹¹¹ Exceptions were made for law enforcement officers, places of business, and otherwise lawful recreational activities,¹¹² but the regulation reached people’s homes. A third regulation involved firearms licensing by the chief of police.¹¹³ The *Heller* majority left unaddressed the issue of firearms licensing, but it concluded that the first two regulations infringed the plaintiff’s right to have a handgun in his home for self-defense.¹¹⁴

It is quite possible to read the majority opinion for very little. The justices did not commit to restraining state or local firearms laws,¹¹⁵ which is where much of the regulatory action takes place. Furthermore, the plaintiff’s position in *Heller* was relatively strong. The regulations under attack were fairly broad, the argument came down to a qualified right to handgun possession in the home, and the dissenting justices thought the amendment was not even implicated without a militia connection.¹¹⁶ Even under these circumstances, the gun rights position only narrowly prevailed on a 5–4 vote. Perhaps a slightly different case would fracture the majority coalition. After all, it does not take special courage to oppose flat handgun bans.¹¹⁷ One can easily imagine the 5–4 vote going the other way had the District permitted a law-abiding citizen to store one handgun in the home, but required

109. *Heller*, 128 S. Ct. at 2788 & n.2 (relating the lower court’s understanding of the facts of the case).

110. See D.C. CODE ANN. § 7-2502.01 (LexisNexis 2008).

111. *Id.* § 7-2507.02.

112. See *id.*

113. See D.C. CODE ANN. § 22-4506 (LexisNexis 2001).

114. See *Heller*, 128 S. Ct. at 2819 (stating reasons for not addressing the issue of firearms licensing).

115. See *id.* at 2812–13 & n.23.

116. See *id.* at 2823 (Stevens, J., dissenting); *id.* at 2847 (Breyer, J., dissenting).

117. See *supra* notes 3–4 (citing polling and majority congressional opposition to flat handgun bans). There is a large empirical literature on the determinants of judicial behavior which we will not delve into here. See, e.g., Barry Friedman, *The Politics of Judicial Review*, 84 TEX. L. REV. 257 (2005). For the classic view of the Court as sticking close to national governing coalitions, see Robert A. Dahl, *Decision-Making in a Democracy: The Supreme Court as a National Policy-Maker*, 6 J. PUB. L. 279 (1957).

handgun training, registration, and a trigger lock—except when and if self-defense became necessary.¹¹⁸

Nevertheless, more significant lessons might be drawn. The first notable feature of the majority opinion is the virtual irrelevance of militias to its view of gun rights. The text of the Second Amendment begins with the preface, “A well regulated Militia, being necessary to the security of a free State,” Whether or not this assertion is factually accurate, it could serve an important role in understanding the words that follow: “the right of the people to keep and bear Arms, shall not be infringed.” But for the majority, the amendment’s preface cannot be used to either limit or expand the meaning of the subsequent words when read separately.¹¹⁹ Instead, the militia reference is supposed to indicate the purpose of codifying a preexisting right of “the people” in general to keep and bear arms.¹²⁰ Although the Amendment’s ratification did follow a debate over standing armies and the ability of state militias to check centralized tyranny, the *Heller* majority contended that the codified right to keep and bear arms was also valued for self-defense.¹²¹ This more personal self-defense function, not the prerequisites of a robust citizen militia, defines the scope of the right according to *Heller*.

Fencing off the amendment’s judicially enforceable right from its militia-oriented preface is revealing—and it cuts in two directions. Some of the implications point toward judicial intervention. Private parties are now allowed to raise Second Amendment arguments in court without showing any relationship to a militia, state-run or otherwise. The content of the right is personal and nonmilitary. As well, incorporation of Second Amendment norms into the Fourteenth Amendment might seem easier once the content of the former is separated from the preservation of state militias. If the right is not about federal-state relations, it better resembles the individual rights the Court has been willing to enforce against state and local governments through the Fourteenth Amendment.¹²²

118. The District’s first temporary legislative reaction to *Heller* allowed registration of handguns (excluding semi-automatics) for in-home self-defense (after a ballistics test), and allowed trigger locks to be removed when the owner reasonably feared imminent harm in the home. See Del Quentin Wilber & Paul Duggan, *D.C. Is Sued Again Over Handgun Rules*, WASH. POST, July 29, 2008, at B01. The District’s second round of temporary legislation can be found at Second Firearms Control Emergency Act of 2008, available at http://mpdc.dc.gov/mpdc/frames.asp?doc=/mpdc/lib/mpdc/info/pdf/2ndFirearmsControl_Act.pdf.

119. See *Heller*, 128 S. Ct. at 2792–97, 2789–90 nn.3–4.

120. See *id.* at 2800–02.

121. See *id.* at 2801–02.

122. See generally ERWIN CHERMERINSKY, CONSTITUTIONAL LAW: PRINCIPLES AND POLICIES 499–507 (3d ed. 2006) (reviewing selective incorporation).

But another implication involves judicial restraint. Ignoring the practical needs of decentralized citizen militias allows courts to reject libertarian demands for exceptionally potent firepower and to preserve the modern role of government in law enforcement and national defense. The *Heller* majority is not about to enforce any asserted right to frighten the United States armed forces with overwhelming firepower. The majority's portrayal of the Second Amendment right seems, at most, tangentially related to people protecting themselves from the risks of centralized tyranny.¹²³ Instead, the majority's conception of the right is mainstreamed and demilitarized. In this respect, one can say that *Heller* defanged the Second Amendment for litigation purposes.

B. *Heller's* Core Right and Suggested Limits

What, then, is the judicially enforceable right recognized in *Heller*? The answer is debatable. Different readers will see the matter differently in the absence of additional direction from the justices regarding what they meant (or mean) to do. To make progress, however, we can look for *Heller's* minimum plausible content. We can attempt to describe the core right to which a majority of justices seem clearly committed.

Whatever else it might be made to include in the future, the majority's core right involves self-defense with a typical handgun in one's home. These justices were not interested in a right to carry arms "for any sort of confrontation,"¹²⁴ and declared that "self-defense . . . was the *central component* of the right" codified in the amendment.¹²⁵ And in explaining why the District's handgun ban was defective, the majority stressed the confluence of three factors: self-defense, handguns, and homes. It asserted that an inherent right of self-defense has been central to the understanding of the Second Amendment in American history, that handguns are now commonly chosen by Americans for lawful self-defense, and that people's homes are where "the need for defense of self, family, and property is most acute."¹²⁶ For similar reasons, the majority immunized the plaintiff's handgun from the District's requirement that firearms in the home be kept inoperable at all times.¹²⁷

Hence the majority's core conception of the right seems to contemplate a law-abiding citizen with a functional handgun in his own home for the pur-

123. See *Heller*, 128 S. Ct. at 2817.

124. *Id.* at 2799.

125. *Id.* at 2801.

126. *Id.* at 2817.

127. See *id.* at 2818 (referring to "the core lawful purpose" of self-defense).

pose of defense, and perhaps only at the time of attack.¹²⁸ This notion of the right was strong enough to overcome an outright prohibition on possessing a functional handgun in one's home at any time. And this description of the right matches the situation of the actual plaintiff in *Heller*, who asked to store an operable handgun in his home and to carry it there only when necessary for self-defense.

In fact, limits were a theme in the majority opinion. These justices went out of their way to suggest insulation for several forms of gun control not at issue in the case. They conceded that the Second Amendment right is "not unlimited,"¹²⁹ and offered a list of "presumptively lawful regulatory measures."¹³⁰ In crude terms, this nonexhaustive list includes regulation aimed at (1) atypical weapons, (2) abnormal people, (3) sensitive locations, (4) sales conditions, (5) safe storage, and, perhaps, (6) concealed carry. Although the matter is not free from doubt, it appears that these presumptively valid regulations would withstand a Second Amendment objection even to the extent that they apply to handgun possession in the home for self-defense. Otherwise, *Heller*'s core right would seem "unlimited" in ways that the majority did not mean.

Thus the majority sought to protect weapons "typically possessed by law-abiding citizens" for self-defense in the home,¹³¹ asserting that a limitation to weapons in common use is consistent with a tradition of restricting "dangerous and unusual weapons."¹³² Handguns are thereby covered in view of their current popularity in the market,¹³³ while the majority strongly suggested that machine guns, M-16s, and sawed-off shotguns are not.¹³⁴ We do not know the extent to which regulation may validly influence which weapons become common. Such influence was implicitly tolerated by the *Heller* majority because the mix of weapons purchased in contemporary America is partly a function of the tax and regulatory policies discussed in Part I. In any event, a right restricted to the type of weapon owned by the mainstream of armed home-defenders fits with the majority's demilitarized vision of the amendment.

The discussion of other presumptively valid regulation was even more brief:

[N]othing in our opinion should be taken to cast doubt on longstanding prohibitions on the possession of firearms by felons and the mentally ill,

128. See *id.* at 2788, 2822.

129. *Id.* at 2816.

130. *Id.* at 2817 n.26.

131. *Id.* at 2815–16 (emphasis added).

132. *Id.* at 2817.

133. See *id.* at 2817–18.

134. See *id.* at 2815, 2817.

or laws forbidding the carrying of firearms in sensitive places such as schools and government buildings, or laws imposing conditions and qualifications on the commercial sale of arms.¹³⁵

Later, in distinguishing founding era regulation of gun powder storage, the majority said its logic did not suggest problems with “laws regulating the storage of firearms to prevent accidents.”¹³⁶ Finally, the majority observed that most nineteenth-century cases had upheld prohibitions on concealed weapons.¹³⁷

The opinion is, nevertheless, a litigation magnet. On the same day that *Heller* was decided, suit was filed against the city of Chicago arguing that the *Heller* right must be enforced against state and local action.¹³⁸ In another suit that raises the incorporation question, gun show owners are using *Heller* to challenge Alameda County’s law against guns on county property.¹³⁹ And New York City is now defending its handgun permit system, which critics argue is too demanding and grants excessive discretion to the police department.¹⁴⁰ Some criminal defendants are even objecting to the federal machine gun ban and felon in possession convictions, despite the list of presumptively valid regulations in *Heller*.¹⁴¹ And some jurisdictions are avoiding the costs and risks of litigation by repealing their handgun bans without a fight over incorporation.¹⁴² In early 2009, San Francisco followed this course. It settled a gun

135. *Id.* at 2816–17.

136. *Id.* at 2820.

137. *See id.* at 2816. On unconcealed pistols, see *infra* Part III.C.

138. The Second Amendment Foundation maintains a website dedicated to the case. See ChicagoGunCase.com, <http://www.chicagoguncase.com> (last visited May 23, 2009). Plaintiffs are challenging Chicago’s handgun ban, see CHI., ILL., MUN. CODE §§ 8-20-040(a), 8-20-050(c) (2008) (noting exceptions), as well as the city’s requirement that firearms be registered before acquisition and then re-registered annually, see *id.* §§ 8-20-090(a), 8-20-200. However, Chicago law seems to differ from the District of Columbia’s regime at issue in *Heller*, in that Chicago does not appear to mandate a trigger lock on all firearms in the home at all times. Whether any such difference will influence the outcome of litigation remains to be seen.

139. See *Nordyke v. King*, 563 F.3d 439, 457, 460 (9th Cir. 2009) (concluding that Second Amendment rights are incorporated into the Due Process Clause of the Fourteenth Amendment, but then upholding this regulation of firearms on county property and stating that “the Ordinance does not meaningfully impede the ability of individuals to defend themselves in their homes with usable firearms, the core of the right as *Heller* analyzed it”).

140. See Daniel Wise, *Defense Lawyers Fire First Shot in Challenge to State Gun Law*, N.Y. L.J., July 16, 2008, at 1.

141. These arguments have not been successful in lower federal courts, however. See, e.g., *United States v. Gilbert*, 286 F. App’x 383, 386 (9th Cir. 2008), *cert. denied*, 129 S. Ct. 613 (2008); *United States v. Whisnant*, No. 3:07-CR-32, 2008 WL 4500118, at *1 (E.D. Tenn. Sept. 30, 2008) (collecting cases); see also Adam Winkler, *Heller’s Catch-22*, 56 UCLA L. REV. 1551, 1564–66 (2009) (analyzing post-*Heller* lower court cases).

142. See Deborah Horan, *Gun Bans Erode Under Pressure: Evanston Is the Latest to Repeal Its Handgun Law*, CHI. TRIB., Aug. 13, 2008, available at http://www.chicagotribune.com/news/local/chi-gun-ban_13aug13,0,1421061.story. Prevailing plaintiffs may recover their attorney fees from state and local defendants in federal constitutional litigation, but prevailing defendants normally

rights lawsuit by agreeing to eliminate a lease provision for public housing tenants that prohibited storage of firearms and ammunition.¹⁴³ The question remains how the legal uncertainty will shake out.

C. Models for Judicial Review After *Heller*

Even with the majority's laundry list of presumptively valid regulations in hand, there is no obvious theory by which to better specify the listed items—or to add new items. Remember that the list is neither conclusive nor exhaustive. Is the list governed by historical analogies and traditional police powers? Can it be built into a general principle allowing “reasonable” regulation? This is unsettled. Nor did the majority identify a generic test that one should apply to determine whether the Second Amendment is violated. Providing such guidance is not a requirement for case law and can be difficult to do well in a single decision, but the absence of a prescribed test leaves regulators guessing.

One possibility is that the Court will fashion additional rules based on history and analogy. After all, the *Heller* majority devoted thousands of words to an analysis of historical sources. These justices indicated that they were investigating the ordinary meaning of the amendment's words to ordinary citizens in 1791.¹⁴⁴ Whatever version of originalism was on display, it was the predominant mode of argument for the majority. In addition, the majority rejected case-by-case balancing of competing interests within the perceived “core protection” of the Second Amendment.¹⁴⁵ In contrast, Justice Breyer's dissent advocated judicial balancing and considered much more than founding era firearms regulation.¹⁴⁶ The majority responded, “[W]hatever else [the amendment] leaves to future evaluation, it surely elevates above all other interests the right of law-abiding, responsible citizens to use arms in defense of hearth and home.”¹⁴⁷ There is no hint here of judges asking whether a challenged regulation is justified by cost-benefit analysis or supported by reliable data.

cannot. See HAROLD S. LEWIS, JR. & ELIZABETH J. NORMAN, CIVIL RIGHTS LAW AND PRACTICE 442, 462–63 (2001).

143. See Stipulation Regarding Settlement and Dismissal of Defendants San Francisco Housing Authority and Henry Alvarez III Without Prejudice, *Doe v. S.F. Hous. Auth.*, No. CV-08-03112 TEH (N.D. Cal. Jan. 12, 2009) (continuing, however, to prohibit unlawful firearms and ammunition possession), available at <http://volokh.com/files/sfpublichousingguns.pdf>.

144. See *District of Columbia v. Heller*, 128 S. Ct. 2783, 2788, 2810 (2008). For a discussion of different versions of originalism, see Samaha, *supra* note 108, at 1327–29.

145. See *Heller*, 128 S. Ct. at 2821.

146. See *id.* at 2847–68 (Breyer, J., dissenting).

147. *Id.* at 2821 (majority opinion); see also *id.* (“Constitutional rights are enshrined with the scope they were understood to have when the people adopted them . . .”). Of course, a right's

But other facets of *Heller* indicate the Court is not locked into strong and rule-oriented originalism. As for hard-line rules over flexible standards, the majority's repudiation of case-specific interest balancing was done with reference to the "core protection" recognized in *Heller*.¹⁴⁸ Perhaps the majority's inflexibility begins and ends with this core right, while some brand of judicial cost-benefit analysis would be appropriate elsewhere, at least at the periphery of Second Amendment values. As for originalism, it was not the only form of analysis on display. Founding era historical sources were not used to explain and probably cannot explain certain critical junctures in the majority opinion.

Most notably, the majority's list of presumptively valid firearms regulation was not supported with serious originalist investigation. In fact, the list was not supported with much of any argument. It is quickly becoming one of the most important features in the majority opinion, yet its foundation is far easier to locate in contemporary political consensus or perhaps the necessity of pragmatic compromise in building a five-vote coalition on the bench than it is to support with eighteenth-century regulatory examples.

Equally important, the majority relied on sources far removed from 1791. *Heller*'s rendition of nineteenth-century characterizations of the Second Amendment stretched to include sources postdating ratification by nearly 100 years.¹⁴⁹ These citations help us understand postenactment traditions much better than they can reveal any settled meaning at the founding. Using tradition to inform constitutional doctrine is also consistent with the majority's reference to "longstanding" gun control in its preferred list,¹⁵⁰ with its claim that the District's ban was more burdensome than others in history,¹⁵¹ and with its reliance on an extended practice of prohibiting unusual weapons.¹⁵² While such analysis does involve history and analogy, it is a departure from strong and pure originalism.

Judge-centered traditions played a role in the majority opinion as well. For example, the majority claimed that the District's handgun ban flunked "any of the standards of scrutiny that we [judges] have applied to enumerated constitutional rights."¹⁵³ But no one asserts that these standards are dictated by

originally understood scope—to the extent that its meaning was determinate within the relevant population at the relevant time—could include consideration of circumstances that may change and authorize future decisionmakers to adjust in light of those changes.

148. *See id.*

149. *See, e.g., id.* at 2811–12.

150. *See id.* at 2816–17.

151. *See id.* at 2818.

152. *See id.* at 2817.

153. *Id.* at 2817–18.

originalism alone. They are tests that courts developed to implement constitutional norms.¹⁵⁴ The majority also made the effort to reconcile its historical conclusions with the Court's meager case law regarding the Second Amendment,¹⁵⁵ which was unnecessary if only originalist history mattered. And the majority cautioned that nineteenth-century precedent indicating that gun rights are not enforceable against state action "did not engage in the sort of Fourteenth Amendment inquiry required by our later cases."¹⁵⁶

Hence neither strong originalism nor strict rule-like doctrine has been locked into place by *Heller*—surely not in the long run, possibly not for cases outside of the core right now recognized, and perhaps not for the process of defining limits on that core right. Only by word count is the *Heller* opinion dominated by originalism.

If we are correct, the majority exhibited dependence on history without prescribing any particular model for judicial review of Second Amendment claims over the long term. And there is no consensus model that judges could import from other fields of constitutional adjudication.

The truth is that judicial review is not a binary choice. Turning it on does not determine exactly how it should be performed. Instead, making judicial review operational requires choices along several dimensions, and it implicates fundamental questions about the judicial role.

The first choice is whether any judicial oversight will take place. Some clauses of the Constitution of the United States are never litigated (for example, many provisions involving the structure of Congress) or are not enforced by courts (for example, certain issues of impeachment).¹⁵⁷ Some clauses have been enforced against ordinary politics in one era only to be largely ignored in another (for example, the Contracts Clause).¹⁵⁸

Among those constitutional norms that courts are comfortable enforcing, judges have developed a variety of practices. Some domains are filled with founding era history and analogical reasoning (for example, federal jury trial rights).¹⁵⁹ Other domains turn to longstanding tradition for guidance (for

154. For a catalog of doctrinal tests developed by courts in constitutional cases, see RICHARD H. FALLON, JR., IMPLEMENTING THE CONSTITUTION 76–101 (2001).

155. See *Heller*, 128 S. Ct. at 2812–16.

156. *Id.* at 2813 n.23; see also *id.* at 2791 ("Some have made the argument, bordering on the frivolous, that only those arms in existence in the 18th century are protected by the Second Amendment. We do not interpret constitutional rights that way.")

157. See, e.g., *Nixon v. United States*, 506 U.S. 224, 233 (1993).

158. See Adam M. Samaha, *Dead Hand Arguments and Constitutional Interpretation*, 108 COLUM. L. REV. 606, 642 (2008).

159. See, e.g., *Curtis v. Loether*, 415 U.S. 189, 193 (1974).

example, strands of substantive due process).¹⁶⁰ Many others are dominated by judicial precedent and analogical reasoning (for example, speech and abortion rights).¹⁶¹ Some combine precedent, originalist history, and contemporary interest balancing (for example, search and seizure jurisprudence).¹⁶²

Even when common law development of constitutional doctrine predominates, diversity reappears. Some justices value specific doctrinal rules over the flexibility of more open-ended standards, while others exhibit the opposite preference.¹⁶³ The intensity of judicial review also varies. Sometimes the Court organizes its thinking around several tiers of scrutiny (for example, equal protection doctrine). These tiers vary in how important the asserted regulatory interest must be, and in how tight the connection between that interest and the regulation under attack must be. Presumptively invalid regulatory classifications, such as race, receive nondeferential strict scrutiny;¹⁶⁴ a few others, including sex, receive intermediate scrutiny;¹⁶⁵ mere rational basis review with extreme deference to policymakers is applied elsewhere.¹⁶⁶ Much free speech precedent has a similar character.¹⁶⁷ But in other fields, this analytical structure is not apparent. In Eighth Amendment cases, the Court looks to policy trends across the country and then exercises its own judgment on whether the punishment in question is cruel under contemporary standards of decency.¹⁶⁸

Whatever shape Second Amendment doctrine takes in this expanse of options, the country's experience with judicial review does suggest boundaries

160. See, e.g., *Washington v. Glucksberg*, 521 U.S. 702, 720–22 (1997).

161. See, e.g., *Davis v. FEC*, 128 S. Ct. 2759, 2770–74 (2008) (invalidating a campaign finance regulation by relying on free speech case law and not originalist history); *Stenberg v. Carhart*, 530 U.S. 914, 929–31 (2000) (invalidating a so-called partial birth abortion law). *Davis* was issued on the same day as *Heller* and was decided by the same 5–4 coalitions. The leading expositor of common law constitutionalism is David A. Strauss. See David A. Strauss, *Common Law Constitutional Interpretation*, 63 U. CHI. L. REV. 877 (1996).

162. See, e.g., *Wyoming v. Houghton*, 526 U.S. 295, 299–303 (1999).

163. Compare the Court's general balancing test for due process violations, which is a form of cost-benefit analysis, see *Mathews v. Eldridge*, 424 U.S. 319, 332–35 (1976), and its “undue burden” test in abortion cases, see *Planned Parenthood of Se. Pa. v. Casey*, 505 U.S. 833, 874 (1992) (plurality opinion), with its rulings in some federalism cases, which may promote more specific rules such as a prohibition on “commandeering” state officers, see *Printz v. United States*, 521 U.S. 898, 925 (1997). See generally Kathleen M. Sullivan, *The Supreme Court, 1991 Term—Foreword: The Justices of Rules and Standards*, 106 HARV. L. REV. 22 (1992).

164. See, e.g., *Grutter v. Bollinger*, 539 U.S. 306, 326 (2003).

165. See, e.g., *Miss. Univ. for Women v. Hogan*, 458 U.S. 718, 723–24 (1982).

166. See, e.g., *City of Cleburne v. Cleburne Living Ctr.*, 473 U.S. 432, 440 (1985).

167. See *infra* Part III.D.

168. In the same term that *Heller* was decided, Justice Kennedy assessed trends in state policies regarding the death penalty to adjudicate an Eighth Amendment claim. See *Kennedy v. Louisiana*, 128 S. Ct. 2641 (2008) (invalidating the death penalty for child rape).

on its influence. First, judicial review cannot be fully detached from politics. If nothing else, the appointments process connects judicial personnel to organized interests and elected officials. The course of Second Amendment litigation depends, in part, on who will judge these cases in the future.

Second, and related, the federal judiciary does not have an impressive track record in making major policy changes.¹⁶⁹ Judges might resist the intense policy preferences of others for a time, but courts are not insulated in the long run. Thus the Supreme Court could not effectively desegregate public schools alone, and it did not resist New Deal innovations forever. It bears repeating that the gun rights movement began outside the courtroom, and that handgun bans were already quite unpopular at the national level. As should be apparent from our discussion in Part I, *Heller* stepped into an existing regulatory and political structure built up over many years. It did not discard that structure entirely. As it turns out, the revolution probably will be televised, but it almost certainly will not be litigated.

We might then predict that Second Amendment litigation will probably dampen regulatory diversity to some degree, without eliminating existing gun control within the political mainstream.¹⁷⁰ Surely the short-term impact of *Heller* is a reduction in policy variation by eroding the most assertive end of the regulatory spectrum. If the case is extended to state and local law, this effect could be more serious. Local outliers will not be able to sustain every local preference for strict gun control based on local conditions.

III. ON THREATS AND SIDESHOWS TO SOCIAL WELFARE

Heller establishes a limited core right to handgun possession in the home without necessarily meaning more. Courts could push further, and they have models for relatively assertive judicial review in other fields. But we doubt that constitutional litigation will radically change the character of firearms regulation in the United States. There are few if any examples of judicial power effectively implementing major social change. Courts tend to work at the margins of public policy, and *Heller* does not commit the Supreme Court to a more aggressive mission. That said, courts could use the Second Amendment to shape the future of gun control policy in significant ways.

169. See, e.g., NEIL K. KOMESAR, IMPERFECT ALTERNATIVES: CHOOSING INSTITUTIONS IN LAW, ECONOMICS, AND PUBLIC POLICY 250–54 (1994) (noting that courts can address only a small fraction of significant policy disputes); GERALD N. ROSENBERG, THE HOLLOW HOPE: CAN COURTS BRING ABOUT SOCIAL CHANGE? (2d ed. 2008).

170. A similar view is defended by Cass R. Sunstein, *Second Amendment Minimalism: Heller as Griswold*, 122 HARV. L. REV. 246, 263–65 (2008).

Our aim here is to speculate about the path of Second Amendment litigation to come. We attempt to identify issues that plausibly could be litigated and that could make a serious difference to social welfare based on current knowledge. It turns out that some hot topics destined for judicial resolution are of little or uncertain significance to sound and effective regulation of firearms, while possibly unappreciated constitutional arguments pose real concerns for social welfare over the longer term.

We begin with a short discussion of incorporation and an inquiry into whether the elimination of municipal handgun bans is truly a matter of major concern. We ask the same question regarding the looming litigation contest over a right to carry handguns in public. Then we turn to potential challenges that give us greater pause: attacks on a variety of laws and practices that treat guns as a special category, including excise taxes on firearms, gun design regulation, and even gun-oriented policing. Finally, we address the somewhat cloudy relationship between gun rights litigation and regulatory innovation.

A. Incorporation

Incorporation of Second Amendment norms against state and municipal action has become a highly salient legal issue after *Heller*. The Court's majority mentioned the question,¹⁷¹ and the city of Chicago is currently resisting incorporation in a lawsuit that challenges its handgun ban.¹⁷² It is a virtual certainty that the Supreme Court will confront the incorporation issue in the near future.

The significance of incorporation, however, is open to a measure of debate. Clearly a judicial refusal to enforce Second Amendment norms against state or local regulation would seriously undercut any practical importance of *Heller* and its progeny. The federal government has not been the principal source of gun control. The political environment has been such that aggressive gun control efforts tend to occur in a select set of states and cities; the absence of incorporation would leave those jurisdictions untouched by Second Amendment norms.¹⁷³

171. See *District of Columbia v. Heller*, 128 S. Ct. 2783, 2813 n.23 (2008).

172. See *supra* note 138.

173. One caveat is the possibility that state courts' understanding of state constitutional gun rights could be influenced by the Supreme Court's understanding of the Second Amendment, regardless of incorporation, and that the latter understanding could turn out to be expansive. Assessing the likelihood of this possibility is difficult. Even if the Supreme Court does take an expansive view of the amendment, state courts need not follow. See, e.g., *State v. Parker*, 987 P.2d 73, 77 n.1, 78 n.2 (Wash. 1999) (declining to conform state constitutional doctrine to a U.S. Supreme Court opinion on the

The question is whether a judicial decision in favor of incorporation would have much greater consequences. But we cannot answer without knowing how Second Amendment doctrine itself will develop. If *Heller* is interpreted narrowly such that only flat handgun prohibitions are declared invalid, then the impact on gun policy will not be dramatic, regardless of whether states and municipalities are subject to suit.¹⁷⁴ Of course judges could easily expand on *Heller*'s core right, and the mere threat of litigation can influence policymaking. But the potential impact of incorporation heavily depends on the as-yet unsettled content of Second Amendment doctrine.

In any event, a fair guess is that the *Heller* majority is poised to incorporate. Those five justices reserved the issue, but they gratuitously observed that nineteenth-century precedents insulating state action had not employed the Court's more recent approach to incorporation.¹⁷⁵ In addition, the majority's rendering of the Second Amendment right was emphatically personal. This makes it difficult to resist application against the states with an argument that the amendment was written to protect the militias of those same states. Moreover, the majority's discussion of Reconstruction Era sources indicates a belief that those involved in creating the Fourteenth Amendment were concerned about the gun rights of freed slaves.¹⁷⁶ This version of history would allow the Court to link gun rights to an anti-subordination effort very different from another strut in the individual rights heritage: *Dred Scott v. Sandford*.¹⁷⁷ In addition, if the question is whether the right is sufficiently "fundamental" to warrant enforcement against all levels of government,¹⁷⁸ the *Heller* opinion intimates an affirmative answer.¹⁷⁹

Fourth Amendment). *But cf.* FLA. CONST. art. 1, § 12 (linking state search and seizure guarantees to U.S. Supreme Court doctrine).

174. See also *infra* Part III.B (discussing the limited importance of handgun bans).

175. See *Heller*, 128 S. Ct. at 2813 n.23.

176. See *id.* at 2809–11.

177. 60 U.S. (19 How.) 393, 450 (1857) (opinion of Taney, C.J.) (dictum) (referring to the right to keep and bear arms in a list of unconstitutional federal "powers . . . in relation to rights of person" (quoted in *Parker v. District of Columbia*, 478 F.3d 370, 391 (D.C. Cir. 2007), *aff'd sub nom.* *District of Columbia v. Heller*, 128 S. Ct. 2783 (2008)).

178. See *Duncan v. Louisiana*, 391 U.S. 145, 148–49 (1968) (regarding jury trial rights in criminal cases). Note that the plaintiffs challenging Chicago's handgun ban are asking the courts to reconsider the narrow understanding of the Fourteenth Amendment's Privileges or Immunities Clause in the *Slaughter-House Cases*, 83 U.S. (16 Wall.) 36 (1873), in addition to arguing for incorporation under the Due Process Clause of the Fourteenth Amendment. See Plaintiffs' Motion to Narrow Legal Issues at 4–5, *McDonald v. City of Chicago*, No. 08-CV-3645 (N.D. Ill. Oct. 21, 2008), available at <http://www.chicagoguncase.com/wp-content/uploads/2008/10/motionnarrowlegalissues.pdf>.

179. *Cf. Heller*, 128 S. Ct. at 2798 ("By the time of the founding, the right to have arms had become fundamental for English subjects.").

Finally, the Court could incorporate without totally repudiating *Presser v. Illinois*,¹⁸⁰ a key precedent in this area. The case rejected a gun rights claim under the Second and Fourteenth Amendments, but it involved state restrictions on unauthorized military organizations parading as such.¹⁸¹ This claim is far different from the demilitarized vision of gun rights endorsed in *Heller*. It seems that *Presser* comes out the same way under *Heller* regardless of the Court's position on incorporation—which is another reminder that the stakes of incorporation depend on the substance of the right to be enforced.

We cannot know with certainty how today's justices will respond to arguments on incorporation. The Court has seldom confronted the issue in recent decades, and it implicates critical judicial choices concerning federalism and constitutional jurisprudence more generally. But we can still conjecture as to the plausible substance and impact of Second Amendment rights after *Heller*, assuming that incorporation will happen.

B. Handgun Bans

Heller establishes that the current Supreme Court will not tolerate comprehensive handgun bans when such laws are challenged by citizens that the Court believes are otherwise entitled to possess handguns for the purpose of self-defense in the home. The question for us is whether this judicial commitment matters much, even if it applies against state and local action and not only the federal government and its enclaves. There are at least two perspectives from which to respond. The first perspective is political: It considers the viability of proposed handgun bans among policymakers. The second perspective assumes the enactment of handgun bans, and considers the likely consequences of such bans. As far as we can discern from the available evidence, neither perspective does much to establish the significance of the handgun ban issue for social welfare.

1. A Political Perspective

Of all the forms that gun control takes in America, comprehensive handgun bans are among the least popular. This policy has never been an element of federal law or, it seems, a realistic proposal at the national level. A handful of municipalities have enacted handgun prohibitions, including the major metropolises of Chicago and the District of Columbia. But these

180. 116 U.S. 252 (1886).

181. See *id.* at 264–66.

locations and their political settings are fairly unique. It is possible that the center of political gravity in other localities is such that handgun bans would be enacted but for state-level politics that prevent them. In any case, most states now have preemption legislation or precedent that allocates lawmaking authority over firearms to state legislatures rather than city councils.¹⁸²

Of course, if handguns bans were generally popular, then elevating the level for gun control policymaking from cities to states would not necessarily lead to less territory being covered by such bans. But they are not popular, at least according to recent public opinion polling. In a 2007 Gallup Poll, 68 percent of respondents opposed a handgun ban.¹⁸³ Opposition reached across several demographic categories. Respondents with postgraduate education expressed opposition at a 60 percent level, and 57 percent of women over age fifty were also opposed.¹⁸⁴

It is worth emphasizing that litigation threats are an unlikely explanation for the rarity of handgun bans. Until 2008, Second Amendment arguments were ineffectual in courts, and state constitutional adjudication was not radically more inhibiting.¹⁸⁵ Handgun bans have been unpopular with policymakers for other reasons. From what we can gather, the political resistance to handgun bans is not the result of a well-organized gun rights minority blocking the preferences of a dispersed majority. This public choice story might fit the resistance to other gun-control proposals—some of which show national majority support in polling¹⁸⁶—but it is probably a weak explanation for the rarity of handgun prohibitions.¹⁸⁷

There is a notable qualification here. Political environments are not stable over the long term and so there is no guarantee that popular preferences regarding handgun regulation are fixed. Demand for more aggressive legislation in urban areas could develop over time, at least in the absence of serious

182. See Beckman, *supra* note 90; see also Sippel v. Nelder, 101 Cal. Rptr. 89, 89–90 (Ct. App. 1972) (invalidating a San Francisco handgun permitting system in favor of state law).

183. See GALLUP POLL SOCIAL SERIES: CRIME 252 (2007) (question 21).

184. See *id.*; see also Sunstein, *supra* note 170, at 252 (asserting that “national opposition to a ban on handguns has been larger and more consistent in recent years”).

185. See, e.g., Quilici v. Village of Morton Grove, 695 F.2d 261, 271 (7th Cir. 1982) (upholding a local operative handgun ban against Second Amendment, Ninth Amendment, and state constitutional claims); Kalodimos v. Village of Morton Grove, 470 N.E.2d 266, 278–79 (Ill. 1984) (rejecting a claim under a qualified state constitutional right to keep and bear arms).

186. See SMITH, *supra* note 15, at 1 (showing support for a variety of gun regulations).

187. However, we cannot rule out the possibility that there is an unorganized majority in some states that would prefer greater decentralization in gun control policymaking, but that is blocked by a better organized gun rights movement.

litigation threats.¹⁸⁸ Constitutional litigation has the potential to inhibit those political changes, certainly at the margins and possibly beyond. For some observers, this lock-in effect is desirable. But regardless of one's ideological predispositions on firearms regulation, *Heller* and its incorporation against municipal action might be important insofar as courts could drive a wedge between emerging political preferences and valid law. We discuss the chilling effects on policy innovation below.

2. A Policy Consequence Perspective

Even if judicial doctrine ultimately stands against handgun bans enacted by any level of government, one can ask whether these formal laws have much impact on social welfare. An effective judicial campaign to eliminate certain types of legislation is not necessarily a matter of serious concern if the targeted legislation is ineffectual. If, however, such legislation tends to reduce the prevalence of handgun ownership by raising the costs of acquisition, even if acquisition remains possible, then the question becomes how handgun ownership is related to crime and public health. There has been considerable research on this relationship.

a. Gun Prevalence, Crime, and Public Health

Firearms are the most lethal of the widely available weapons deployed in assaults, robberies, and self-defense. They are the great equalizer. With a gun, most anyone can threaten or inflict grave injury on another, even someone with greater skill, strength, and determination. With a gun, unlike a knife, one individual can kill another quickly, at a distance, on impulse.

The logical and documented result is that, when a gun is present in an assault or robbery, the victim is more likely to die. It is not only the assailant's intent that determines the outcome, but also the means of attack. This conclusion regarding instrumentality has been demonstrated in a variety of ways and is no longer controversial among social scientists.¹⁸⁹ Thus widespread

188. The Village of Morton Grove, which apparently enacted the first comprehensive municipal handgun prohibition, repealed its law after opponents filed suit in the wake of *Heller*. See Robert Channick, *Morton Grove's Historic Gun Ban Ends: Village's Law Falls to High Court Ruling*, CHI. TRIB., July 29, 2008 ("Fighting in court to try to keep the law would cost money the village does not have, officials said.").

189. See Cook, *supra* note 11, at 18–19; William Wells & Julie Horney, *Weapon Effects and Individual Intent to Do Harm: Influences on the Escalation of Violence*, 40 CRIMINOLOGY 265, 287–92 (2002); Franklin E. Zimring, *Is Gun Control Likely to Reduce Violent Killings?*, 35 U. CHI. L. REV.

gun use in violent crime *intensifies* violence, increasing the case-fatality rate. The United States is exceptional with respect to violent crime not because we have so much more of it, but because widespread gun availability and use means that our violence is so much more deadly than that of other Western nations.¹⁹⁰

The likelihood that a gun will be used in crime is closely linked to the general availability of guns, and especially handguns. In jurisdictions where handgun ownership is common, the various types of transactions by which youths and criminals become armed are facilitated. The list of transactions includes thefts from homes and vehicles, loans to family members and friends, and off-the-books sales. In an area with a high-prevalence of gun ownership, then, transactions in the secondary market are subject to less friction and may well be cheaper than in markets where gun ownership is rare.¹⁹¹ While there is no evidence that gun prevalence affects the rate of violent crime, gun prevalence does have a demonstrable effect on the likelihood that the assailants in robbery and assault will be armed with guns, resulting in a higher case-fatality rate than would otherwise occur.¹⁹²

Research on the effects of gun prevalence has been facilitated by the discovery of a useful proxy: the percentage of suicides committed with guns.¹⁹³ It allows us to analyze how gun use relates to the prevalence of gun ownership across states, or even counties. This proxy has been used to document a strong positive relationship between county gun prevalence and each of the following outcomes: the fraction of robberies involving guns; the fraction of homicides with guns; the likelihood that young men carry a gun; and, most important, the overall homicide rate.¹⁹⁴ Considerable care was taken in these studies to establish that the relationship was causal, although in the absence of experimental evidence there necessarily remains

721, 735–37 (1968); Franklin E. Zimring, *The Medium Is the Message: Firearm Caliber as a Determinant of Death From Assault*, 1 J. LEGAL STUD. 97 (1972).

190. See FRANKLIN E. ZIMRING & GORDON HAWKINS, CRIME IS NOT THE PROBLEM: LETHAL VIOLENCE IN AMERICA 51, 106–13 (1997) (comparing the United States with other developed nations in terms of violence, both life threatening and not).

191. See Philip J. Cook, Jens Ludwig, Sudhir Venkatesh & Anthony A. Braga, *Underground Gun Markets*, 117 ECON. J. F588, F589–90 (2007) (focusing on Chicago, emphasizing policing practices, and collecting survey data from other cities).

192. See COOK & LUDWIG, *supra* note 32, at 34, 35–36 (citing Philip J. Cook, *The Effect of Gun Availability on Robbery and Robbery Rates: A Cross Section Study of 50 Cities*, 3 POL'Y STUD. ANN. REV. 743, 743–81 (1979)).

193. See Azrael et al., *supra* note 16; Gary Kleck, *Measures of Gun Ownership Levels for Macrolevel Crime and Violence Research*, 41 J. RES. CRIME & DELINQ. 3, 8 (2004).

194. See Philip J. Cook & Jens Ludwig, *Does Gun Prevalence Affect Teen Gun Carrying After All?*, 42 CRIMINOLOGY 27, 36 (2004); Cook & Ludwig, *supra* note 10, at 387–88 (connecting the proxy for county-level gun prevalence to overall homicide rates).

some doubt. The bulk of the evidence at this point suggests more prevalent handgun ownership engenders more widespread use of guns in crime as well as higher social costs of crime.

From a public health perspective, a concern for the effects of gun prevalence on suicide is as important as the effect on homicide. In fact, gun suicide is more common than gun homicide, although it seems fair to say that the threat of suicide does not have the same broad effects on quality of life as does the threat of violent crime. The assertion that gun availability influences the suicide rate may be questioned on the grounds that, unlike in the case of assault, someone who wishes to commit suicide has a choice of alternative mechanisms that can be equally as effective as a gunshot. Nonetheless, in the United States a majority of suicides are committed with guns, while guns are involved in only a small fraction of unsuccessful suicide attempts. Those determined to kill themselves can find a way; but, for those attempting suicide on impulse, the lethality of readily available and psychologically acceptable weapons appears to matter. A recent review of the evidence by Matthew Miller and David Hemenway collects numerous case control studies comparing gun-owning households to observably similar households without guns, as well as ecological research pointing to the same conclusion.¹⁹⁵ While this empirical research helps make the case, it is the logic and descriptive information on suicide that is most compelling to us.

If an ultimate consequence of *Heller* is increased handgun ownership in some jurisdictions, these likely effects on violent crime and suicide may be viewed as tangential to the intended effect of the decision—to safeguard the right of trustworthy householders to defend their home against intruders. In that light, perhaps the most relevant consequences of increased gun prevalence are the effect on residential burglary rates and home-invasion rates. Unfortunately we have no reliable data on the frequency with which householders actually do use a gun to defend against home invasion, or with what degree of success. Certainly it happens, but how frequently remains a mystery. Survey data do not provide a reliable basis for finding the answer because self-reports of these events are unreliable. Moreover, the estimated frequencies differ by an order of magnitude, perhaps depending on how the questions are asked.¹⁹⁶

195. See Mark Duggan, *Guns and Suicide*, in EVALUATING GUN POLICY: EFFECTS ON CRIME AND VIOLENCE, *supra* note 89, at 41, 41; Matthew Miller & David Hemenway, *Guns and Suicide in the United States*, 359 NEW ENG. J. MED. 989, 990 (2008); Matthew Miller et al., *Household Firearm Ownership and Rates of Suicide Across the 50 United States*, 62 J. TRAUMA, INJ., INFECTION & CRITICAL CARE 1029 (2007).

196. See HEMENWAY, *supra* note 45, at 66–69 (pointing to a large difference between assertions of some gun proponents and results from the National Crime Victimization Survey, which posed open questions to people who had actually reported an incident).

However, we can estimate the influence of gun prevalence on burglary rates and patterns. One study, which used a variety of data sets and methods, concluded that the prevalence of gun ownership in a county is positively related to the burglary rate.¹⁹⁷ This association does not appear spurious, but rather most likely results from an inducement effect. Other things equal, residential burglary tends to be more profitable in communities where guns are likely to be part of the available loot. The rate of “hot” burglaries (break-ins of occupied homes) is also positively related to gun prevalence, although the effect is small.¹⁹⁸

Let us review the chain of logic. To the extent that *Heller* and subsequent Court decisions make handguns cheaper and more readily available in some jurisdictions, those jurisdictions will likely experience an increase in demand for handguns and ultimately an increase in the prevalence of ownership. An increase in ownership prevalence will in turn make guns more readily available to criminals, thereby increasing gun use in violent crime and suicide, resulting in an increased death rate from intentional violence. Burglary rates are also likely to increase as burglary becomes more lucrative. But as it turns out, the first link in that chain—the connection between invalidating handgun bans and increased prevalence of handgun ownership—is the weakest empirically. It requires further discussion.

b. Will Handgun Prevalence Increase in the District?

The District of Columbia’s ban on handgun acquisitions was enacted in 1976. But, by the late 1980s, the notion that the ban had achieved anything useful seemed unlikely, given common references to the city as the “murder capital of the country.”¹⁹⁹ Of course we do not know how high the homicide rate spike would have been in the absence of the ban. Yet there is good evidence that the ban was ineffective in preventing members of the public from arming themselves during the turbulence of the 1980s.

In fact, homicides and suicides declined by approximately 25 percent around the time of the ban, led by reductions in homicides and suicides with guns²⁰⁰—before the tsunami of violence stemming from the introduction

197. See Philip J. Cook & Jens Ludwig, *Guns and Burglary*, in *EVALUATING GUN POLICY: EFFECTS ON CRIME AND VIOLENCE*, *supra* note 89, at 74, 76.

198. See *id.* at 102–04.

199. Matthew Cella, *Murder Rate Raises Concern*, WASH. TIMES, Apr. 28, 2003, at B01. *But cf.* Vance Garnett, Op-Ed, *Homicide: Will the Shake-Up Help?*, WASH. POST, Sept. 28, 1997, at C08 (asserting that *Newsweek* coined the term with respect to D.C. in 1941).

200. See Colin Loftin et al., *Effects of Restrictive Licensing of Handguns on Homicide and Suicide in the District of Columbia*, 325 NEW ENG. J. MED. 1615, 1616–17 (1991).

of crack cocaine in the mid-1980s. Still controversial is the issue of how much of this decline can be attributed to the handgun ban rather than other factors.

In an influential article published in the *New England Journal of Medicine*, criminologist Colin Loftin and his colleagues showed that, following the ban, homicides and suicides declined in Washington, D.C., and by a greater margin than in the city's Maryland and Virginia suburbs.²⁰¹ A challenge to the use of affluent suburbs as a control group for the city²⁰² prompted additional research using Baltimore data. Like the District, Baltimore also experienced a decline in firearm homicides around 1976. But unlike the District, Baltimore experienced a reduction in *both* non-gun and gun homicides, suggesting some general change in Baltimore during this time period that was not specific to guns. Further, Baltimore did not experience a decline in gun *suicides*.²⁰³

It is interesting, then, to analyze gun-ownership rates in the District of Columbia and Baltimore during this period. Figure 1 tracks the proxy for gun ownership from the period before the District's ban was enacted until the end of the 1990s. The rate jumps up in the late 1980s, just as the crack epidemic was pushing up criminal violence—but Baltimore had quite a different trajectory during that time. Gun ownership has declined in the District since the early 1990s, and in recent years has dropped lower than when the ban was initiated in 1976 (and far lower than the national average). Perhaps the lesson from the early years is that a ban in a small jurisdiction with porous borders is difficult to enforce, especially in the face of broad concern caused by a major crime epidemic. Oddly, this may be good news for the District: It suggests that the removal of the handgun ban may have little effect, standing alone, on the prevalence of handgun ownership.

The data hint at a similar pattern in Chicago, home to the other notable handgun ban susceptible to legal challenge following *Heller*. In 1982, Chicago essentially banned private ownership of handguns, with a grandfather exception enabling those already in possession of handguns to register them with the city. Figure 2 shows that our proxy for gun ownership in all of Cook County declined somewhat during a brief period after the city's ban was enacted, but then reverted to pre-ban levels.²⁰⁴ Whether the numbers

201. See *id.*

202. See Chester L. Britt et al., *A Reassessment of the D.C. Gun Law: Some Cautionary Notes on the Use of Interrupted Time Series Designs for Policy Impact Assessment*, 30 L. & SOC'Y REV. 361 (1996).

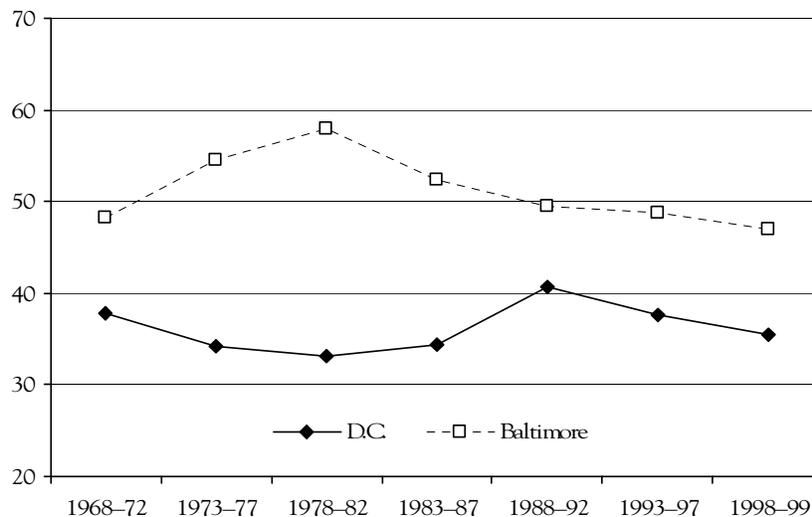
203. See David McDowall et al., *Using Quasi-Experiments to Evaluate Firearms Laws: Comment on Britt et al.'s Reassessment of the D.C. Gun Law*, 30 LAW & SOC'Y REV. 381 (1996).

204. See also Philip J. Cook & Jens Ludwig, *The Effects of the Brady Act on Gun Violence*, in GUNS, CRIME, AND PUNISHMENT IN AMERICA 283, 294 (Bernard E. Harcourt ed., 2003).

in Chicago proper followed the same pattern is unknown; the city has only about half of the county's suicides.²⁰⁵

In sum, the effect of these local handgun bans on the prevalence of gun ownership is uncertain, although there is some indication that it has not been large. This does not mean that these and other interventions have no effect on the prices and availability of guns. Fortunately, the underground gun market in Chicago does not work well, and young people and criminals tend to have a difficult time obtaining a gun if they are not gang members.²⁰⁶ The handgun ban and the ban on licensed dealers in that city may contribute to these frictions. But available data leads us to question whether judicial invalidation of (weakly enforced) handgun bans would seriously threaten social welfare. The general political hostility to such prohibitions adds to our skepticism. It is therefore plausible that the most obvious implication of *Heller* for formal law has little significance for sound and politically feasible gun control.

FIGURE 1: PERCENTAGE OF SUICIDES COMMITTED WITH GUNS IN WASHINGTON, D.C., AND BALTIMORE, MARYLAND²⁰⁷

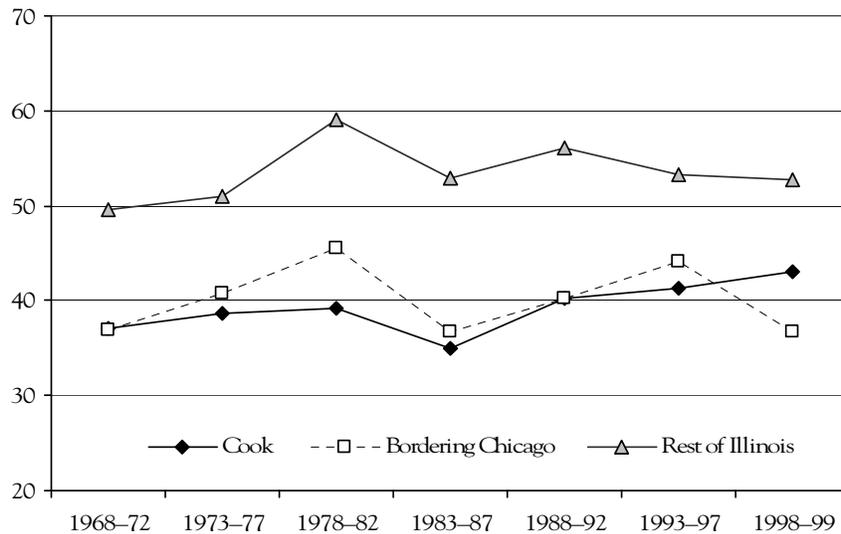


205. See ILL. CTR. FOR HEALTH STATISTICS, ILL. DEP'T OF PUB. HEALTH, VITAL STATISTICS ILLINOIS 2002, at 95, 127 (2006), available at http://www.idph.state.il.us/pdf/2002_Vital_Statistics_Illinois.pdf.

206. See Cook et al., *supra* note 191, at F598, F601-02.

207. Figure 1 presents five-year averages for the percentage of suicides committed with guns, a proxy for household gun ownership rates. See *supra* notes 193-194.

FIGURE 2: PERCENTAGE OF SUICIDES COMMITTED WITH GUNS IN COOK COUNTY AND IN THE REST OF ILLINOIS²⁰⁸



C. Public Places and Concealed Carry

In addition to the issues of incorporation and municipal handgun bans, Second Amendment litigation will likely address a right to carry weapons in public places. Whether otherwise qualified gun owners should be entitled to carry firearms beyond their homes and into generally accessible locations, including a right to carry concealed firearms, has been on the policy agenda for more than a century. The Supreme Court, in dicta from 1897, indicated that the Second Amendment does not protect concealed carry.²⁰⁹

But this suggestion might be reconsidered or left narrow by reliance on *Heller's* self-defense theme. It could be argued that protecting oneself from violence in high-crime areas is no more important within the home than out in the open. True, this argument runs into some of *Heller's* hedging on handgun rights. During its discussion of limits on Second Amendment rights, the majority opinion observed that nineteenth-century state court

208. Figure 2 presents five-year averages for the percentage of suicides committed with guns, a proxy for household gun ownership rates. See *supra* notes 193–194.

209. See *Robertson v. Baldwin*, 165 U.S. 275, 281–82 (1897) (“Thus, the freedom of speech and of the press (article 1) does not permit the publication of libels, blasphemous or indecent articles, or other publications injurious to public morals or private reputation; the right of the people to keep and bear arms (article 2) is not infringed by laws prohibiting the carrying of concealed weapons . . .”).

cases had usually rejected constitutional claims to a right of concealed carry.²¹⁰ Elsewhere, however, the majority noted some nineteenth-century judicial support for a right to *unconcealed* pistols.²¹¹ Part of that jurisprudence is, to put it politely, unrelated to modern forms of public policy analysis, but it does suggest that gun rights can extend into public places without including concealed carry. Thus an 1850 decision from Louisiana lauded “a manly and noble defence” with unconcealed weapons while disparaging “secret advantages and unmanly assassinations” with concealed weapons.²¹²

However the courtroom arguments about gun rights in public (or manliness) might play out in the twenty-first century, our question is whether one result would have significantly different consequences from another. It is certainly true that permit systems of some kind are a politically viable form of gun control in many jurisdictions. Indeed, almost all states require that legal gun owners obtain a permit to carry a concealed firearm in public, although over time a growing number of states have relaxed their requirements for issuing such permits.²¹³ What would it mean to social welfare if otherwise qualified citizens possessed a federal constitutional right to carry guns in public, whether openly in a holster or concealed on their person? What if this right were subject to approval through a permit system? There is no uncontroversial answer to these questions, especially in light of the different forms that a right to public carry might take. But we can present salient arguments and existing empirical data.²¹⁴

210. See *District of Columbia v. Heller*, 128 S. Ct. 2783, 2816 (2008).

211. See *id.* at 2809, 2818.

212. *State v. Chandler*, 5 La. Ann. 489, 490 (1850).

213. See John A. Dvorak, *Concealed Weapons Laws Taking Hold, Broadening Across U.S.*, KAN. CITY STAR, Mar. 2, 2002 (Domestic News).

214. It is possible that law enforcement officers' stop-and-frisk authority would be curtailed if the courts established a right to carry concealed weapons in public. Police officers might have more difficulty establishing reasonable suspicion of criminal activity to support a stop. See *Terry v. Ohio*, 392 U.S. 1, 30–31 (1968); Lawrence Rosenthal, *Second Amendment Plumbing After Heller: Of Standards of Scrutiny, Incorporation, Well-Regulated Militias, and Criminal Street Gangs*, 41 URB. LAW. 1, 37–48 (2009) (raising concerns about the potential effects of an extension of *Heller*). However, *Terry* stops might often be justified on alternative grounds not necessarily related to illegal gun possession, such as suspicion of drug crimes or even curfew violations. Before confidently predicting the implications of extending *Heller* for stop-and-frisk tactics, we need to know how often alternative grounds for a stop are available, and whether substantive criminal law might be expanded to generate those grounds. These kinds of adjustments would not be shocking in the field of law enforcement. In any event, the officer safety justification for the stop-and-frisk doctrine seems adequate to preserve pat downs and weapons seizures during certain police-citizen encounters regardless of whether police suspect unlawful or lawful gun possession. See *Terry*, 392 U.S. at 23–24, 29–30. Nor should we assume that, if *Heller* were extended to public places, *Terry* doctrine will remain static. However, a remaining hitch for police officers might be their authority to keep seized weapons at the end of a street encounter if the citizen is not arrested, lawfully possesses the firearm, and asks for the weapon back on the spot. These interchanges

Those who wish to encourage gun carrying in public places by private parties argue that the increased likelihood of encountering an armed victim will deter criminals. This possibility receives some support from prisoner surveys: 80 percent of prisoners in one survey agreed with the statement that “a smart criminal always tries to find out if his potential victim is armed.”²¹⁵ But the same data also raise the possibility that an increase in gun carrying could prompt an arms race. Two-thirds of prisoners incarcerated for gun offenses reported that the chance of running into an armed victim was very or somewhat important in their own choice to use a gun.²¹⁶ Currently, criminals use guns in only about 25 percent of noncommercial robberies and 5 percent of assaults.²¹⁷ If increased gun carrying among potential victims causes criminals to carry guns more often themselves, or become quicker to use guns to avert armed self-defense, the end result could be that street crime becomes more lethal.²¹⁸

In a provocative series of research papers and books, economist John Lott has argued that the deterrent effects of moving from restrictive to permissive gun-carrying laws dominate.²¹⁹ On the other side economist John Donohue argues that, while Lott’s analysis improves on previous research on this topic, Lott’s findings cannot support the conclusion that ending restrictive concealed-carry laws reduces crime.²²⁰ Donohue’s re-analysis of the Lott data indicates that states that eventually ended restrictive concealed-carry laws had systematically different crime trends from the other states even before these law changes

might be risky for police officers, and yet a right to demand immediate return of the weapon could follow from a broad view of the Second Amendment.

215. WRIGHT & ROSSI, *supra* note 27, at 145.

216. *See id.* at 147.

217. *See* MICHAEL R. RAND, U.S. DEP’T OF JUSTICE, CRIMINAL VICTIMIZATION, 2007, at 6 (2008), available at <http://www.ojp.usdoj.gov/bjs/pub/pdf/cv07.pdf> (reporting, as well, that offenders used firearms in 7.1 percent of all violent crimes in 2007).

218. The policy analysis is complicated by the choice between rights to carry concealed as opposed to unconcealed weapons outside the home. If people have a right to carry handguns in public but the government mandates unconcealed carry for those who choose to do so, then potential aggressors would receive reliable information regarding which would-be victims are most vulnerable. Not seeing a handgun would be closer to knowing that a person is not carrying one. Of course, it could be that unconcealed carry mandates cannot be effectively enforced. Nevertheless, such a regime of rights and regulations (public carry with mandatory nonconcealment) could be meaningfully different from a regime in which people have a legal right to choose whether or not to conceal the handguns that they choose to carry in public (public carry with optional concealment)—or in which government mandates concealment for any person otherwise entitled to possess a handgun in public (public carry with mandatory concealment). Each combination probably has different informational effects.

219. *See* LOTT, *supra* note 78, at 115; John R. Lott & David B. Mustard, *Crime, Deterrence and Right-To-Carry Concealed Handguns*, 26 J. LEGAL STUD. 1 (1997).

220. *See* John J. Donohue, *The Impact of Concealed-Carry Laws*, in EVALUATING GUN POLICY: EFFECTS ON CRIME AND VIOLENCE, *supra* note 89, at 287, 289–90.

went into effect. The tendency to adopt the law under study following an unusual spike in crime—which would ordinarily be followed by a reduction regardless of whether a new law were passed—makes the analysis problematic. Indeed, Donohue finds much evidence in support of the view that these laws increased crime rates in the 1990s, when crime was generally declining.²²¹ Hence the estimated treatment effect may be attributable to whatever unmeasured factors caused crime trends to diverge before the laws were enacted.

Regardless of who gets the better of this particular debate, we want to stress the issue of magnitudes. Whether the net effect of relaxing concealed-carry laws is to increase or reduce the burden of crime, there is good reason to believe that the net is not large. One study found that in twelve of the sixteen permissive concealed-carry states studied, fewer than 2 percent of adults had obtained permits to carry concealed handguns.²²² And the actual change in gun-carrying prevalence will be smaller than the number of permits issued would suggest, because many of those who obtain permits were already carrying guns in public.²²³ Moreover, the change in gun carrying appears to be concentrated in rural and suburban areas where crime rates are already relatively low, among people who are at relatively low risk of victimization—white, middle-aged, middle-class males.²²⁴ The available data about permit holders also imply that they are at fairly low risk of misusing guns, consistent with the relatively low arrest rates observed to date for permit holders.²²⁵

Based on available empirical data, therefore, we expect relatively little public safety impact if courts invalidate laws that prohibit gun carrying outside the home, assuming that some sort of permit system for public carry is allowed to stand. The result would most likely be a modest change in gun carrying rates among a subset of the population that is itself at relatively low risk of either committing gun crimes or being victimized by them. Of course, we cannot confidently predict that a judicially enforceable right to public carry would not change the composition of those who carry guns in public; and the

221. See *id.* at 312–13. See generally Ian Ayres & John J. Donohue, *Shooting Down the “More Guns, Less Crime” Hypothesis*, 55 STAN. L. REV. 1193 (2003).

222. See Cook & Ludwig, *supra* note 11, at 725 (citing J.M. Hill, *The Impact of Liberalized Concealed Weapon Statutes on Rates of Violent Crime* (1997) (unpublished senior thesis, Duke University, Public Policy) (on file with authors)).

223. See Gail Robuck-Mangum, *Concealed Weapon Permit Holders in North Carolina: A Descriptive Study of Handgun-Carrying Behavior* 40 (1997) (unpublished master’s thesis, University of North Carolina, School of Public Health) (on file with authors).

224. See Cook & Ludwig, *supra* note 11, at 726 (citing Hill, *supra* note 222).

225. See H. STERLING BURNETT, NAT’L CTR. FOR POLICY ANALYSIS, *TEXAS CONCEALED HANDGUN CARRIERS: LAW-ABIDING PUBLIC BENEFACTORS 1* (2000), available at <http://www.ncpa.org/pdfs/ba324.pdf> (reporting that concealed carry licensees in Texas had lower arrest rates than the rest of the population).

effects on public safety could vary depending on whether any such right includes the choice to conceal as opposed to openly carry a firearm outside the home. As well, our analysis would be different if a right to public carry were coupled with an enlargement of the class of people entitled to acquire firearms, or if government were not allowed to operate a permit system at all. Even if the test for issuance is fairly permissive, imposing a permit requirement might well affect the composition of gun carriers in positive ways. On the available data, however, the issue of public carry standing alone seems more likely to be a source of litigation than a serious threat to social welfare.

D. Gun-Targeted Taxes, Safety Programs, and Policing

Given the discussion above and the *Heller* majority's apparent commitment to immunizing much of the existing gun control regime, the stakes of Second Amendment litigation seem low. But there might be greater threats to sound public policy in the future.

Our first concern is that courts might someday hold that special regulatory treatment of firearms is *prima facie* evidence of a constitutional violation. That is, judges might consider it presumptively problematic that government action singles out firearms or handguns, and then require a justification so demanding that reasonably reliable evidence and logic become insufficient for gun control to survive. Demanding anything resembling mathematical certainty that a regulation will enhance public safety at acceptable cost would jeopardize large swaths of existing gun control efforts, and thwart potential innovation in the future. Everything from gun taxes, to gun design requirements, to gun safety programs involving permits and licenses, to gun registration and information collection efforts, to gun-oriented policing in high-violence neighborhoods could be disrupted—unless regulators show analogous treatment of other products or otherwise survive skeptical judicial scrutiny of the program's value.

Nothing in *Heller* commits the Court to this path, but it would not be entirely novel in constitutional adjudication. Free speech and free exercise doctrines include this sort of anti-targeting structure.²²⁶ In these fields the modern Court has often concentrated on government action that not only burdens behavior the justices believe constitutionally valued, but that singles out such behavior for special disfavor. To be clear, this anti-targeting approach

226. See Adam M. Samaha, *Litigant Sensitivity in First Amendment Law*, 98 NW. U. L. REV. 1291, 1294 (2004).

does not fit all of First Amendment doctrine.²²⁷ Nor is it easy to identify which forms of regulatory targeting ought to be problematic. This requires a theory. For instance, the Court has been relatively unconcerned when government regulates the time, place, or manner of speech without explicitly targeting speech content,²²⁸ even though such choices can be crucial to speakers and audiences. Regardless, one must have a justifiable definition of “the freedom of speech” before one can tell whether regulation targets the phenomenon. It is not at all obvious how “the right to keep and bear arms” should be fully specified, and then how the doctrinal categories from free speech or free exercise litigation might be imported into the gun rights field. It is nevertheless worth raising the First Amendment analogy. The *Heller* majority did so in several places.²²⁹

Consider in this regard a tributary of speech doctrine that leans hard against special taxation of the traditional press. In 1983, the Court declared invalid a state tax on paper and ink used for producing publications, with exemptions for the first \$100,000 worth—even though it appeared that the complaining newspapers would have paid more under the state’s general sales tax.²³⁰ On the other hand, the Court has repeatedly rejected press claims for exemption from regulation that reaches other industries, despite the real economic burdens that may be imposed on the media; the Court grants media operations no constitutional immunity from labor or antitrust laws that are applicable to other businesses.²³¹ This kind of logic might be exported to Second Amendment litigation. Indeed, regulatory cost concerns have already arisen after *Heller*. Plaintiffs challenging gun control in Chicago are not only objecting to the city’s handgun ban, they also seek invalidation of a recurring firearms registration and fee requirement.²³²

Now consider the federal excise tax. Since 1919, the federal government has collected an excise tax on firearms.²³³ This one-time tax on sales now

227. See *id.* at 1317–18, 1355–71 (identifying situations when claimant conduct matters to First Amendment doctrine and its functions).

228. See, e.g., *Ward v. Rock Against Racism*, 491 U.S. 781, 791 (1989).

229. See *District of Columbia v. Heller*, 128 S. Ct. 2783, 2790–91, 2797, 2799, 2805, 2812, 2817 n.27, 2821 (2008) (connecting First and Second Amendment text, history, and judicial treatment).

230. See *Minneapolis Star & Tribune Co. v. Minn. Comm’r of Revenue*, 460 U.S. 575, 577–79, 588–91 (1983) (expressing concern that judges will not be able to calculate tax burdens); *id.* at 597–98 (Rehnquist, J., dissenting) (comparing liability under the sales tax). To be fair to the majority, the sales tax was not necessarily the correct baseline for comparison. Exemptions to the paper-and-ink tax meant that only a few large newspapers paid the tax.

231. See *Cohen v. Cowles Media Co.*, 501 U.S. 663, 669–70 (1991); *Associated Press v. NLRB*, 301 U.S. 103, 132–33 (1937).

232. See *supra* note 138.

233. See Revenue Act of 1918, Pub. L. No. 254, § 900(10), 40 Stat. 1058, 1122 (codified as amended in scattered sections of 26 U.S.C.).

stands at 10 percent of the manufacturer's price for handguns and 11 percent for long guns.²³⁴ At least part of this tax is surely passed along to consumers. Even if a tax burden by itself will not trigger heightened judicial skepticism, a post-*Heller* judiciary might nevertheless ask whether a firearms tax law is special compared to other taxation schemes and whether the government can explain the differences persuasively. If firearms are taxed like sporting goods, perhaps judges become passive; but if they are taxed in a unique way, perhaps judges become inquisitive. It is of course possible for government lawyers to defend special treatment for firearms by linking their prevalence or misuse to social harm and to the level of taxation or other regulation in question. But case outcomes would depend upon what kind of logic judges find most persuasive and how much evidence they demand to support the regulation. Taxation can be the product of political opportunity and demand elasticities, rather than distinctions that a judge deems principled.

If courts are sufficiently demanding of evidentiary support and if they are sufficiently sensitive to cost increases from firearms regulation, there could be major losses in social welfare. Minimizing the cost of acquiring firearms obviously benefits those who sell or enjoy possessing them, but these gains have attendant threats. One worrisome possibility is that concerned judges would invalidate experimental gun control efforts or targeted taxation that nevertheless have a reasonable chance of seriously improving public health and safety. Furthermore, gun-targeted laws can be designed to offset negative externalities that empirical study associates with firearms. By one estimate, keeping a handgun in the home is associated with at least \$600 per year in externalities.²³⁵ On the usual logic of corrective taxation, it would make sense to raise the current firearms tax rate so that handgun owners internalize the full social costs of their choices.²³⁶ Attempts to tax or otherwise regulate

234. See Alcohol & Tobacco Tax & Trade Bureau, Dep't of the Treasury, Tax and Fee Rate, http://www.ttb.gov/tax_audit/atftaxes.shtml (last visited May 23, 2009). Ordinary wine is taxed at only 21¢/bottle. See *id.*

235. See Cook & Ludwig, *supra* note 10, at 390.

236. Liability insurance is an alternative mechanism for the internalization of externalities associated with gun ownership. A standard homeowners' insurance policy ordinarily covers liability for accidents involving guns, but often has an exemption for intentional harms, or even for harms resulting from criminal acts. See Tom Baker & Thomas O. Farrish, *Liability Insurance & the Regulation of Firearms*, in *SUING THE GUN INDUSTRY*, *supra* note 92, at 292, 299; Tom Baker, *Liability Insurance at the Tort-Crime Boundary*, in *FAULT LINES: TORT LAW AND CULTURAL PRACTICE* (D.M. Engle & M. McCann eds., forthcoming 2009) (manuscript at 7), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1314309. It is not clear how far liability or liability coverage extends for cases in which the gun is transferred by the owner to someone else, or is stolen, and then misused. To the best of our knowledge, no states or localities require gun owners to obtain such insurance. The threat of litigation following *Heller* could stifle local experiments with such policies.

firearms based on estimates of their social costs are threatened by constitutional doctrine that flatly disfavors such special treatment absent conclusive proof of those social costs. Even information collection systems could be at risk of invalidation.²³⁷

To economists, the effect of taxation and other requirements on the price of guns is not just an incidental detail, but rather may have an important effect on gun sales, use, and misuse. It seems apparent that the most important health-related outcome likely to come from the cigarette litigation has been the increase in the price of cigarettes resulting from the financial settlement with the states.²³⁸ The tax on new guns, though much more modest proportionally, should also have some effect on demand, reducing the number of guns and the prevalence of gun ownership by some amount. The economic logic here rests on the strong presumption that a tax on new guns will be passed on to the secondary market by restricting the quantity available from the primary market.²³⁹ The same price effect can be achieved by imposing permit fees or by establishing minimum quality standards—as with the ban on imports of low-quality handguns—or by requiring special features on new guns, such as locking devices or microstamp capability. But these initiatives tend to make guns special from a regulatory perspective.

237. The public safety consequence of repealing licensing and registration systems is a bit unclear based on available evidence. These systems do provide information regarding who owns which guns, information that could prove useful to law enforcement investigations. The most vivid example is in the future. The California law requiring pistols sold after 2010 to have micro-stamp capability will be more useful if the state is allowed to continue handgun registration; the regulatory combination should help investigators connect shell casings found at the scene of a crime to the current or recent owner of the gun. Unfortunately, evaluation of existing state-level licensing and registration systems is forced to rely on weak research designs, yielding evidence for regulatory impact on immediate output measures but not on outcomes of more direct policy interest. For example, D.W. Webster et al., *Relationship Between Licensing, Registration and Other Gun Sales Laws and the Source State of Crime Guns*, 7 INJ. PREVENTION 184 (2001), finds some effect of licensing and registration requirements on the fraction of confiscated crime guns that were first purchased out of state. See *id.* at 188. How informative this is about the ease with which criminals can obtain guns, or ultimately the overall rate of gun crime within a community, is unclear. A study of the federal Brady Act suggests the ability of the secondary gun market to shift, and at least partially offset, changes to the supply side of the market. After the Brady Act was enacted, Chicago experienced a large drop in the share of crime guns first sold out of state, yet the fraction of homicides committed with a gun did not seem to change at all. See Cook & Braga, *supra* note 27, at 304–07; Philip J. Cook & Jens Ludwig, *Pragmatic Gun Policy*, in *EVALUATING GUN POLICY: EFFECTS ON CRIME AND VIOLENCE*, *supra* note 89, at 1, 21–22.

238. See Frank J. Chaloupka & Kenneth E. Warner, *The Economics of Smoking*, in 1B HANDBOOK OF HEALTH ECONOMICS 1539, 1546–56 (Anthony J. Culyer & Joseph P. Newhouse eds., 2000) (reviewing studies for the proposition that monetary price increases tend to reduce cigarette demand, despite the product's addictive qualities).

239. See Philip J. Cook & James A. Leitzel, “Perversity, Futility, Jeopardy”: *An Economic Analysis of the Attack on Gun Control*, LAW & CONTEMP. PROBS., Winter 1996, at 91, 104–05 fig.2.

We have reason to believe, however, that courts will not aggressively follow an anti-targeting theme in Second Amendment doctrine. First, for reasons noted above, judges are unlikely to radically uproot gun control regardless of the doctrinal forms they adopt. Second, an anti-targeting theme is not necessarily sensible for the Second Amendment as a matter of lawyers' logic. It depends on what motivates courts to single out singling out, so to speak.

Part of the motivation derives from a conclusion that an enormous variety of government action can negatively influence the exercise of constitutionally valued behavior, and that not every adverse effect can or should be policed by courts.²⁴⁰ This limit on judicial ambition does seem equally applicable to Second Amendment litigation. If mass media must pay property taxes, and if the Constitution is no barrier to enforcing religiously-neutral drug laws against religious ritual,²⁴¹ then it is difficult to see why handguns cannot validly be subject to a general sales tax or to pre-market approval from a product safety commission, for example.

The complication arises from the necessity of identifying which forms of regulatory targeting might be constitutionally troubling. It is not enough for a court to recognize constitutional value in the private conduct at issue. Such value is jeopardized whether or not regulators single it out for special treatment. To enforce an anti-targeting theme while minimizing or ignoring other government-imposed burdens, judges ought to have a convincing reason for their skepticism of regulatory targeting itself.

In the free speech field, one might conclude that government regulation that isolates particular messages for uniquely burdensome treatment is presumptively problematic. This could be based on a theory that, say, government officials are especially likely to use such regulation to entrench their own power and to freeze the political environment against logical testing and innovation.²⁴² And we might believe that, in general, forcing the political system to treat communication more like other conduct provides a handy safeguard. Speakers will thereby have natural allies in the democratic process who are likewise threatened with regulatory burden.²⁴³

240. See, e.g., Larry A. Alexander, *Trouble on Track Two: Incidental Regulations of Speech and Free Speech Theory*, 44 HASTINGS L.J. 921, 943 (1993).

241. See *Employment Div. v. Smith*, 494 U.S. 872, 889–91 (1990).

242. See, e.g., FREDERICK SCHAUER, *FREE SPEECH: A PHILOSOPHICAL ENQUIRY* 43–44, 80–86 (1982) (suggesting regulation might be distrusted more than speech is especially valued).

243. See, e.g., KATHLEEN M. SULLIVAN & GERALD GUNTHER, *FIRST AMENDMENT LAW* 204–05 (3d ed. 2007). There are other theories that might support anti-targeting themes and yet still weaken the case for substantial burdens tests; perhaps a targeted burden amounts to a special form of injury.

But we have doubts that courts could faithfully translate this logic into the gun rights domain. We are aware of no convincing theory of just political power that identifies the gun rights movement as in need of federal judicial assistance. This movement is anything but a perennial loser in ordinary politics, and a judicial attempt to multiply allies for the gun lobby would be hard to justify on a reasonable vision of equitably distributed political influence. One might believe that existing gun control is too onerous without believing that the political process is rigged in its favor.

Nor is it clear what special skepticism the judiciary should have when it comes to firearms regulation. If we focus on *Heller's* reasoning, the majority's key concern was handgun possession for self-defense in the home. But it is doubtful that regulators surreptitiously harbor ill will toward those hoping to protect themselves against criminal intruders, or that they will often use firearms regulations as a method for squelching self-defense efforts. Had *Heller* emphasized the problem of centralized tyranny, our analysis would be different. But it did not. The majority's vision for the right was mainstreamed and demilitarized.²⁴⁴ Once the rationale for gun rights moves away from fear of centralized tyranny and aligns with more mainstream values, such as preserving self-defense from private criminal assault, judges would seemingly have less reason to worry that specialized gun regulation is the first step toward an impermissible end.

This is not to claim that courts have no basis on which to invalidate firearms regulation beyond comprehensive handgun bans. Our point is that the path toward an anti-targeting theme in Second Amendment doctrine is logically challenging. And a substantial burden analysis would yield a pattern of outcomes that is not easy to predict. Our concern remains that, however controversial the legal logic, courts will borrow an anti-targeting theme from elsewhere in constitutional doctrine and then subject nearly all gun control efforts to substantial judicial review. While we hold to our sense that courts will not radically revise firearms law in the United States, confirming our prediction of judicial modesty might be possible only after much litigation—and with an additional cost in the form of regulatory stasis.

E. Judicial Review and Innovation

This brings us to a more diffuse yet at least equally troublesome risk of Second Amendment litigation. The Supreme Court's willingness to inject the judiciary into the gun control arena could have a socially detrimental

244. See *supra* Part II.A.

dampening effect on regulatory innovation. This should be of concern to anyone who believes that gun policy in America has come to an unfortunate stalemate, and that the future might open political opportunities for novel regulatory approaches that overcome current ideological cleavages and do more good than harm.

Granted, constitutional law does not necessarily kill innovation. The relationships among constitutionalism, judicial review, and regulatory innovation are actually quite complex. One description of constitutional law in the United States has emphasized entrenchment of old norms against change, but many observers now recognize that a constitutional order can generate institutions to make change.²⁴⁵ Judicial review is no different. It might retard or instigate regulatory innovation, depending on how it is performed. For example, nonjudicial policymakers might respond to judicial invalidations with new regulatory approaches in an effort to respect both judicial judgments and public demands. Just as *Roe v. Wade* did not end the development of abortion law, *Heller* did not end the District of Columbia's gun control efforts.²⁴⁶ In addition, the very substance of constitutional doctrine can mandate periodic updating in ordinary law. An illustration is Eighth Amendment doctrine's focus on evolving standards of decency.²⁴⁷ We can imagine a Second Amendment doctrine that likewise calls for evaluation of gun control according to contemporary values and circumstances.

But the possibility of constitutional litigation certainly can deter novel government responses to old or new social problems—and passages in *Heller* seem crafted to have this dampening effect. Recall the majority's reliance on eighteenth- and nineteenth-century sources for guidance on the Second Amendment's meaning, its reference to a tradition of prohibiting dangerous or unusual weapons, and its apparent preference for longstanding gun control measures.²⁴⁸ Even if these forays into originalist history and subsequent tradition leave readers uncertain about what counts as unacceptable novelty in gun control, and even if some type of interest balancing was operating in

245. See, e.g., STEPHEN HOLMES, *PASSIONS AND CONSTRAINT: ON THE THEORY OF LIBERAL DEMOCRACY* 153 (1995) (“The American Constitution is an instrument of government, not an obstacle to government . . .”); Samaha, *supra* note 158, at 631–33, 662–67 (discussing coordination theories of authority for our constitutional text). A provocative argument for valuing constitutional debate precisely for its ability to combat entrenchment is LOUIS MICHAEL SEIDMAN, *OUR UNSETTLED CONSTITUTION: A NEW DEFENSE OF CONSTITUTIONALISM AND JUDICIAL REVIEW* 55, 210–16 (2001). In this regard, consider that *Heller* effectively disrupted a status quo in judicial review against Second Amendment claims.

246. See *supra* note 118.

247. See, e.g., *Kennedy v. Louisiana*, 128 S. Ct. 2641, 2664–65 (2008).

248. See *supra* text accompanying notes 144–152.

the background, the Court's official rationale looks largely unsympathetic to policy experimentation. We cannot be certain at this point that fighting comprehensive handgun bans will exhaust judicial opposition to firearms regulation. There is now a substantial range of plausible litigation threats while the Court's position on gun control remains vague. These threats can prevent policy experiments before they begin.

It might be fair to ask whether the demand for innovative responses to gun risks is appreciable in the current political environment. One might believe that the policy rut is too deep for Second Amendment litigation threats to make much difference. But we believe that policy innovation is alive in some states and localities. Jurisdictions including California, Maryland, and Massachusetts have moved forward with new gun control policies in recent years.²⁴⁹ Relatively innovative ideas include microstamping shell casings for the purpose of tracing crime guns, reviewing the design of new guns before they hit the market, and requiring personalized gun technology that attempts to restrict usage to owners only. Perhaps less mainstream—but nevertheless intriguing—is the possibility of taxing firearms according to their estimated social costs, or requiring firearms owners to maintain insurance to cover the costs of gun misuse by themselves or others. Some such innovation might be analogized to existing regulation of other commodities, but these ideas would be new with respect to firearms. A tradition-oriented Second Amendment doctrine would undercut efforts to introduce them.

Furthermore, the political environment for firearms regulation can change. Opportunities for new policy rise and fall with such factors as changing demographics and the salience of gun violence. If the decline in sporting uses of guns continues to sap NRA membership efforts, if gun crimes and visible street gang activity spike upward again, and if we witness another Virginia Tech-style massacre, the politics will likely change. But a tradition-enforcing form of judicial review can minimize these regulatory opportunities. In fact, this politically countercyclical role for judicial oversight helps explain the oddity of 305 members of Congress supporting constitutional litigation against the District of Columbia, rather than simply voting to override the District's regulations.²⁵⁰ *Heller* could help freeze some existing political victories on the

249. See *supra* Part I.C.1–I.C.4.

250. See *supra* note 4. It is possible that the Senate's commitment to supermajority votes for cloture against filibusters led this simple majority of Congress members to prefer constitutional litigation to ordinary legislation. If so, the shift to litigation is a consequence of the legislators' own institutional design choices. On constitutional objections to the filibuster, see Adam M. Samaha, *Undue Process*, 59 STAN. L. REV. 601, 608–09, 667–68 (2006).

gun rights side, victories that kept gun control mild and that make *Heller* look unimportant at the moment.

Heller might put a brake on new gun control policy through two mechanisms. First, at least some proposals will be debated under a serious threat of constitutional litigation with its attendant costs for the government. These costs are not limited to financing an adequate legal defense; losing a Second Amendment challenge might mean paying damages or attorneys fees to the claimants. And litigation threats against innovative regulation will remain strong unless and until Second Amendment doctrine is clarified in relevant respects. Consider California's cutting edge rule that, beginning in 2010, semiautomatic pistols must be designed to stamp a serial number on the shell casing each time a round is fired.²⁵¹ Whether this requirement will pass constitutional muster is not fully known at the moment, and the issue may not be settled for many years. Meanwhile, legislators in other states who are attracted to this idea as a boon to police investigations will have to persuade the majority that it not only serves the public interest, but that it is worth the expected cost of defending it in the courts. Even if microstamping is somehow insulated from serious Second Amendment objections, in some cases the expected litigation costs will be prohibitive.

The second mechanism is more speculative, but it might be significant. *Heller* transformed the notion of personalized Second Amendment rights from contested to justiciable. The decision could therefore strengthen the rhetorical arsenal of gun rights supporters, even if these advocates go beyond *Heller*'s language.²⁵² It is hard to predict the political effect that this shift will have in practice, but it may be nontrivial. The hopeful view of gun control advocates, that *Heller* would open the door to moderate legislation by undercutting the rhetorical force of the slippery slope argument,²⁵³ is yet to be confirmed and might be naïve.²⁵⁴ On the other hand, the case could ultimately have no meaningful effect on constitutional argument outside the courts. Second Amendment objections to gun control predate *Heller* by decades, and the move-

251. See *supra* note 88.

252. See Nat'l Rifle Ass'n Inst. for Legislative Action, Supreme Court Declares That the Second Amendment Guarantees an Individual Right to Keep and Bear Arms (June 26, 2008), <http://www.nra.org/heller> ("All law-abiding Americans have a fundamental, God-given right to defend themselves in their homes. Washington, D.C. must now respect that right.")

253. See David M. Kennedy, Op-Ed., *After Heller, Reason Can Prevail*, NAT'L L.J., Sept. 23, 2008, available at <http://www.law.com/jsp/scm/PubArticleSCM.jsp?id=1202424712957>.

254. Cf. Nat'l Ass'n for Gun Rights, *The Ugly Truth About the Heller Decision* (July 29, 2008), <http://www.nationalgunrights.org/truthaboutheller.shtml> (exhorting supporters to fuel pro-gun lobbying efforts because "liberals are using [*Heller*] to restrict our gun rights," and criticizing the decision for recognizing longstanding prohibitions on certain types of gun use).

ment behind those arguments helps explain the decision rather than the other way around. In addition, *Heller* demilitarized the amendment in a way that preserves key elements of modern gun control. Thus if judicial rhetoric influences nonjudicial debate, the influence might cut in two directions.

Even if *Heller* deters the implementation of some number of firearms policies that are worth trying, there is nevertheless a modest hope for improved policy quality in the regulation that does go forward. The Supreme Court intervened late in the development of gun regulation in the United States, and some might view the current system as dysfunctional. The less respect one has for gun politics today, the more one might hope that a dose of judicial oversight will prove net beneficial. The comparison is not between uninformed judges badly redrafting firearms law and an ideal world of policymaking. In the United States, authority over firearms regulation is often maintained within state legislatures responsive to the distribution of organized political power, not in localities sensitive to local conditions or administrative agencies building expertise on the potential and limits of gun control. And if Second Amendment doctrine beyond the core right recognized in *Heller* calls for sober consideration of rational argument and empirical data, the system of gun politics and regulation might make progress toward sound policy.

But this hope is no more than modest. The first problem is that we cannot guarantee that any improvement in policy quality will outweigh the value of foregone policy experiments. It almost goes without saying that we have more to learn about the characteristics of effective gun control that adequately account for the benefits of gun ownership. Second, judges are, at best, only marginally better at understanding the complexities of gun policy analysis than others involved in the system. They are not experts and they are unlikely to acquire the relevant expertise in short order, even if they act in good faith. Whether judges are able to incorporate values held by the general public rather than implement their own personal policy preferences is another serious question, if the goal is social welfare maximization.

Finally, the post-*Heller* litigation environment is decidedly asymmetrical. Gun rights proponents now have an additional method for achieving their goals, while gun control proponents will ordinarily lack conventional constitutional arguments to prompt gun regulation. Nonjudicial politics ultimately preempted many lawsuits against the gun industry, and now the Supreme Court has made it possible for the gun rights movement to press further in the other direction with supreme judicial review. To the extent that Second Amendment litigation prompts deeper and empirically driven evaluation of firearms regulation, it will come with gun control in a systematically

defensive posture. We have little confidence that this one-sided drag on policy innovation can produce sufficient gains to provide a net benefit.

For some, an additional opportunity to veto gun control in the courtroom will be a welcome change. But a libertarian presumption against government action is not self-evidently good policy from a social welfare perspective. And so we remain concerned that the greatest risk to sound public policy following *Heller* is among the least visible: an additional background pressure against novelty in the law of gun control at a time when experimentation and creative decisionmaking are crucial.

CONCLUSION

Heller begins a new era in the history of gun control. It adds federal constitutional adjudication to the policymaking environment in a novel way, without determining much of the future for Second Amendment doctrine. We have attempted to understand the dimensions and underpinnings of the decision, and to evaluate its plausible consequences for social welfare. This perspective and the available data lead us to believe that some obvious constitutional issues, such as the validity of nonfederal handgun bans and the entitlement to concealed-carry permits, are not especially threatening. Yet other possible outcomes, such as judicial skepticism of gun-targeted regulation or litigation risks that chill regulatory innovation, ought to be matters of serious concern. Our analysis is itself only a beginning. But one important task after *Heller* is to separate true threats from sideshows in the continuing struggle to reduce crime and violence in America.

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