

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF CONNECTICUT

JUNE SHEW, *et al.*,

Plaintiffs,

v.

DANNEL P. MALLOY, *et al.*,

Defendants.

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Case No. 3:13-cv-00739-AVC

August 23, 2013

PLAINTIFFS' LOCAL RULE 56(a)1 STATEMENT

Plaintiffs, by and through counsel and pursuant to D.Conn.L.Civ.R. 56(a)1, hereby submit this Statement of Undisputed Material Facts in support of their Motion for Summary Judgment dated August 23, 2013 (Doc. # 60) seeking declaratory judgment that Connecticut's Act Concerning Gun Violence Prevention and Children's Safety ("the Act") is unconstitutional, and also an immediate and permanent injunction against the Act's enforcement.

Gun Deaths In The United States

1. The leading cause of death by firearm in the U.S. is suicide. *See* Pew Research Center, *Gun Homicide Rate Down 49% Since 1993 Peak; Public Unaware* (May 2013) ("Pew Report"), at 2. [A copy of the Pew Report is attached hereto as "**Exhibit A**"].
2. Gun suicides now account for six out of every ten firearm deaths in this country. *Id.*
3. The gun suicide rate has been higher than the gun homicide rate since at least 1981. *Id.* at 4.
4. There were 31,672 firearm deaths in the U.S. in 2010; 61% of these were caused by suicide, versus 35% being caused by homicide. Pew Report at 4. In 2010, firearm suicide was the

fourth leading cause of violent-injury death in the U.S., behind motor vehicle accidents, unintentional poisoning, and falls. *Id.* at 16.

Gun Homicides In The United States

5. National rates of gun homicide and other violent gun crimes are “strikingly lower” now than during their peak in the mid-1990s. Pew Report at 1. *See also* U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics, *Special Report – Firearm Violence, 1993-2011* (May 2013) (“BJS Report”) at 1. [A copy of the BJS Report is attached hereto as “**Exhibit B**”].

6. The firearm homicide rate in the late 2000s has not been this low since the early 1960s. Pew Report at 2.

7. The firearm homicide rate in 2010 was 49% lower than it was in 1993. *Id.* *See also* BJS Report at 1.

Non-Fatal Gun Crimes In The United States

8. The victimization rate for other violent crimes committed with a firearm (i.e., assaults, robberies and sex crimes) was 75% lower in 2011 than in 1993. Pew Report at 1. *See also* BJS Report at 1.

9. In 1993, the rate of non-fatal violent gun crime amongst people aged 12 and over was 725.3 per 100,000 people. Pew Report at 17. By 2011, that rate had plunged 75% to 181.5 per 100,000 people. *Id.*

10. During this same period, the victimization rate for aggravated assault with firearms declined 75%, and the rate for robbery with firearms declined 70%. *Id.*

Public Knowledge Of The Dropping Gun Crime Rate

11. Despite the widespread media attention given to gun violence recently, most Americans are unaware that gun crime is markedly lower than it was two decades ago. Pew Report at 4.

12. A national survey taken between March 14-17 of 2013 found that 56% of Americans believe the number of gun crimes is higher than it was 20 years ago; 26% say it stayed the same, and only 12% say it is lower. *Id.*

Mass Shootings

13. Mass shootings, while a matter of great public interest and concern, account for only a very small share of shootings overall. Pew Report at 4. Homicides that claimed the lives of three or more people accounted for less than 1% of all homicide deaths between 1980 and 2008. *Id.*

14. Most scholarly and expert sources conclude that mass shootings are rare violent crimes. *See* Congressional Research Service, *Public Mass Shootings in the United States: Selected Implications for Federal Public Health and Safety Policy* (March 2013) (“CRS Report”). [A copy of the CRS Report is attached hereto as “**Exhibit C**”].

15. One study has described mass shootings as “very low-frequency and high intensity events.” *Id.* [citing J. Reid Meloy, *et al*, “A Comparative Analysis of North American Adolescent and Adult Mass Murders,” *BEHAVIORAL SCIENCES AND THE LAW*, vol. 22, no. 3 (2004) at 307].

The Prevalence Of Handgun Use In Gun Crimes

16. Approximately 90% of all non-fatal firearm crimes in the U.S. between 1993 and 2011 were committed with a handgun. BJS Report at 1, 3.

17. Approximately 80% of all gun homicides in the U.S. between 1991 and 2011 were committed with a handgun. *See* U.S. Department of Justice, Federal Bureau of Investigation, *Crime in the United States – Uniform Crime Report* (“FBI UCRs”), 1995 to 2011. [Complete copies of the FBI UCRs for the years 1995 through 2012 can be accessed at: www.fbi.gov/about-us/cjis/usc/usc-publications. True, complete and accurate summaries of the gun homicide data provided by the FBI UCRs are attached hereto as “**Exhibit D**”]. *See also* BJS Report at 1, 3.

18. In contrast, only 6% of the gun homicides committed between 1991 and 2011 involved a shotgun, and even less (4.6%) involved a rifle. FBI UCRs, 1995 to 2011.

19. In Connecticut: 77% of the gun homicides between 1995 and 2010 were committed with a handgun. *Id.* Just 3% of these involved a shotgun, and 2% involved a rifle. *Id.*

The Prevalence of Illegal Guns Used In Crimes

20. Between 1997 and 2004, more state inmates who used guns during crimes (40%) obtained those guns illegally than from any other source. BJS Report at 13.

21. Almost as many (37%) obtained guns from family or friends. *Id.*

22. A very small number of state inmates (10%) purchased their guns at retail stores or pawn shops, and even fewer (less than 2%) bought their guns at gun shows or flea markets. *Id.*

The Prevalence of “Assault Weapons” Used In Crimes

23. Numerous studies have examined the use of firearms characterized as “assault weapons” (“AWs”) both before and after the implementation of Title XI of the Violent Crime Control and Law Enforcement Act of 1994 (the federal assault weapons ban) (“the Ban”). *See e.g.*, Christopher Koper, Daniel Woods and Jeffrey Roth, *An Updated Assessment of the Federal Assault Weapons Ban: Impacts on Gun Markets and Gun Violence, 1994-2003* (June 2004) (“Koper 2004”);

Christopher Koper and Jeffrey Roth, *Impact Evaluation of the Public Safety and Recreational Firearms Use Protection Act of 1994 – Final Report* (March 1997) (“Koper 1997”). [The Koper 2004 Report is attached here as “**Exhibit E.**” The Koper 1997 Report is attached here as “**Exhibit E.**”].

24. The “overwhelming weight” of evidence produced by these studies indicates that AWs are used in a only a very small percentage of gun crimes overall. Koper 2004 at 17. According to most studies, AWs are used in approximately 2% of all gun crimes, Koper 2004 at 2, 14, 19.

25. The inclusion of AWs among crime guns is “rare.” Koper 1997 at 69.

26. Even the highest estimates of AW use in gun crime, which correspond to “particularly rare” events such mass shootings and police murders, are no higher than 13%. Koper 2004 at 15-16.

27. AWs (including so-called assault pistols (“APs”) and assault rifles (“ARs”)) and ammunition magazines that can accept more than ten rounds of ammunition (so-called “Large Capacity Magazines” or “LCMs”) are not used disproportionately in crimes. Koper 2004 at 17; Koper 1997 at 65, 70, 96.

28. Prior to the Ban, AWs (as defined by the federal law) accounted for about 2.5% of guns produced from 1989 through 1993. Koper 2004 at 17. This figure is consistent with the fact that AWs are used in just 2% of all gun crimes. *Id.*

29. Prior to the Ban, LCMs accounted for 14% to 26% of guns used in crime. Koper 2004 at 2, 18. This range is consistent with the national survey estimates indicating approximately

18% of all civilian-owned guns and 21% of civilian-owned handguns were equipped with LCMs as of 1994. Koper 2004 at 18.

30. Post-Ban analysis of ATF¹ trace requests for AWs involved in violent and drug-related crime between 1994 and 1996 show that, on average, the monthly number of assault weapon traces associated with violent crimes across the entire nation ranged from approximately 30 in 1995 to 44 in 1996. Koper 1997 at 65. For drug crimes, the monthly averages ranged from 34 in 1995 to 50 in 1994. *Id.*

31. These trace ranges represent a “strikingly small” magnitude. Koper 1997 at 65.

32. ATF trace figures from 1996 show that assault weapons accounted for 3% of all trace requests. *Id.* Analysis of trace requests for AR15, Intratec and SWD types of domestic firearms (i.e., those not impacted by pre-Ban legislation (Koper 1997 at 63)), and also those arms characterized as “assault weapons” that were most frequently sold at the enactment of the Ban (Koper 1997 at 63), showed that AWs associated with violent and drug-related crimes represented only 2.5% of all traces. Koper 1997 at 70. Traces for this select AW group accounted for 2.6% of traces for guns associated with violent crimes and 3.5% of traces for guns associated with drug crimes. *Id.*

33. According to Koper, “these numbers reinforce the conclusion that assault weapons are rare among crime guns.” *Id.*

34. Koper also analyzed all guns confiscated by police in various jurisdictions to obtain “a more complete and less biased” picture of weapons used in crime that that presented by ATF

¹ “ATF” refers to the Bureau of Alcohol, Tobacco, and Firearms, which was renamed the Bureau of Alcohol, Tobacco, and Firearms and Explosives in 2003.

trace requests. Koper 1997 at 71. Data collected from police departments in Boston and St. Louis confirmed that AWs are not overrepresented in violent crime relative to other guns. *Id.* at 72, 75.

35. Overall, assault weapons accounted for about 1% of guns associated with homicides, aggravated assaults, and robberies. *Id.* at 75.

The Prevalence of “Assault Weapons” Used in the Murder of Police Officers

36. Police officers are rarely murdered with assault weapons. Koper 1997 at 99.

37. The fraction of police gun murders perpetrated with AWs is only slightly higher than that for civilian gun murders. *Id.*

38. The argument that assault weapons pose a unique, disproportionate danger to police officers is contradicted by FBI data. *See* LAW ENFORCEMENT OFFICERS KILLED & ASSAULTED (“LEOKA”) [www.fbi.gov/about-us/cjis/ucr/leoka/2010]. The LEOKA data show that, in 2010, a law enforcement officer was eight times more likely to be murdered with a revolver than with an AW or LCM, eight times more likely to be killed with his own service pistol, three times as likely to be killed by a “firearms mishap” during police training (whether by his own hand or that of a fellow officer), and 72 times as likely to be killed in the line of duty accidentally—usually by being run over by another motorist while the officer was standing on a roadside to issue somebody a traffic ticket. The LEOKA statistics for 2011 are similar. *See* www.fbi.gov/about-us/cjis/ucr/leoka/2011.

The Impact of the Federal Assault Weapons Ban

The Impact of the Ban on “Assault Weapon” and “Large Capacity Magazine” Market Scarcity

39. Repeated statistical analysis of the Ban’s impact on primary market prices for AWs and LCMs showed that primary-market prices of the banned guns and magazines rose by upwards of 50% during 1993 and 1994, while the Ban was being debated and as gun distributors, dealers,

and collectors speculated that the banned weapons would become expensive collectors' items. Koper 1997 at 1, 3. *Cf.*, Koper 2004 at 23-29. However, production of the banned guns also surged, so that more than an extra year's normal supply of assault weapons and legal substitutes was manufactured during 1994. *Id.* at 1. After the Ban took effect, primary-market prices of the banned guns and most large-capacity magazines fell to nearly pre-Ban levels and remained there at least through mid-1996, reflecting both the oversupply of grandfathered guns and the variety of legal substitutes that emerged around the time of the Ban. *Id.* at 1-3. *Cf.*, Koper 2004 at 2.

The Ban's Impact on the Consequences of "Assault Weapon" Use

Total Gun Murders

40. The percentage of violent gun crimes resulting in death has been very stable since 1990. Koper 2004 at 92. In fact, the percentage of gun crimes resulting in death during 2001 and 2002 (2.94%) was slightly higher than that during 1992 and 1993 (2.9%). *Id.*

41. Similarly, neither medical nor criminological data have shown any post-Ban reduction in the percentage of crime-related gunshot victims who die. Koper 2004 at 92. If anything, this percentage has been higher since the Ban. *Id.*

42. According to medical examiners' reports and hospitalization estimates, about 20% of gunshot victims died nationwide in 1993. *Id.* This figure rose to 23% in 1996, before declining to 21% in 1998. 92. *Id.* Estimates derived from the FBI UCRs and the Bureau of Justice Statistics' annual National Crime Victimization Survey ("NCVS") follow a similar pattern from 1992 to 1999, and also show a considerable increase in the percentage of gunshot victims who died in 2000 and 2001. *Id.*

43. Overall, the statistical evidence is not strong enough to conclude that the Ban had any meaningful effect on the rate of gun murders (i.e., that the effect was different from zero). Koper 1997 at 6.

Gun Homicides Associated With AWs
(multiple victims in a single incident, or multiple bullet wounds per victim)

44. The Ban failed to reduce both multiple-victims and multiple-bullet-wounds-per-victim murders. Koper 1997 at 2.

45. Using a variety of national and local data sources, Koper found no statistical evidence of post-Ban decreases in either the number of victims per gun homicide incident, the number of gunshot wounds per victim, or the proportion of gunshot victims with multiple wounds. Koper 1997 at 6. Nor did he find assault weapons to be overrepresented in a sample of mass murders involving guns *Id.*

Multiple-Victim Gun Homicides

46. Examination of the FBI's Supplemental Homicide Report ("SHR") data produced no evidence of short term decreases in the lethality of gun violence as measured by the mean number of victims killed in gun homicide incidents. Koper 1997 at 86.

47. The number of victims-per-incident gun murders increased very slightly (less than 1 percent) after the Ban. *Id.* Multiple-victim gun homicides remained at relatively high levels through at least 1998, based on the national average of victims killed per gun murder incident. Koper 2004 at 93. If anything, then, gun attacks appear to have been more lethal and injurious since the Ban. *Id.* at 96.

48. An interrupted time series analysis failed to produce any evidence that the Ban reduced multiple-victims gun homicides. *Id.*

Multiple-Wound-Per-Victim Gun Homicides

49. Multiple wound shootings were elevated over pre-Ban levels during 1995 and 1996 in four of five localities examined during Koper's first AW study, though most of the differences were not statistically significant. Koper 2004 at 93.

50. If attacks with AWs and LCMs result in more shots fired and victims hit than attacks with other guns and magazines, Koper expected a decline in crimes with AWs and LCMs to reduce the share of gunfire incidents resulting in victims wounded or killed. Koper 2004 at 93. Yet, when measured nationally with UCR and NCVS data, this indicator was relatively stable at around 30% from 1992 to 1997, before rising to about 40% from 1998 through 2000. *Id.*

51. Analysis of the number of wounds inflicted in both fatal and non-fatal gunshot cases in Milwaukee, Seattle, Jersey City, San Diego, and Boston failed to produce evidence of a post-Ban reduction in the average number of gunshot wounds per case, or the proportion of cases involving multiple wounds. Koper 1997 at 97.

The Role of LCMs in Increased Gunshot Victimization

52. There is very little empirical evidence on the direct role of ammunition capacity in determining the outcomes of criminal gun attacks. Koper 1997 at 10. Specific data on shots fired in gun attacks are quite fragmentary and often inferred indirectly, but they suggest that relatively few attacks involve more than 10 shots fired. Koper 2004 at 90. The limited data which do exist suggest that criminal gun attacks involve three or fewer shots on average. Koper 1997 at 10.

53. Based on national data compiled by the FBI, there were only about 19 gun murder incidents a year involving four or more victims from 1976 through 1995 (for a total of 375), and

only about one a year involving six or more victims from 1976 through 1992 (for a total of 17). Koper 2004 at 90.

54. Similarly, gun murder victims are shot two to three times on average (according to a number of sources), and a study at a Washington, DC trauma center reported that only 8% of all gunshot victims treated from 1988 through 1990 had five or more wounds. Koper 2004 at 90.

55. The few available studies on shots fired show collectively that assailants fire less than four shots on average, a number well within the 10-round magazine limit imposed by the AW-LCM ban. Koper 2004 at 90.

56. A study of mass shootings (defined therein as incidents in which six or more victims were killed with a gun, or twelve or more were wounded) from 1984 to 1993 found that “for those incidents where the number of rounds fired and the duration of the shooting were both reported, the rate of fire never was faster than about one round every two seconds, and was usually much slower than that.” *See* Kleck, TARGETING GUNS at 124-25. Thus, “[n]one of the mass killers maintained a sustained rate of fire that could not also have been maintained—even taking reloading time into account—with either multiple guns or with an ordinary six-shot revolver and the common loading devices known as ‘speedloaders.’” *Id.* at 125.

57. There is no evidence comparing the fatality rate of attacks perpetrated with guns having large-capacity magazines to those involving guns without large-capacity magazines. Koper 2004 at 90. Indeed, there is no evidence comparing the fatality rate of attacks with semiautomatics to those with other firearms. *Id.*

Summary of Past and Future Impacts of the Ban

58. The Ban cannot clearly be credited with any of the nation's recent drop in gun violence. Koper 2004 at 2, 96.

59. The Ban has produced no discernible reduction in the lethality and injuriousness of gun violence, based on indicators like the percentage of gun crimes resulting in death or the share of gunfire incidents resulting in injury. *Id.* at 96. *See also* NATIONAL RESEARCH COUNCIL, FIREARMS AND VIOLENCE: A CRITICAL REVIEW 97 (Charles F. Wellford *et al.* eds., 2005) (“[G]iven the nature of the [1994 assault weapons ban], the maximum potential effect of the ban on gun violence outcomes would be very small and, if there were any observable effects, very difficult to disentangle from chance yearly variation and other state and local gun violence initiatives that took place simultaneously”); Centers for Disease Control, *Recommendations To Reduce Violence Through Early Childhood Home Visitation, Therapeutic Foster Care, and Firearms Laws*, 28 AM. J. PREV. MED. 6, 7 (2005) (With respect to “bans on specified firearms or ammunition,” the CDC Task Force found that “[e]vidence was insufficient to determine the effectiveness of bans . . . for the prevention of violence.”); *see also* Robert A. Hahn *et al.*, *Firearms Laws and the Reduction of Violence: A Systematic Review*, 28 AM. J. PREV. MED. 40, 49 (2005) (“available evidence is insufficient to determine the effectiveness or ineffectiveness on violent outcomes of banning the acquisition and possession of [particular] firearms”).

60. If the AW ban were to be renewed, its effects on gun violence would likely to be small at best and perhaps too small for reliable measurement. Koper 2004 at 3. AWs were rarely used in gun crimes even before the ban. *Id.* at 3, 97. LCMs are involved in a more substantial share of gun crimes, but it is not clear how often the outcomes of gun attacks depend on the ability of

offenders to fire more than ten shots (the current magazine capacity limit) without reloading. Koper 2004 at 3, 19, 97.

The Impact of the Act

Plaintiffs

61. Members of Organization Plaintiffs Connecticut Citizens Defense League (“CCDL”) and the Coalition of Connecticut Sportsmen (“CCS”), as well as the individual plaintiffs and business plaintiffs, possess and wish to acquire rifles, handguns, shotguns, and ammunition feeding devices, but are prevented from doing so by the Act’s restrictions on “assault weapons,” and “large capacity ammunition feeding devices.” *See* Declaration of the CCDL’s Scott Wilson (“Wilson Decl.”) [attached hereto as “**Exhibit G**”]; Affidavit of June Shew (“Shew Aff.”) [Ms. Shew’s affidavit was originally filed with the Court on 06/26/13 as “Exhibit D” (Doc. #15-6) in support of Plaintiffs’ Motion for Preliminary Injunction]; Affidavit of Brian McClain (“McClain Aff.”) [Mr. McClain’s affidavit was originally filed with the Court on 06/26/13 as “Exhibit E” (Doc. #15-7) in support of Plaintiffs’ Motion for Preliminary Injunction]; Affidavit of Stephanie Cypher (“Cypher Aff.”) [Ms. Cypher’s affidavit was originally filed with the Court on 06/26/13 as “Exhibit F” (Doc. #15-8) in support of Plaintiffs’ Motion for Preliminary Injunction]; Affidavit of Mitchell Rocklin (“Rocklin Aff.”) [Rabbi Rocklin’s affidavit was originally filed with the Court on 06/26/13 as “Exhibit G” (Doc. #15-9) in support of Plaintiffs’ Motion for Preliminary Injunction]; Affidavit of Peter Owens (“Owens Aff.”) [Mr. Owens’ affidavit was originally filed with the Court on 06/26/13 as “Exhibit H” (Doc. #15-10) in support of Plaintiffs’ Motion for Preliminary Injunction]; Affidavit of Andrew Mueller (“Mueller Aff.”) [Mr. Mueller’s affidavit was originally filed with the Court on 06/26/13 as “Exhibit I” (Doc. #15-11) in support of Plaintiffs’ Motion for Preliminary Injunction];

Affidavit of Michele DeLuca (“DeLuca Aff.”) [Mr. DeLuca’s affidavit was originally filed with the Court on 06/26/13 as “Exhibit L” (Doc. #15-14) in support of Plaintiffs’ Motion for Preliminary Injunction]; and Declaration of Paul Hiller (“Hiller Decl.”) [attached hereto as “**Exhibit H**”]. *See also*, Supplemental Decl. of June Shew (“Shew Supp’l Decl.”) [attached hereto as “**Exhibit I**”].

62. Some members, individual plaintiffs, and business plaintiffs possess magazines with a capacity of more than ten rounds that are now criminalized by the Act. *See, e.g.*, Wilson Decl. at 2; Rocklin Aff. at 1; DeLuca Aff. at 1. Other members and individual plaintiffs do not possess magazines with a capacity of more than ten rounds, but would possess those magazines forthwith but for the Act. Wilson Decl. at 2; Mueller Aff. at 1. Many members and individual plaintiffs would load more than ten rounds in their magazines for use in firearms kept in the home for self-protection, but cannot do so because of the Act. *See, e.g.*, Wilson Decl. at 2; Rocklin Aff. at 1; Mueller Aff. at 1; DeLuca Aff. at 1-3. Members, individual plaintiffs, and business plaintiffs are unaware how to modify magazines so they cannot “readily be restored or converted to accept” more than ten rounds. *See, e.g.*, Wilson Decl. at 2; Rocklin Aff. at 3.

63. Some members, individual plaintiffs, and business plaintiffs possess arms now prohibited by the Act as “assault weapons” that were lawfully possessed prior to the passage of the Act. *See, e.g.*, Wilson Decl. at 2; Rocklin Aff. at 1; DeLuca Aff. at 1-3. But for the Act, still other members, individual plaintiffs, and business plaintiffs would forthwith obtain and possess “assault weapons” under the Act’s new definitions. *See, e.g.*, Wilson Decl. at 2; Rocklin Aff. at 4-5; DeLuca Aff. at 1-3.

64. As examples, some members, individual plaintiffs, and business plaintiffs possess, and other members, individual plaintiffs, and business plaintiffs would possess but for the Act,

semiautomatic rifles that have an ability to accept a detachable magazine with a folding or telescoping stock, or a thumbhole stock; or any other stock which would allow an individual to grip the weapon, resulting in any finger on the trigger hand in addition to the trigger finger being directly below any portion of the action of the weapon when firing; or a forward pistol grip. *See, e.g.*, Wilson Decl. at 2-3; Owens Aff. at 4-5; DeLuca Aff. at 2.

65. Further, some members, individual plaintiffs, and business plaintiffs possess semiautomatic rifles with detachable magazines and with a thumbhole stock. *See, e.g.*, Wilson Decl. at 3; DeLuca Aff. at 2. Such rifles are commonly used for hunting game and for target shooting. Wilson Decl. at 3; Shew Supp'l Decl. at 2. A thumbhole stock allows the rifle to be held more comfortably and fired more accurately, but it causes the rifle to be defined as an "assault weapon." Wilson Decl. at 3.

66. But for the Act, other members, individual plaintiffs, and business plaintiffs would forthwith obtain and possess identical or similar rifles but may not do so in that they are now considered illegal "assault weapons." *See, e.g.*, Wilson Decl. at 3; Rocklin Aff. at 4; Mueller Aff. at 2-3;

67. Being in possession of, or wishing to acquire, "assault weapons" and "large capacity ammunition feeding devices," members of the CCDL, the CCS, and other plaintiffs are subject to the Act's requirements regarding registration and converting magazines, and to the Act's serious criminal penalties, including incarceration, fines, forfeitures, and cancellation of licenses. *See, e.g.*, Wilson Decl. at 3; Rocklin Aff. at 1-2; Owens Aff. at 4-5; DeLuca Aff. at 3.

68. Members, individual plaintiffs and business plaintiffs are unaware of how to convert "large capacity ammunition feeding devices" so that they will hold only ten rounds. *See, e.g.*,

Wilson Decl. at 3; Rocklin Aff. at 3; Owens Aff. at 4. Other members, individual plaintiffs and business plaintiffs might possess the technical ability to attempt such conversions, but are unaware of the definition of “readily converted or restored” or “permanent” that the State of Connecticut would apply to such conversions. *Id.* The Act contains no guidance in this regard, nor does it refer gun or magazine owners to other resources that can provide adequate guidance.

69. Plaintiff MD SHOOTING SPORTS (“MD”) is in the business of gunsmithing, and buying and selling firearms and ammunition within and without the State of Connecticut. DeLuca Aff. at 1. MD’s business has been harmed by the Act’s restrictions on “assault weapons,” and “large capacity ammunition feeding devices.” *Id.* at 2.

70. Prior to enactment of the Act, one segment of MD’s business involved the purchase of “AR”-type firearms from out-of-state distributors and the sale of these “AR”-type firearms to customers. *Id.* at 1-2. Since the passage of the Act, MD’s out-of-state distributors have stopped altogether the shipment of “AR”-type firearms to the Store due to concern and confusion over whether these types of arms can legally be shipped to, received by and/or sold by the holder of an FFL. *Id.* at 2. These reductions and stoppages have caused actual harm to MD’s sales and overall business. *Id.*

71. Another segment of MD’s business involves the sale of ammunition magazines. Since the passage of the Act, MD’s sales of magazines have declined significantly. *Id.* at 2. This decline involves magazines that hold more than ten rounds and those that hold less than ten rounds. This decline has caused actual harm to MD’s sales and overall business. *Id.*

72. One segment of the Store’s business involves the receipt and transfer of firearms pursuant to the FFL the Store holds. *Id.* at 2. Since the passage of the Act, the volume of firearms

that the Store received and transfers has declined significantly. *Id.* Before enactment of the Act, MD regularly received 5-7 used firearms per week that would be resold. *Id.* Now, however, MD only receives 1-2 used firearms per week. *Id.* This decline has caused actual harm to MD's sales and overall business. *Id.*

73. Since the passage of the Act, MD's overall sales of rifles, pistols, and shotguns have declined significantly. *Id.* at 3. Mr. DeLuca has observed that this decline in sales involves firearms that contain some of the individual features that are banned by the Act (e.g., pistol grips, telescoping stocks, etc.), but also firearms that are not characterized by the Act as "assault weapons." *Id.* This decline is due, in large part, to customer confusion over which kinds of firearms are banned and which are not, as well as customer concern that purchasing a firearm will subject the customer to criminal prosecution. *Id.*

74. Prior to enactment of the Act, MD typically did \$2,000-\$2,500 in business each weekday and \$5,000 to \$7,000 in business on Saturdays. After enactment of the Act, however, MD is only generally earning about \$1,000 per weekday and \$2,000 to \$2,500 on Saturdays. *Id.* at 8.

75. Plaintiff HILLER SPORTS LLC ("Hiller") is in the business of buying and selling firearms and ammunition within and without the State of Connecticut. Hiller Decl. at 1-2. Hiller's business has been harmed by the Act's restrictions on "assault weapons," and "large capacity ammunition feeding devices." *Id.* at 2.

76. The firearms sold by Hiller include rifles, pistols and shotguns. *Id.* at 2. Several models of these firearms are semi-automatic, and are capable of accepting detachable magazines. *Id.* Several models are AR-15 type modern sporting rifles. *Id.* Several of these same models also have characteristics such as pistol grips, forward grips, telescoping stocks, thumbhole stocks, and

threaded barrels. *Id.* at 2. Threaded barrels permit the firearm to accept popular accessories such as shrouds and flash hiders. *Id.*

77. The Act outlaws semi-automatic rifles that can accept detachable magazines, and also have a thumbhole stock, a telescoping stock, a forward grip, or any grip that permits the fingers of the trigger hand to rest below the firearm's action when firing. *Id.* at 2. These features are commonly found (either individually or in combination) on AR-15 type modern sporting rifles. *Id.*

78. One segment of Hiller's business involves the purchase of "AR"-type firearms from out-of-state distributors and the sale of these "AR"-type firearms to customers. *Id.* at 3. Since the passage of the Act, several of Hiller's out-of-state distributors have stopped altogether the shipment of "AR"-type firearms to the Store due to concern and confusion over whether these types of arms can legally be shipped to, received by and/or sold by the holder of an FFL. *Id.* In fact, Hiller had to refund \$100,000 of back orders on AR-15s to its customers because the wholesaler would not ship the AR-15s to fill them. *Id.* The sale of those types of firearms was a vast majority of Hiller's sales before the passage of the Act. These stoppages have caused actual harm to Hiller's sales and overall business. *Id.*

79. One segment of Hiller's business involves the sale of accessories for "AR"-type firearms. *Id.* at 3-4. These include, among other things, slings, rails, optics/scopes, grips, and cases. Since the passage of the Act, Hiller has not sold one accessory, whereas before the passage of the Act the sale of accessories kept pace with the sale of AR-type firearms. *Id.*

80. Another segment of Hiller's business involves the sale of ammunition magazines. *Id.* at 4. Since the passage of the Act, Hiller has returned all large capacity ammunition magazines and has asked, in turn, for the manufacturers to send it magazines that hold ten rounds. *Id.* Hiller is still

waiting to receive those magazines from the manufacturers. *Id.* This scenario has caused actual harm to Hiller's sales and overall business. *Id.*

81. Another segment of Hiller's business involves the receipt and transfer of large capacity magazines pursuant to the FFL Hiller holds. *Id.* at 4. Since the passage of the Act, Hiller no longer transfers large capacity magazines out-of-state because Hiller cannot profit from those transactions. *Id.* The supply to the out-of-state dealers is high and thus these transactions are not profitable. *Id.* This decline has caused actual harm to Hiller's sales and overall business. *Id.* Some customers who wanted to trade in their large capacity magazines have expressed dissatisfaction with Hiller's refusal to receive and transfer the magazines out-of-state. *Id.*

82. Since the passage of the Act, Hiller's overall sales of rifles, pistols, and shotguns have declined significantly. *Id.* at 5. Mr. Hiller has observed that this decline in sales involves firearms that contain some of the individual features that are banned by the Act (e.g., pistol grips, telescoping stocks, etc.), but also firearms that are not characterized by the Act as "assault weapons." *Id.* This decline is due, in large part, to customer confusion over which kinds of firearms are banned and which is not, as well as customer concern that purchasing a firearm will subject the customer to criminal prosecution. *Id.*

Ammunition Magazines

83. Magazines with a capacity of more than ten cartridges, and rifles and shotguns with telescoping stocks, pistol grips, and thumbhole stocks, are commonly possessed for lawful purposes in the millions by law-abiding citizens throughout the United States. *See* Declaration of Mark Overstreet ("Overstreet Decl.") [attached to Plaintiffs' Memorandum of Law in Support of Motion for Preliminary Injunction as Exhibit A] (Doc. #15-15)] at 4-7; the National Shooting Sports

Foundation *2010 Modern Sporting Rifle Comprehensive Consumer Report*) (“NSSF 2010 MSR Report”) [attached to Plaintiffs’ Memorandum of Law in Support of Motion for Preliminary Injunction as Exhibit B (Doc. ## 15-2, 15-3, and 15-4)] at 27; Declaration of Guy Rossi (“Rossi Decl.”) [attached to Plaintiffs’ Memorandum of Law in Support of Motion for Preliminary Injunction as Exhibit C (Doc. #15-5)] at 2.

84. Magazines that hold more than more than ten rounds are commonplace to the point of being a standard for pistols and rifles: nationwide, most pistols are manufactured with magazines holding 10 to 17 rounds. Overstreet Decl. at 4-7; Rossi Decl. at 2. Many commonly possessed popular rifles are manufactured with magazines holding 15, 20, or 30 rounds. *Id.*

85. A review of the current edition of GUN DIGEST, a standard reference work that includes specifications of currently available firearms, reveals that about two-thirds of the distinct models of semiautomatic centerfire rifles listed are normally sold with standard magazines that hold more than ten rounds of ammunition. GUN DIGEST 2013 455-64, 497-99 (Jerry Lee ed., 67th ed. 2012). And many rifles sold with magazines of smaller capacity nonetheless accept standard magazines of twenty, thirty, or more rounds without modification. *Id.* Similarly, about one-third of distinct models of semiautomatic handguns listed—even allowing for versions sold in different calibers, which often have different ammunition capacities—are normally sold with magazines that hold more than ten rounds. *Id.* at 407-39. In both cases, but especially for handguns, these figures underestimate the ubiquity of magazines capable of holding more than ten rounds of ammunition, because they include many minor variations of lower-capacity firearms offered by low-volume manufacturers, such as those devoted to producing custom versions of the century- old Colt .45 ACP Government Model 1911.

86. LCMs have been a familiar feature of firearms for more than 150 years. Indeed, many firearms with “large” magazines date from the era of ratification of the 14th Amendment: the Jennings rifle of 1849 had a twenty-round magazine, the Volcanic rifle of the 1850s had a thirty-round magazine, both the 1866 Winchester carbine and the 1860 Henry rifle had fifteen-round magazines, the 1892 Winchester could hold seventeen rounds, the Schmidt-Rubin Model 1889 used a detachable twelve-round magazine, the 1898 Mauser Gewehr could accept a detachable box magazine of twenty rounds, and the 1903 Springfield rifle could accept a detachable box magazine of twenty-five rounds. *See* GUN: A VISUAL HISTORY 170-71, 174-75, 180-81, 196-97 (Chris Stone ed., 2012); Military Small Arms 146-47, 149 (Graham Smith ed., 1994); WILL FOWLER AND PATRICK SWEENEY, WORLD ENCYCLOPEDIA OF RIFLES AND MACHINE GUNS 135 (2012); K.D. KIRKLAND, AMERICA’S PREMIER GUNMAKERS: BROWNING 39 (2013).

87. Annual ATF manufacturing and export statistics indicate that semiautomatic pistols rose as a percentage of total handguns made in the United States and not exported, from 50% of 1.3 million handguns in 1986, to 82% of three million handguns in 2011. Overstreet Decl. at 4-6. Standard magazines for very commonly owned semiautomatic pistols hold up to 17 rounds of ammunition. *Id.* In 2011, about 61.5% of the 2.6 million pistols made in the U.S. were in calibers typically using magazines that hold over ten rounds. *Id.*

88. In recent decades, the trend in semiautomatic pistols has been away from those designed to hold 10 rounds or fewer, to those designed to hold more than ten rounds. Overstreet Decl. at 4-6. This tracks with trends among law enforcement and military personnel. *Id.*

89. Today, police departments typically issue pistols the standard magazines for which hold more than ten rounds. Overstreet Decl. at 4-6. One such pistol is the Glock 17, the standard

magazines for which hold 17 rounds. *Id.* The standard magazine for our military's Beretta M9 9mm service pistol holds 15 rounds. *Id.* The M9 replaced the M1911 .45 caliber pistol, the standard magazine for which holds seven rounds. *Id.*

90. Magazines holding more than ten rounds are ubiquitous in the law enforcement community: currently, the nation's nearly one million law enforcement agents at the federal, state and local levels are virtually all armed with semiautomatic handguns with magazines holding more than ten, and as many as twenty, rounds of ammunition. *See* MASSAD AYOUB, THE COMPLETE BOOK OF HANDGUNS 50 (2013) (discussing police transition from revolvers to semiautomatics with large magazines); *id.* ("For a time in the 1980s, this Sig Sauer P226 was probably the most popular police service pistol") (fifteen-round magazines); *id.* at 87 ("Known as the Glock 22, this pistol is believed to be in use by more American police departments than any other. Its standard magazine capacity is 15 rounds."); *id.* at 89 ("On the NYPD, where officers have a choice of three different 16-shot 9mm pistols for uniform carry, an estimated 20,000 of the city's estimated 35,000 sworn personnel carry the Glock 19."); *id.* at 90 ("The most popular police handgun in America, the Glock is also hugely popular for action pistol competition and home and personal defense.").

91. Beginning with the M1 Carbine, introduced in the 1940s, rifles equipped with detachable magazines holding more than ten rounds have been increasingly common: there are about two million privately owned M1 Carbines currently in existence, the standard magazines for which hold 15 or 30 rounds. Overstreet Decl. at 6-7.

92. There are approximately 4 million AR-15 type rifles currently in existence, and these are typically sold with between one and three 30-round magazines. Overstreet Decl. at 6-7. Ruger Mini-14 series rifles, which may outnumber M1 Carbines and AR-15s combined, have the capacity

to accept magazines that hold more than ten rounds, and many are equipped with such magazines. *Id.* Numerous other rifle designs use magazines holding more than 10 rounds. *Id.* An unknown number in the millions of such rifles exist in private ownership. *Id.*

93. The actual number of magazines made or imported each year is not known, since the ATF does not require manufacturers to report magazine production. Overstreet Decl. at 6. However, estimates are set forth in the Koper 2004 report. Overstreet Decl. at 6. Koper reported that, as of 1994, 18% of civilian-owned firearms, including 21% of civilian-owned handguns, were equipped with magazines holding over ten rounds, and that 25 million guns were equipped with such magazines. *Id.* Some 4.7 million such magazines were imported during 1995-2000. *Id.*

94. Koper further reported that, as of 1994, 40% of the semiautomatic handgun models and a majority of the semiautomatic rifle models manufactured and advertised before the Ban were sold with, or had a variation that was sold with, a magazine holding over ten rounds. Overstreet Decl. at 7.

Remanufacturing of Ammunition Magazines

95. Connecticut residents who wish retain “large capacity” magazines criminalized by the Act must remanufacture them so that they cannot be “readily restored or converted” to hold more than ten rounds.

96. Remanufacturing or conversion of magazines so that they cannot be readily restored or converted to hold more than ten rounds of ammunition would require engineering know-how, parts, and equipment that are beyond the capacity of most law-abiding gun owners. Rossi Decl. at 2. *See also, e.g.,* McClain Aff. at 3; Rocklin Aff. at 3; Cypher Aff. at 3.

97. No such products or services that would permit the plaintiffs to restore or convert grandfathered magazines by themselves are currently available on the market. Rossi Decl. at 2. Magazine model and design types number in the hundreds or the thousands. *Id.*

Tubular Ammunition Magazines

98. The “capacity” of tubular magazines for rifles and shotguns varies with the length of the cartridges or shells inserted therein. *Peoples Rights Org., Inc. v. City of Columbus*, 152 F.3d 522, 536 n.15 (6th Cir. 1998). They may hold no more than ten of one length, but more than ten of another length.

Common Features Banned by the Act

99. The Act defines the term “assault weapon” so as to criminalize features that are commonly found on rifles, pistols and shotguns. CONN. GEN. STAT. § 53-202a. These features include telescoping stocks, pistol grips, and thumbhole stocks. *Id.* Telescoping stocks, pistol grips, and thumbhole stocks promote the safe and comfortable use of a firearm, and also promote firing accuracy. Rossi Decl. at 2-5.

Telescoping Stocks

100. A stock is that part of a firearm a person holds against the shoulder when shooting. *See* diagram attached hereto as “**Exhibit J.**” It provides a means for the shooter to support the firearm and easily aim it. Rossi Decl. at 4.

101. A “telescoping stock” allows the length of the stock to be shortened or lengthened consistent with the length of the person’s arms, so that the stock fits comfortably against the shoulder and the rear hand holds the grip and controls the trigger properly. Rossi Decl. at 4-5. It simply allows the gun to fit the person’s physique correctly, in the same manner as one selects the

right size of shoe to wear. *Id.* For example, a telescoping stock allows a hunter to change the length of the stock depending on the clothing appropriate for the weather encountered. *Id.* Shooting outdoors in fall and winter require heavy clothing and a shooting vest, thus requiring shortening the stock so that the firearm can be fitted for proper access to the trigger. *Id.* The gun may be adjusted to fit the different sizes of several people in a family or home. *Id.* A gun that properly fits the shooter promotes greater shooting accuracy. *Id.*

102. A telescoping stock does not make a firearm more powerful or more deadly. *Id.*

Pistol Grips

103. A pistol grip is a grip of a shotgun or rifle shaped like a pistol stock. Exhibit J. A pistol grip allows a rifle to be held at the shoulder with more comfort and stability. Rossi Decl. at 5. Many rifles have pistol grips rather than straight grips. *Id.*

104. Pistol grips serve two basic functions. The first is assisting sight-aligned accurate fire. Rossi Decl. at 5. Positioning the rear of the stock into the pocket of the shoulder and maintaining it in that position is aided by the pistol grip, and is imperative for accurate sight alignment and thus accurate shooting with rifles of this design, due to the shoulder stock being in a straight line with the barrel. *Id.* With the forward hand holding the fore-end, the rearward hand holding the grip, and the butt securely against the shoulder, a rifle may be fired accurately. *Id.* The more consistent the shooter's eye is in relation to the line of the stock and barrel, the more accurate the shot placement. *Id.*

105. The second function of the pistol grip is firearm retention, imperative, for example, during a home invasion when assailant(s) may attempt to disarm a citizen in close quarters. Rossi Decl. at 5.

106. A pistol grip does *not* function to allow a rifle to be fired from the hip. Rossi Decl. at 5. . (emphasis added). Sight alignment between the eye and firearm is not conducive to spray or hip fire. Rossi Decl. at 5. Conversely, a rifle with a straight grip and no pistol grip would be more conducive to firing from the hip. Rossi Decl. at 5. Firing from the hip would be highly inaccurate and is simply not a factor in crime. *Id.*

107. A pistol grip (“conspicuous” or otherwise) does not make a firearm more powerful or deadly. Rossi Decl. at 5.

Thumbhole Stocks

108. A thumbhole stock is simply a hole carved into the stock of a rifle through which a user inserts his or her thumb. Rossi Decl. at 5. Thumbhole stocks allow the rifle to be held with more comfort and stability and, thus, fired more accurately. *Id.*

109. A thumbhole stock does not make a rifle more powerful or more lethal. *Id.*

Firearms Affected By The Act’s Restrictions

110. The Act’s broadened definition of “assault weapon” impacts a wide range of firearms, all of which are regularly used for lawful and legitimate purposes like hunting, sporting competitions and self defense. Rossi Decl. at 2. The pistols, rifles and shotguns criminalized by these restrictions are immensely popular and have widespread use throughout the United States. *Id.*

111. One type of rifle that is directly impacted by the Act’s restrictions is arguably the most popular: the AR-15 type of Modern Sporting Rifle (“MSR”). Overstreet Decl. at 2-4; NSSF 2010 MSR Report. Colt introduced the AR-15 SP-1 rifle in 1963. Overstreet Decl. at 2. Since that time, “AR-15” has become a generic term commonly used to describe the same or similar MSRs made by Colt and other manufacturers. *Id.*

112. AR-15 model MSRs (and all other rifles called “assault weapons” under the Act) are semiautomatic, meaning that they are designed to fire only once when the trigger is pulled. Overstreet Decl. at 2. As a general matter, semiautomatic firearms are extremely common in the U.S. (Overstreet Decl. at 2-4), having flooded the handgun market for at least twenty (20) years. *See* Koper 2004 at 81 (80% of handguns produced in 1993 were semiautomatic). *See also* David B. Kopel, *Rational Basis Analysis of “Assault Weapon” Prohibition*, 20 J. CONTEMP. L. 381, 413 (1994) (“semiautomatics are more than a century old”). “Sixty percent of gun owners [own] some type of semiautomatic firearm.” Nicholas J. Johnson, *Supply Restrictions at the Margins of Heller and the Abortion Analogue*, 60 HASTINGS L.J. 1285, 1293-95 (2009).

113. AR-15 MSRs are not fully automatic machine guns, which continue to fire so long as the trigger is pressed. Overstreet Decl. at 2. AR-15 model MSRs have the capacity to accept a detachable magazine. *Id.* Standard magazines for AR-15 MSRs hold 20 or 30 rounds of ammunition, but magazines of other capacities are also available. *Id.* AR-15 MSRs also have a pistol grip typically 3 ¾ to 4 inches in length that protrudes at a rearward angle beneath the action of the rifle. *Id.*

114. The AR15 is the semi-automatic civilian sporting version of the select-fire M16 rifle and M4 carbine used by the United States military and many law enforcement agencies. *See* Declaration of Gary Roberts (“Roberts Decl.”) [attached hereto as “**Exhibit K**”].

115. The AR15 is extremely common in America. Roberts Decl. at 14-16. As a result of being used by the military for nearly 50 years, perhaps more Americans have been trained to safely operate the AR15 than any other firearm, as there are approximately 25 million American veterans who have been taught how to properly use an AR15 type rifle through their military training, not to

mention in excess of 1 million American law enforcement officers who have qualified on the AR15 over the last several decades, as well as numerous civilian target shooters and hunters who routinely use AR15s. *Id.* Since so few military service members, particularly those not on active duty, get enough training and practice with their M16 or M4 service rifle, many military Reservists and National Guard personnel, as well as some active duty service members, have purchased civilian AR15s in order to train and practice on their own time with a rifle offering similar ergonomics and operating controls as the service weapon they are issued in the military. *Id.*

116. U.S. Government data sources (such as ATF manufacturing and export statistics) and nationwide market and consumer surveys (such as the National Shooting Sports Foundation (“NSSF”) *Modern Sporting Rifle Comprehensive Consumer Report*) indicate that the AR-15 MSR is one of the most widely and commonly possessed rifle in the United States. Overstreet Decl. at 2-4.

117. Between 1986-2011, over 3.3 million AR-15s were made and not exported by AR-15 manufacturers whose production can be identified from government data sources. Overstreet Decl. at 2-4.

118. In 2011, there were 6,244,998 firearms (excluding fully-automatic firearms, i.e., machine guns) made in the U.S. and not exported. *Id.* Of these, 2,238,832 were rifles, including 408,139 AR-15s by manufacturers whose production figures could be discerned from the ATF reports. *Id.* Thus, AR-15s accounted for at least 7% of firearms, and 18% of rifles, made in the U.S. for the domestic market that year. *Id.*

119. From 1986 through 2011, U.S.-made firearms accounted for 69% of all new firearms available on the commercial market in the United States. *Id.* Even with the inclusion of imported

firearms into the above calculations, AR-15s would account for a significant percentage of new firearms available in the United States. *Id.*

120. The FBI reports that background checks processed through the National Instant Criminal Background Check System (NICS), most of which are conducted for retail purchases of firearms by consumers, increased 14.2 % in 2011 as compared to 2010; 19.1 % in 2012 as compared to 2011; and 44.5 % during the first three months of 2013 as compared to the same period in 2012. Overstreet Decl. at 2-4.

121. If the 2011-2013 trend for AR-15 rifle production was identical to that for NICS checks, it would mean that nearly 660,000 AR-15s were made in the U.S. and not exported during 2012 and the first three months of 2013. *Id.* That figure, added to the over 3.3 million noted earlier, implies a conservative estimate of 3.97 million AR-15s for the period 1986-March 2013, excluding production by Remington and Sturm, Ruger. Overstreet Decl. at 2-4.

122. The NSSF 2010 MSR Report (Doc. ## 15-2, 15-3, 15-4) illustrates the lawful and legitimate reasons supporting the MSR's popularity and common use as of 2010. According to this report, 60% of MSR owners that responded to the study owned multiple MSRs. NSSF 2010 MSR Report at 7-8. Recreational target shooting and home defense were the top two reasons for owning an MSR. *Id.* Beyond this, MSR owners consider accuracy and reliability to be the two most important things to consider when buying a MSR. *Id.* Those who shoot often are much more likely to own multiple MSRs. *Id.* 3 out of 4 people who shoot twice a month or more own multiple MSRs. *Id.* 60% of MSR owners use a collapsible/folding stock. *Id.* One-third of all MSR owners use a 30-round magazine in their MSR. *Id.*

123. The firearms characterized as "assault weapons" under the Act, have been widely

and legally used for sporting purposes (as well as for self-defense and hunting) throughout Connecticut and the United States for decades. *See* Wilson Decl. at 4; Shew Supp'l Decl. at 2.

124. There are numerous shooting competitions for non-military personnel that have taken place throughout the State of Connecticut for years that regularly and legally used the firearms now classified as “assault weapons” to compete. *See* Wilson Decl. at 4; Shew Supp'l Decl. at 2. For example, timed competitions known as “3 Gun Shoots” and “2 Gun Shoots” were regularly held at such places as the Metacon Gun Club in Weatogue, CT, and the Rockville Fish & Game Club in Vernon, CT. *Id.* These matches were and are extremely popular, have been taking place throughout Connecticut for years, and have been attended throughout the years by hundreds (and likely thousands) of individual and member plaintiffs. *Id.*

125. In this sense, the argument that the firearms now classified as “assault weapons” are not used by private citizens for sporting competitions is simply untrue. *Id.*

Suitability of the AR-15 MSR For Home Defense

126. It is widely accepted that the AR15 chambered in a .223/5.56 mm caliber is the firearm best suited for home defense use. Roberts Decl. at 14-16. *See also* J. Guthrie, *Versatile Defender: An Argument for Advanced AR Carbines in the Home*, in BOOK OF THE AR-15 134 (Eric R. Poole, ed. 2013) (“If a system is good enough for the U.S. Army’s Delta and the U.S. Navy SEALs, surely it should be my weapon of choice, should I be a police officer or Mr. John Q. Public looking to defend my home”); Eric Poole, *Ready To Arm: It’s Time to Rethink Home Security*, in GUNS & AMMO, BOOK OF THE AR-15 15-22 (Eric R. Poole, ed. 2013) (discussing virtues of the AR-15 platform as a home defense weapon); Mark Kayser, *AR-15 for Home & the Hunt*, In PERSONAL & HOME DEFENSE 28-29, 30-31 (2013) (advising use of AR-15 for self-defense in the home and

recommending customizing with accessories).

127. The AR15 .223/5.56 mm caliber carbine configuration is extremely common. Roberts Decl. at 14-16. In fact, it is the carbine configuration most commonly used by law enforcement officers today. *Id.* This configuration (i.e., 5.56 mm 55 grain cartridges fired from 20” barrel M16A1 rifles) was the U.S. military standard ammunition in the 1960s and 1970s. *Id.* The roots of the .223/5.56 mm cartridge commonly used in the AR15 come from a caliber designed for small game varmint hunting and used to eliminate small furry rodents and animals up to coyote size. *Id.*

128. During defensive shooting encounters, shots that inadvertently miss the intended target in close quarter battle and urban environments can place innocent citizens in danger. Roberts Decl. at 14-16. In general, .223/5.56 mm bullets demonstrate less penetration after passing through building structural materials than other common law enforcement and civilian calibers. *Id.* All of the .223/5.56 mm bullets recommended for law enforcement use offer reduced downrange penetration hazards, resulting in less potential risk of injuring innocent citizens and reduced risk of civil litigation in situations where bullets miss their intended target and enter or exit structures compared with common handgun bullets, traditional hunting rifle ammunition, and shotgun projectiles. *Id.*

The Impact Of The Act On Crime

129. The Act’s restriction on the number of rounds loaded in a magazine is unlikely to have any detectable effect on the number of homicides or violent acts committed with firearms. *See* Declaration of Gary Kleck (“Kleck Decl.”) [attached to the Plaintiffs’ Memorandum of Law in Support of Motion for Preliminary Injunction as “Exhibit K”) (Doc. # 15-13)] at 2. Criminals will

be even less likely to be affected by the LC magazine restriction than non-criminals. *Id.* It is the law-abiding citizens who will primarily be impacted by the restriction. *Id.*

130. The Act's limitation of the number of rounds allowable for a firearm in the home impairs a homeowner's ability to successfully defend himself or herself during a criminal attack in the home because: (a) victims often face multiple criminal adversaries; and (b) people miss with most of the rounds they fire, even when trying to shoot their opponents. Kleck Decl. at 3. In 2008, the NCVS indicated that 17.4% of violent crimes involved two or more offenders, and that nearly 800,000 crimes occurred in which the victim faced multiple offenders. *Id.*

131. Like civilians, police officers frequently miss their targets: numerous studies have been done of shootings by police officers in which the officers were trying to shoot criminal adversaries. Kleck Decl. at 3. In many of these shootings, the officers fired large numbers of rounds. *Id.* Yet, in 63% of the incidents, the officers failed to hit even a single offender with even a single round. Kleck Decl. at 3. Police officers have the experience, training, and temperament to handle stressful, dangerous situations far better than the average civilian, so it is reasonable to assume marksmanship among civilians using guns for self-protection will be still lower than that of police. *Id.*

132. Some law-abiding citizens, along with many criminals, might invest in multiple ten-round magazines in the absence of larger capacity magazines – a development which obviously defeats the purpose of the magazine capacity limit. Kleck Decl. at 3. Beyond that, however, some people will not be able to make effective use of additional magazines. *Id.*

133. The restrictions on LC magazines will have an inconsequential impact on reducing homicides and violent crimes. Kleck Decl. at 3-4. Criminals rarely fire more than ten rounds in gun

crimes. *Id.* Indeed, they usually do not fire any at all – the gun is used only to threaten the victim, not attack him or her. *Id.* For the vast majority of gun crimes, the unavailability of LC magazines would therefore be inconsequential to deterring the criminal behavior. *Id.*

134. A ban on LC magazines will have an inconsequential effect on reducing the number of killed or injured victims in mass shootings. Kleck Decl. at 4-5. The presumption is false that an offender lacking LC magazines would be forced to reload sooner or more often, thereby giving bystanders the opportunity to tackle him and stop his attacks. *Id.* Analysis of mass shootings in the United States shows it is exceedingly rare that victims and bystanders in mass shootings have tackled shooters while they are reloading. *Id.* This is particularly true because most mass shooters bring multiple guns to the crimes and, therefore, can continue firing without reloading even after any one gun's ammunition is expended. *Id.* at 4-5. A study of every large-scale mass shooting committed in the United States in the 10-year period from 1984 through 1993 found that the killers in 13 of these 15 incidents possessed multiple guns. Kleck Decl. at 4-5.

135. The Act's restrictions on rifles and shotguns that contain so-called "Assault Weapon" characteristics will not further the goals of reducing homicides or violent crimes or improving public safety. Kleck Decl. at 6.

136. Criminals are just as likely to use non-banned firearms that function the same as firearms falling within the so-called "assault weapon" ("AW") definition under the Act. Kleck Decl. at 6-7. Under the Act, though some semi-automatic firearms are banned, other semi-automatic firearms are left legally available, including (a) unbanned models; (b) currently banned models that are redesigned to remove the features that make them AWs; and (c) firearms that would otherwise be banned as AWs but are grandfathered into lawful status because they were manufactured before

September 13, 1994, or were lawfully possessed before January 15, 2013. *Id.* Thus, firearms will continue to be available that function in essentially identical ways as the banned firearms – i.e., they can accept detachable magazines (including LC magazines), can be fired just as fast, and can fire rounds that are, shot-for-shot, just as lethal as rounds fired from the banned firearms. *Id.*

Consequently, criminals can substitute mechanically identical firearms for banned AWs, commit the same crimes they otherwise would have committed with the banned firearms, with the same number of wounded or killed victims. *Id.*

137. The Act’s expanded definition and ban of “assault weapons” will make little difference on public safety by reducing crimes committed with firearms. Kleck Decl. at 6-7. Criminals who do not currently possess or use banned AWs have no need to acquire substitute weapons because they will presumably continue to use the firearms they currently possess. Kleck Decl. at 7.

138. All attributes of AWs that *do* make them more useful for criminal purposes (i.e., accuracy, the ability to fire many rounds without reloading) are present in easily-substituted, unbanned, counterpart firearms. Kleck Decl. at 7. More importantly, these same attributes increase the utility of AWs for *lawful* self-defense or various sporting uses. *Id.*

139. In self-defense situations where it is necessary for the crime victim to shoot the criminal in order to prevent harm to the defender or others, accuracy is crucial for the victim. Kleck Decl. at 8. Where it is necessary for a crime victim to shoot the aggressor, and only lethal or incapacitating injury will stop him, the lethality of the defender’s firearm is a precondition to her ability to end the criminal attack, and prevent harm to herself and other potential victims. *Id.*

140. Where a crime victim faces multiple adversaries, the ability and need to fire many rounds without reloading is obvious. Kleck Decl. at 8. The ability to fire rapidly may be essential to either deter offenders from attacking, or failing that, to shoot those aggressors who cannot be deterred. *Id.* at 8. This is because some of the defender's shots will miss, and because the offender(s) may not allow the victim much time to shoot before incapacitating the victim. *Id.* Regardless of how an AW is defined, restricting firearms with the attributes that make them useful for criminal purposes necessarily restricts firearms possessing attributes that make them more effective for lawful self-defense. *Id.*

141. The Act's ban on firearms defined as "assault weapons" will not deter criminals from using them to commit crimes or from finding substitute firearms with the same features, and will simultaneously deny law-abiding citizens access to those weapons to defend themselves. Kleck Decl. at 8.

142. While either criminals or prospective crime victims *could* substitute alternative weapons for banned "AWs," criminals are more likely to actually do so because they are more powerfully motivated to have deadly weapons. Kleck Decl. at 8. This would be especially true of the extremely rare mass shooters, who typically plan their crimes in advance and thus are in a position to take whatever time and effort is needed to acquire substitute weapons. *Id.* Further, even ordinary criminals are strongly motivated to acquire firearms both for purposes of committing crimes and for purposes of self-defense. *Id.* at 9. Because criminals are victimized at a rate higher than non-criminals, this means that they have even stronger self-defense motivations to acquire and retain guns than non-criminals. *Id.* In contrast, many prospective crime victims do not face an imminent threat at the time they consider acquiring a gun for self-protection, have a weaker

motivation to do whatever it takes to acquire their preferred type of firearm, and are therefore less likely to do so. *Id.*

143. It is virtually a tautology that criminals will disobey the AW ban at a higher rate than non-criminals. Kleck Decl. at 9.

The Impact Of The Act On Self-Defense

144. Limiting plaintiffs' ability to possess a magazine containing more than ten rounds of ammunition in one's home severely compromises their ability to defend themselves, their families, and their property. Rossi Decl. at 6-10.

The Ability to Aim Under Stress

145. The Act's ten-round limitation assumes that all homeowners will never need to fire more than ten rounds to defend themselves, that they own multiple firearms, or that they will be able to switch out their firearms' magazines while under criminal attack. Rossi Decl. at 6. However, a homeowner under the extreme duress of an armed and advancing attacker is likely to fire at, but miss, his or her target. *Id.* Nervousness and anxiety, lighting conditions, the presence of physical obstacles that obscure a "clean" line of sight to the target, and the mechanics of retreat are all factors which contribute to this likelihood. Rossi Decl. at 6.

146. Highly trained police officers are not immune to the stressors affecting the ability to aim well under pressure: the 2010 New York City Police Department's *Annual Firearms Discharge Report* ("NYPD AFDR") (available at http://www.nyc.gov/html/nypd/downloads/pdf/analysis_and_planning/afdr_20111116.pdf) provides detailed information on all incidents in which NYPD officers discharged their weapons in 2010. Rossi Decl. at 9. In that year there were thirty-three (33) incidents of the police intentionally

discharging firearms in encounters of adversarial conflict. Rossi Decl. at 8; NYPD AFDR at p.8, Figure A.10. 65% of these incidents took place at a distance of less than ten (10) feet. *Id.*, NYPD AFDR at p.9, Figure A.11. In 33% of these incidents, the NYPD officer(s) involved fired more than seven (7) rounds. *Id.*, NYPD AFDR at p.8, Figure A.10. In 21% of these incidents, the NYPD officer(s) fired more than ten (10) rounds. *Id.*

147. If highly trained and experienced NYC police officers required the use of at least eight rounds in 1/3rd of their close-range encounters to subdue an aggressive assailant, it stands to reason that a “green” civilian gun owner under duress (and certainly far less experienced and trained than a NYC police officer) would need at least that many rounds to subdue an armed assailant with his or her home. *Id.* at 9.

148. Under such expected conditions and with such likely results, it is of paramount importance that a homeowner have quick and ready access to ammunition in quantities sufficient to provide a meaningful opportunity to defend herself and/or her loved ones. *Id.* at 6. It is equally important that the homeowner under attack have the capability to quickly and efficiently re-load a firearm after all of the rounds it holds are fired. *Id.* However, many homeowners cannot re-load quickly or efficiently due to such factors as age, physical limitations, and the stress/anxiety produced by a potentially life-threatening situation. *Id.*

Delayed Reaction Time Under Stress

149. Violent criminal attacks frequently occur suddenly and without warning, leaving the victim with very little time to fire the firearm to save herself. Rossi Decl. at 6. Reaction time under stress is complicated and can be attributed to many physiological, psychological and environmental factors. *Id.* The most basic premise breaks down into three factors: the ability for an individual to

perceive a threat (Perceptual Processing), the ability to make a decision (Cognitive Processing), and lastly the ability of the brain to send messages to the muscles to react (Motor Processing). Rossi Decl. at 6-7.

150. This processing takes, minimally, several seconds without consideration to other factors such as distractions, noise, multiple assailants, lighting conditions, nervousness and fatigue. Rossi Decl. at 6-7.

Loading and Re-Loading Difficulties for the Physically Disabled

151. Loading a firearm requires two hands, and is a far more difficult task when someone is physically handicapped, or one hand is wounded during an attack. Rossi Decl. at 7-8. Having more rounds in a magazine allows the victim to better protect himself or herself without the need to reload especially if handicapped, disabled or injured. *Id.* at 8.

152. Plaintiff Peter Owens and Plaintiff Stephanie Cypher are but two examples.

153. Mr. Owens is physically disabled. Owens Aff. at 2. When he was four years old he suffered a stroke and lost the functional use of the left side of his body. *Id.* As a result, he cannot use most of his left hand or arm. *Id.* He owns several pistols and rifles with magazines having capacities over ten rounds. *Id.*

154. In order to change a magazine Mr. Owens must discard the spent magazine from his firearm, tuck the empty firearm under his left arm, pick up a new magazine with his right hand, insert the new magazine into the firearm and then continue firing. *Id.* Since he cannot use his left hand, it takes him more time to exchange an empty magazine for a full one than it does an able-bodied shooter. *Id.* The ten-round limitation will require Mr. Owens to switch out the magazines of his pistols more frequently if confronted with a sudden home invasion, robbery, or other attack. *Id.*

Therefore, Mr. Owens' ability to defend himself and property with these pistols is substantially compromised by the ten-round limitation. *Id.*

155. Plaintiff Stephanie Cypher is similarly impacted by the limitation. *See* Cypher Aff. at 1, 2. Ms. Cypher is physically disabled, losing her right arm to cancer at 12 years old. *Id.* Ms. Cypher owns several firearms, all with magazine capacities of over ten rounds. *Id.*

164. In light of her physical limitations, the ten-round limitation increases her vulnerability during a home invasion. *Id.* at 2.

156. Since Ms. Cypher can only use her left hand, it takes her more time to exchange an empty magazine for a full one than it does an able-bodied shooter. *Id.* at 2. In order to change a spent magazine, Ms. Cypher must place her firearm down on a bench or table, press the magazine eject button, wiggle the magazine free, exchange the spent magazine for a new one, and then pick up the firearm and continue shooting. *Id.* at 2.

157. Like Mr. Owens, Ms. Cypher must switch out the magazines of her firearm more frequently under the Act if confronted with a sudden home invasion, robbery, or other attack. *Id.* Her ability to defend herself and her property is, likewise, substantially compromised by the ten-round limitation. *Id.*

Loading and Re-Loading Difficulties for All Gun Owners

158. The physiological reaction to the "stress flood" produced by an armed attack, the time delay caused by loading/re-loading a firearm, the loss of defensive use of the non-dominant arm and hand during loading/re-loading, and the attention distraction caused by loading/re-loading a firearm are factors that effect able-bodied gun owners as well as those who are handicapped. Rossi Decl. at 8-10.

159. Under the “stress flood” of a life or death encounter the blood within one’s body is re-routed to the larger muscles so as to allow a “flee or fight” response Rossi Decl. at 8-9. This physiological reaction to extreme stress causes significant reloading difficulty during an attack due to loss of fine motor control in the fingers. *Id.* Trying to push a magazine release or align a magazine with the magazine well with fingers that are shaking and weakened due to blood loss is very difficult for a seasoned veteran soldier or police officer who expects this phenomena. Rossi Decl. at 8.

160. It is far more difficult for a civilian who has never been trained that such changes will occur, or trained during realistic scenario-based training, or who is experiencing a life-threatening attack for the first time. *Id.* at 9.

161. Police and civilians who train in defensive handgun use learn to draw a loaded handgun, quickly acquire a sight picture, and place two shots on the attacker's upper center of mass. Rossi Decl. at 9. Optimally, all this can be accomplished in a little over two seconds. *Id.* The process of loading the handgun will take at least a few extra seconds. *Id.* Extensive practice can reduce how long it takes a person to load a firearm under stress, but that time cannot be reduced to zero. *Id.* Accordingly, the simple time delay of loading a spent firearm may result in the success of a violent attacker who otherwise could have been thwarted. *Id.*

162. Carrying an unloaded firearm will often not provide a viable means of self-defense and would frequently result in a situation where the assailant has closed the distance on the victim so that the assailant is on the person of the victim. Rossi Decl. at 9. The victim is left with a firearm she needs to retain so that she is not shot with her own gun. *Id.* At best then, the firearm becomes a bludgeoning tool. *Id.*

163. The delay in loading a firearm has additional deadly implications. Rossi Decl. at 10. While the left arm and hand are being used to load the handgun, they cannot be used for anything else. *Id.* The victim is more vulnerable because both hands are occupied. *Id.* The non-gun hand becomes useless to fend off the attacker or to deflect the attacker's knife, stick, or other weapon. *Id.*

164. Further, if the victim were to be grabbed during the loading of the firearm, the sympathetic nervous system reaction of clenching one hand to retain the magazine, or simply tightening muscles under stress would further limit the victim's ability to complete the loading of the firearm. Rossi Decl. at 10.

Dated: August 23, 2013

Respectfully Submitted,

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CERTIFICATION

I hereby certify that on August 23, 2013, a copy of the foregoing **LOCAL RULE 56(a)1 STATEMENT** was filed electronically and served by mail upon anyone unable to accept electronic filing. Notice of this filing was will be sent by e-mail to all parties by operation of the Court's electronic filing system or by mail to anyone unable to accept electronic filing as indicated on the Notice of Electronic Filing. Parties may access this filing through the Court's CM/ECF System.

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PewResearchCenter

May 7, 2013

Gun Homicide Rate Down 49% Since 1993 Peak; Public Unaware

Pace of Decline Slows in Past Decade

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Gun Homicide Rate Down 49% Since 1993 Peak; Public Unaware

Pace of Decline Slows in Past Decade

By D'Vera Cohn, Paul Taylor,
Mark Hugo Lopez, Catherine A. Gallagher,
Kim Parker and Kevin T. Maass

CHAPTER 1: OVERVIEW

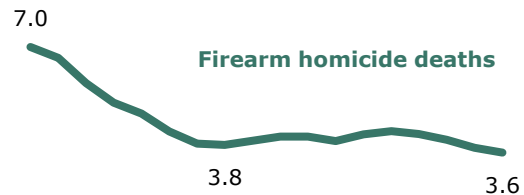
National rates of gun homicide and other violent gun crimes are strikingly lower now than during their peak in the mid-1990s, paralleling a general decline in violent crime, according to a Pew Research Center analysis of government data. Beneath the long-term trend, though, are big differences by decade: Violence plunged through the 1990s, but has declined less dramatically since 2000.

Compared with 1993, the peak of U.S. gun homicides, the firearm homicide rate was 49% lower in 2010, and there were fewer deaths, even though the nation's population grew. The victimization rate for other violent crimes with a firearm—assaults, robberies and sex crimes—was 75% lower in 2011 than in 1993. Violent non-fatal crime victimization overall (with or without a firearm) also is down markedly (72%) over two decades.

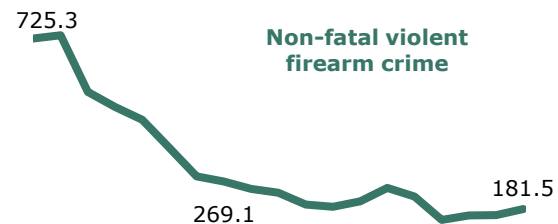
Nearly all the decline in the firearm homicide rate took place in the 1990s; the downward trend stopped in 2001 and resumed slowly in 2007. The victimization rate for other gun crimes

Crime Rates Drop in 1990s, Then Decline More Slowly

Deaths per 100,000 people (all ages)



Victimizations per 100,000 people ages 12 and older



Victimizations per 100,000 people ages 12 and older



1993 1997 2001 2005 2009 2011

Note: Data labels shown for 1993, 2000 and 2011. 2006 NCVS victimization estimates are not comparable with those in other years. See Methodology for details.

Sources: For firearm homicide deaths, CDC's National Center for Injury Prevention and Control Web-based Injury Statistics Query and Reporting System (WISQARS); for non-fatal victimizations, Pew Research Center tabulations of National Crime Victimization Survey, U.S. Justice Department

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plunged in the 1990s, then declined more slowly from 2000 to 2008. The rate appears to be higher in 2011 compared with 2008, but the increase is not statistically significant. Violent non-fatal crime victimization overall also dropped in the 1990s before declining more slowly from 2000 to 2010, then ticked up in 2011.

Despite national attention to the issue of firearm violence, most Americans are unaware that gun crime is lower today than it was two decades ago. According to a new Pew Research Center survey, today 56% of Americans believe gun crime is higher than 20 years ago and only 12% think it is lower.

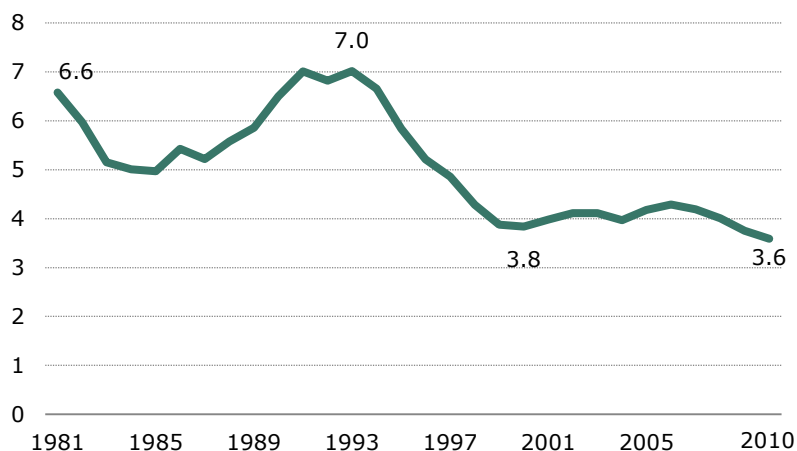
Looking back 50 years, the U.S. gun homicide rate began rising in the 1960s, surged in the 1970s, and hit peaks in 1980 and the early 1990s. (The number of homicides peaked in the early 1990s.) The plunge in homicides after that meant that firearm homicide rates in the late 2000s were equal to those

not seen since the early 1960s.¹ The sharp decline in the U.S. gun homicide rate, combined with a slower decrease in the gun suicide rate, means that gun suicides now account for six-in-ten firearms deaths, the highest share since at least 1981.

Trends for robberies followed a similar long-term trajectory as homicides ([National Research Council, 2004](#)), hitting a peak in the early 1990s before declining.

Rate of Firearm Homicide Deaths, 1981-2010

Per 100,000 people



Note: Data labels shown for 1981, 1993, 2000 and 2010.

Source: CDC's National Center for Injury Prevention and Control Web-based Injury Statistics Query and Reporting System (WISQARS)

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This report examines trends in firearm homicide, non-fatal violent gun crime victimization and non-fatal violent crime victimization overall since 1993. Its findings on firearm crime are based mainly on analysis of data from two federal agencies. Data from the Centers for Disease

¹ See [Cooper and Smith, 2011](#). The rate declined through at least 2010.

Control and Prevention, using information from death certificates, are the source of rates, counts and trends for all firearm deaths, homicide and suicide, unless otherwise specified. The Department of Justice's National Crime Victimization Survey, a household survey conducted by the Census Bureau, supplies annual estimates of non-fatal crime victimization, including those where firearms are used, regardless of whether the crimes were reported to police. Where relevant, this report also quotes from the FBI's Uniform Crime Reports (see text box at the end of this chapter and the Methodology appendix for more discussion about data sources).

Researchers have studied the decline in firearm crime and violent crime for many years, and though there are theories to explain the decline, there is no consensus among those who study the issue as to why it happened.

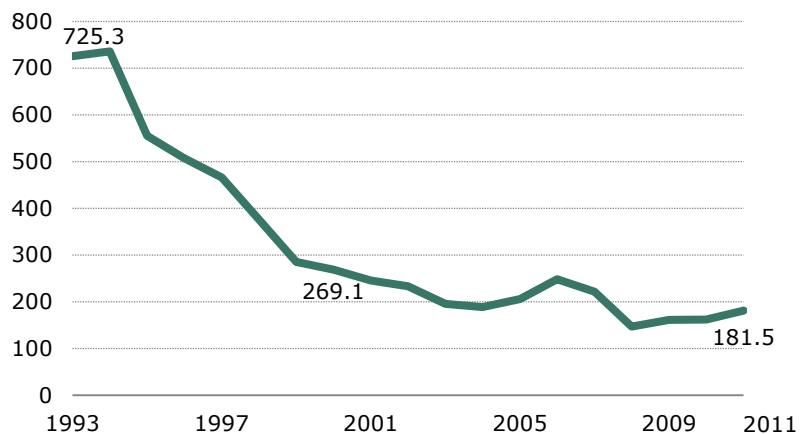
There also is debate about the extent of gun ownership in the U.S., although no disagreement that the U.S. has more civilian firearms, both total and per capita, than other nations.

Compared with other developed nations, the U.S. has a higher homicide rate

and higher rates of gun ownership, but not higher rates for all other crimes. (See Chapter 5 for more details.)

Rate of Non-fatal Firearm Crime, 1993-2011

Victimizations per 100,000 people ages 12 and older



Note: Data labels shown for 1993, 2000 and 2011. 2006 NCVS estimates are not comparable with those in other years. See Methodology for details.

Source: Pew Research Center tabulations of National Crime Victimization Survey, U.S. Justice Department

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In the months since the mass shooting at a Newtown, Conn., elementary school in December, the public is paying close attention to the topic of firearms; according to a recent Pew Research Center survey ([Pew Research Center, April 2013](#)) no story received more public attention from mid-March to early April than the debate over gun control. Reducing crime has moved up as a priority for the public in polling this year.

Mass shootings are a matter of great public interest and concern. They also are a relatively small share of shootings overall. According to a Bureau of Justice Statistics review, homicides that claimed at least three lives accounted for less than 1% of all homicide deaths from 1980 to 2008. These homicides, most of which are shootings, increased as a share of all homicides from 0.5% in 1980 to 0.8% in 2008, according to the bureau's data. A Congressional Research Service report, using a definition of four deaths or more, counted 547 deaths from mass shootings in the U.S. from 1983 to 2012.²

Looking at the larger topic of firearm deaths, there were 31,672 deaths from guns in the U.S. in 2010. Most (19,392) were suicides; the gun suicide rate has been higher than the gun homicide rate since at least 1981, and the gap is wider than it was in 1981.

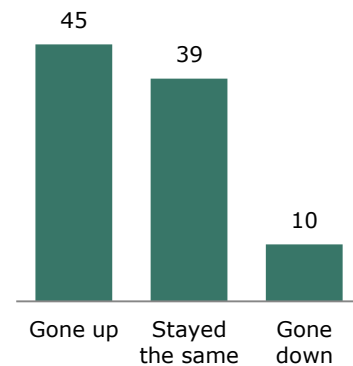
Knowledge about Crime

Despite the attention to gun violence in recent months, most Americans are unaware that gun crime is markedly lower than it was two decades ago. A new Pew Research Center survey (March 14-17) found that 56% of Americans believe the number of crimes involving a gun is higher than it was 20 years ago; only 12% say it is lower and 26% say it stayed the same. (An additional 6% did not know or did not answer.)

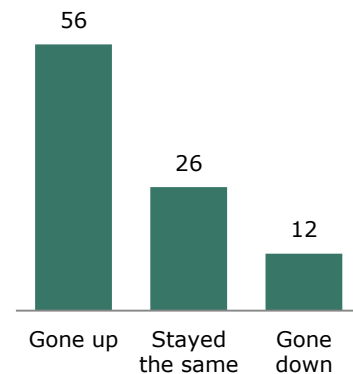
Men (46%) are less likely than women (65%) to say long-term gun crime is up. Young adults, ages 18 to 29, are markedly less likely than other adults to say long-term crime is up—44% do, compared with more than half of other adults. Minority adults are more likely than non-Hispanic whites to say that long-term gun crime is up, 62% compared with 53%.

Most Americans Unaware of Big Crime Drop Since 1990s

In recent years, has the number of gun crimes in America gone up, gone down or stayed the same? (%)



Compared with 20 years ago, has the number of gun crimes in America gone up, gone down or stayed the same? (%)



Note: "Don't know/Refused" responses not shown.

Source: Pew Research Center survey, March 14-17, 2013, N=924

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² A *USA Today* analysis in 2013 found that 934 people died since 2006 in mass shootings, defined as claiming at least four victims, and that most were killed by people they knew: <http://www.usatoday.com/story/news/nation/2013/02/21/mass-shootings-domestic-violence-nra/1937041/>

Asked about trends in the number of gun crimes “in recent years,” a plurality of 45% believe the number has gone up, 39% say it is about the same and 10% say it has gone down. (An additional 5% did not know or did not answer.) As with long-term crime, women (57%) are more likely than men (32%) to say that gun crime has increased in recent years. So are non-white adults (54%) compared with whites (41%). Adults ages 50 and older (51%) are more likely than those ages 18-49 (42%) to believe gun crime is up.

What is Behind the Crime Decline?

Researchers continue to debate the key factors behind changing crime rates, which is part of a larger discussion about the predictors of crime.³ There is consensus that demographics played some role: The outsized post-World War II baby boom, which produced a large number of people in the high-crime ages of 15 to 20 in the 1960s and 1970s, helped drive crime up in those years.

A review by the National Academy of Sciences of factors driving recent crime trends ([Blumstein and Rosenfeld, 2008](#)) cited a decline in rates in the early 1980s as the young boomers got older, then a flare-up by mid-decade in conjunction with a rising street market for crack cocaine, especially in big cities. It noted recruitment of a younger cohort of drug seller with greater willingness to use guns. By the early 1990s, crack markets withered in part because of lessened demand, and the vibrant national economy made it easier for even low-skilled young people to find jobs rather than get involved in crime.

At the same time, a rising number of people ages 30 and older were incarcerated, due in part to stricter laws, which helped restrain violence among this age group. It is less clear, researchers say, that innovative policing strategies and police crackdowns on use of guns by younger adults played a significant role in reducing crime.

Some researchers have proposed additional explanations as to why crime levels plunged so suddenly, including increased access to abortion and lessened exposure to lead. According to one hypothesis, legalization of abortion after the 1973 Supreme Court *Roe v. Wade* decision resulted in fewer unwanted births, and unwanted children have an increased risk of growing up to become criminals. Another theory links reduced crime to 1970s-era reductions in lead in gasoline; children’s exposure to lead causes brain damage that could be associated with violent behavior. The National Academy of Sciences review said it was unlikely that either played a major role, but researchers continue to explore both factors.

³ Much of this section draws from Blumstein and Rosenfeld, 2008.

The plateau in national violent crime rates has raised interest in the topic of how local differences might influence crime levels and trends. Crime reductions took place across the country in the 1990s, but since 2000, patterns have varied more by metropolitan area or city.⁴

One focus of interest is that gun ownership varies widely by region and locality. The National Academy of Sciences review of possible influences on crime trends said there is good evidence of a link between firearm ownership and firearm homicide at the local level; “the causal direction of this relationship remains in dispute, however, with some researchers maintaining that firearm violence elevates rates of gun ownership, but not the reverse.”

There is substantial variation within and across regions and localities in a number of other realms, which complicates any attempt to find a single cause for national trends. Among the variations of interest to researchers are policing techniques, punishment policies, culture, economics and residential segregation.

Internationally, a decline in crime, especially property crime, has been documented in many countries since the mid-1990s. According to the authors of a 30-country study on criminal victimization ([Van Dijk et al., 2007](#)), there is no general agreement on all the reasons for this decline. They say there is a general consensus that demographic change—specifically, the shrinking proportion of adolescents across Europe—is a common factor causing decreases across Western countries. They also cite wider use of security measures in homes and businesses as a factor in reducing property crime.

But other potential explanations—such as better policing or increased imprisonment—do not apply in Europe, where policies vary widely, the report noted

Among the major findings of this Pew Research Center report:

U.S. Firearm Deaths

- In 2010, there were 3.6 gun homicides per 100,000 people, compared with 7.0 in 1993, according to CDC data.
- In 2010, CDC data counted 11,078 gun homicide deaths, compared with 18,253 in 1993.⁵

⁴ The diversity of homicide trend by city was the topic of a recent forum, [“Putting Homicide Rates in Their Place,”](#) sponsored by the Urban Institute.

⁵ There were 11,101 gun homicide deaths in 2011 and the gun homicide rate remained 3.6 per 100,000 people, according to preliminary CDC data.

- Men and boys make up the vast majority (84% in 2010) of gun homicide victims. The firearm homicide rate also is more than five times as high for males of all ages (6.2 deaths per 100,000 people) as it is for females (1.1 deaths per 100,000 people).
- By age group, 69% of gun homicide victims in 2010 were ages 18 to 40, an age range that was 31% of the population that year. Gun homicide rates also are highest for adults ages 18 to 24 and 25 to 40.
- A disproportionate share of gun homicide victims are black (55% in 2010, compared with the 13% black share of the population). Whites were 25% of victims but 65% of the population in 2010. Hispanics were 17% of victims and 16% of the population in 2010.
- The firearm suicide rate (6.3 per 100,000 people) is higher than the firearm homicide rate and has come down less sharply. The number of gun suicide deaths (19,392 in 2010) outnumbered gun homicides, as has been true since at least 1981.

U.S. Firearm Crime Victimization

- In 2011, the NCVS estimated there were 181.5 gun crime victimizations for non-fatal violent crime (aggravated assault, robbery and sex crimes) per 100,000 Americans ages 12 and older, compared with 725.3 in 1993.
- In terms of numbers, the NCVS estimated there were about 1.5 million non-fatal gun crime victimizations in 1993 among U.S. residents ages 12 and older, compared with 467,000 in 2011.

U.S. Other Non-fatal Crime

- The victimization rate for all non-fatal violent crime among those ages 12 and older—simple and aggravated assaults, robberies and sex crimes, with or without firearms—dropped 53% from 1993 to 2000, and 49% from 2000 to 2010. It rose 17% from 2010 to 2011.
- Although not the topic of this report, the rate of property crimes—burglary, motor vehicle theft and theft—also declined from 1993 to 2011, by 61%. The rate for these types of crimes was 351.8 per 100,000 people ages 12 and older in 1993, 190.4 in 2000 and 138.7 in 2011.

Context

- The number of firearms available for sale to or possessed by U.S. civilians (about 310 million in 2009, according to the Congressional Research Service) has grown in recent years, and the 2009 per capita rate of one person per gun had roughly doubled since 1968. It is not clear, though, how many U.S. households own guns or whether that share has changed over time.
- Crime stories accounted for 17% of the total time devoted to news on local television broadcasts in 2012, compared with 29% in 2005, according to Pew Research Center's Project for Excellence in Journalism. Crime trails only traffic and weather as the most common type of story on these newscasts.

About the Data

Findings in this report are based on two main data sources:

Data on homicides and other deaths are from the Centers for Disease Control and Prevention, based on information from death certificates filed in state vital statistics offices, which includes causes of death reported by attending physicians, medical examiners and coroners. Data also include demographic information about decedents reported by funeral directors, who obtain that information from family members and other informants. Population data, used in constructing rates, come from the Census Bureau. Most statistics were obtained via the National Center for Injury Prevention and Control's Web-based Injury Statistics Query and Reporting System (WISQARS), available from URL: www.cdc.gov/ncipc/wisqars. Data are available beginning in 1981; suitable population data do not exist for prior years. For more details, see Appendix 4.

Estimates of crime victimization are from the National Crime Victimization Survey, a sample survey conducted for the Bureau of Justice Statistics by the Census Bureau. Although the survey began in 1973, this report uses data since 1993, the first year employing an intensive methodological redesign. The survey collects information about crimes against people and households, but not businesses. It provides estimates of victimization for the population ages 12 and older living in households and non-institutional group quarters; therefore it does not include populations such as homeless people, visiting foreign tourists and business travelers, or those living in institutions such as military barracks or mental hospitals. The survey collects information about the crimes of rape, sexual assault, personal robbery, aggravated and simple assault, household burglary, theft, and motor vehicle theft. For more details, see Appendix 4.

Roadmap to the Report

The remainder of this report is organized as follows. **Chapter 2** explores trends in firearm homicide and all firearm deaths, as well as patterns by gender, race and age. **Chapter 3** analyzes trends in non-fatal violent gun crime victimizations, as well as patterns by gender, race and age. **Chapter 4** looks at trends and subgroup patterns for non-fatal violent crime victimizations overall. **Chapter 5** examines issues related to the topic of firearms: crime news, crime as a public priority, U.S. gun ownership data, and comparison of ownership and crime rates with those in other nations. **Appendices 1-3** consist of detailed tables with annual data for firearm deaths, homicides and suicides, as well as non-fatal firearm and overall non-fatal violent crime victimization, for all groups and by subgroup. **Appendix 4** explains the report's methodology.

Notes on Terminology

All references to whites, blacks and others are to the non-Hispanic components of those populations. Hispanics can be of any race.

“Aggravated assault,” as defined by the Bureau of Justice Statistics, is an attack or attempted attack with a weapon, regardless of whether an injury occurred, and an attack without a weapon when serious injury results.

The terms “firearm” and “gun” are used interchangeably.

“Homicides,” which come from Centers for Disease Control and Prevention data, are fatal injuries inflicted by another person with intent to injure or kill. Deaths due to legal intervention or operations of war are excluded. Justifiable homicide is not identified.

“Robbery,” as defined by the Bureau of Justice Statistics, is a completed or attempted theft, directly from a person, of property or cash by force or threat of force, with or without a weapon, and with or without injury.

“Sex crime,” as defined by the Bureau of Justice Statistics, includes attempted rape, rape and sexual assault.

“Simple assault,” as defined by the Bureau of Justice Statistics, is an attack (or attempted assault) without a weapon resulting either in no injury, minor injury (for example, bruises, black eyes, cuts, scratches or swelling) or in undetermined injury requiring less than two days of hospitalization.

“Victimization” is based on self-reporting in the National Crime Victimization Survey, which includes Americans ages 12 and older. For personal crimes (which in this report include assault, robbery and sex crime), it is expressed as a rate based on the number of victimizations per 100,000 U.S. residents ages 12 and older. See the Methodology appendix for more details.

Acknowledgments

Many researchers and scholars contributed to this report. Senior writer D’Vera Cohn wrote the body of the report. Paul Taylor, senior vice president of the Pew Research Center, provided editorial guidance. Mark Hugo Lopez, senior researcher and associate director of the Pew Hispanic Center, managed the report’s data analysis and wrote the report’s methodology appendix. Catherine A. Gallagher, director of the Cochrane Collaboration of the College for Policy at George Mason University, provided guidance on the report’s data analysis and comments on earlier drafts of the report. Lopez and Kim Parker, associate director of the Center’s Social & Demographic Trends project, managed the report’s development and production. Kevin T. Maass, research associate at the Cochrane Collaboration at George Mason University’s College for Policy, provided analysis of the FBI’s Uniform Crime Reports. Research Assistants Eileen Patten and Anna Brown number-checked the report and prepared charts and tables. Patten also conducted background research on trends in crime internationally. The report was copy-edited by Marcia Kramer of Kramer Editing Services.

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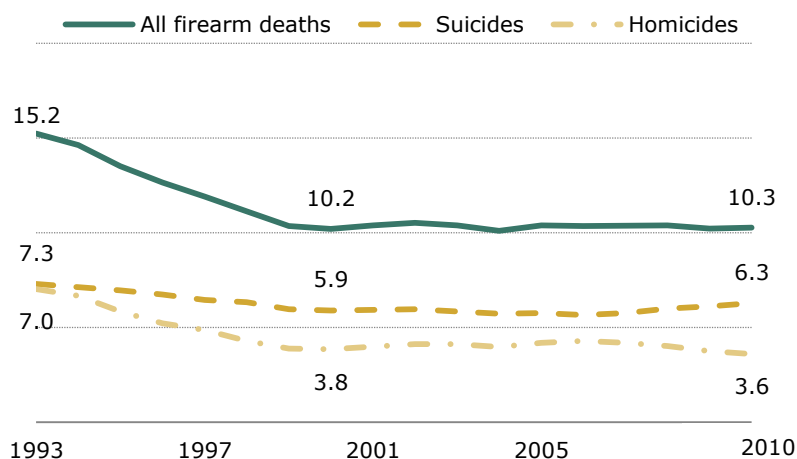
Finally, Michael Planty and Jennifer Truman of the Bureau of Justice Statistics at the U.S. Department of Justice provided data, invaluable guidance and advice on the report’s analysis of the National Crime Victimization Survey.

CHAPTER 2: FIREARM DEATHS

In 2010, there were 31,672 deaths in the U.S. from firearm injuries, mainly through suicide (19,392) and homicide (11,078), according to CDC compilation of data from death certificates.⁶ The remaining firearm deaths were attributed to accidents, shootings by police and unknown causes. The gun homicide rate in 2010 was the lowest it had been since CDC began publishing data in 1981. Other homicide data, from the FBI's Uniform Crime Report (Cooper and Smith, 2011), indicate that homicide rates are as low now as they were in the 1960s.

Rate of Firearm Deaths, 1993-2010

Per 100,000 people



Note: Data labels shown for 1993, 2000 and 2010.

Source: Source: CDC's National Center for Injury Prevention and Control Web-based Injury Statistics Query and Reporting System (WISQARS)

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The U.S. gun homicide rate and number of homicide victims plunged during the 1990s, but there has been little change since the end of that decade. From 1993 to 2000, the death rate dropped 45%, and the number of victims killed each year fell by nearly 7,500. From 2000 to 2010, the death rate declined 7%, and the number of victims did not change much.⁷

Still, due in part to recent increases in the number of suicides, firearm homicide accounted for 35% of firearm deaths in 2010, the lowest share since 1981, the first year for which the CDC published data.

The gun suicide rate has declined far less than the gun homicide rate since the mid-1990s; the gun suicide rate began rising in recent years, and the number of victims is slightly higher than two decades ago. See the textbox at the end of this section for more detail.

⁶ According to preliminary 2011 data, there were 32,163 deaths by firearms, including 11,101 homicides and 19,766 suicides. The overall rate, 10.3 per 100,000 people, was unchanged.

⁷ According to preliminary 2011 CDC data, there was virtually no change from 2010 on these measures.

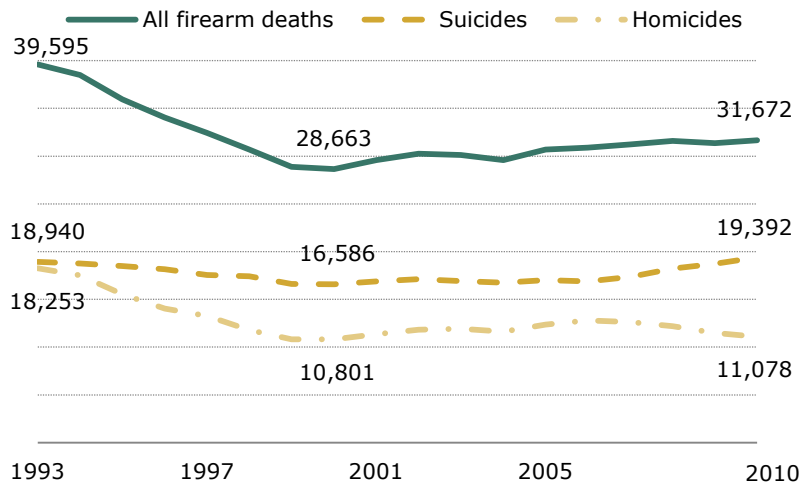
Firearms were used in 68% of homicides in 2010, according to CDC data. That share has ranged from 64% to 71% since the 1990s.⁸ In 2010, firearm homicide was the fifth leading cause of violent death, after motor vehicle deaths, unintentional poisoning such as drug overdose, falls and suicide by firearm.

Homicide by means other than firearms also has declined, though not as much as gun homicide; the non-firearm rate declined 41% from 1993 to 2010, according to CDC data.

Another way of examining firearm violence is to look at data from the CDC for firearm injuries, which comes from a survey of

hospital emergency rooms. In 2011, nearly 74,000 injuries from firearms were reported in the CDC database, according to a Pew Research Center analysis. Of those, about 56,000 (75%) resulted from assaults.⁹ Since 2000, the share of firearm injuries that are the result of assaults has ranged from 63% to 75%.

Number of Firearm Deaths, 1993-2010



Note: Totals not shown for residual categories of firearm death, such as accidents. Data labels shown for 1993, 2001 and 2010.

Source: CDC's National Center for Injury Prevention and Control Web-based Injury Statistics Query and Reporting System (WISQARS)

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⁸ Except for 2001, the year that terrorist attacks killed about 3,000 people, when it was 56%.

⁹ Remaining injuries were unintentional, deliberately self-inflicted or the result of "legal intervention" by law enforcement officers.

Deaths from mass shootings are a relatively small share of firearm homicides. According to a recent Congressional Research Service report ([Congressional Research Service, 2013](#)), 78 public mass shootings occurred in the United States from 1983 through 2012, claiming 547 lives and injuring 476 people. (The count does not include the shooters.)

The Congressional Research Service report did not assess whether mass shootings are more or less frequent than they used to be, but noted that they are relatively uncommon. It stated: “Mass shootings are rare, high-profile events, rather than broad trends that require systematic data collection to understand.”

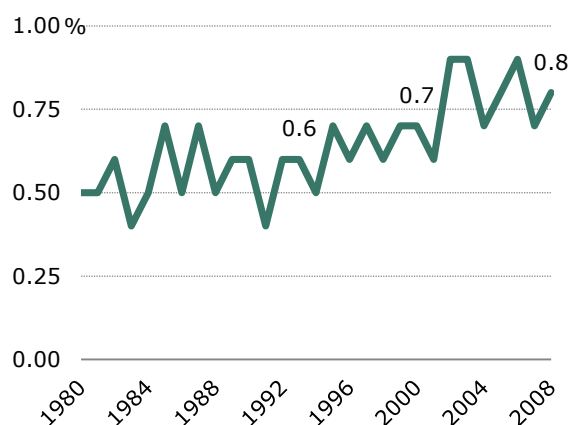
Noting that definitions differ, the report defined “public mass shootings” as those happening in relatively public places, killing at least four people (not including the shooter) and having a “somewhat indiscriminate” choice of victims. The violence in these cases counted by CRS was “not a means to an end such as robbery or terrorism.”

A Bureau of Justice Statistics review of homicide trends from 1980 to 2008 ([Cooper and Smith, 2011](#)) found that homicides with multiple victims (in this case, three or more) have increased somewhat as a share of incidents, but are a small share of the total.¹⁰ Less than 1% of homicides each year claim three or more victims. These homicides, most of which are shootings, increased as a share of all homicides from 0.5% in 1980 to 0.8% in 2008, according to the bureau’s data.

Homicides with more than one victim were more likely to involve firearms than single-victim homicides, the review concluded. In 2008, 77% of homicides with two or more victims involved guns, according to the Bureau of Justice Statistics review, compared with 66% of single-victim homicides.

Multiple-victim Homicides Rise, But Are Still a Small Share of All Homicides

Homicides with three or more victims, as % of all homicides



Note: Data labels shown for 1993, 2000 and 2008.

Source: Bureau of Justice Statistics, 2011. Homicide Trends in the United States, 1980-2008. Washington, D.C.

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¹⁰ Data in this Bureau of Justice Statistics report come from the FBI’s Supplementary Homicide Reports, part of the Uniform Crime Reporting program. See Methodology for more details on differences between this source and the CDC data used elsewhere in this report.

Gender and Age Groups

Men (and boys) make up the vast majority (84% in 2010) of gun homicide victims.

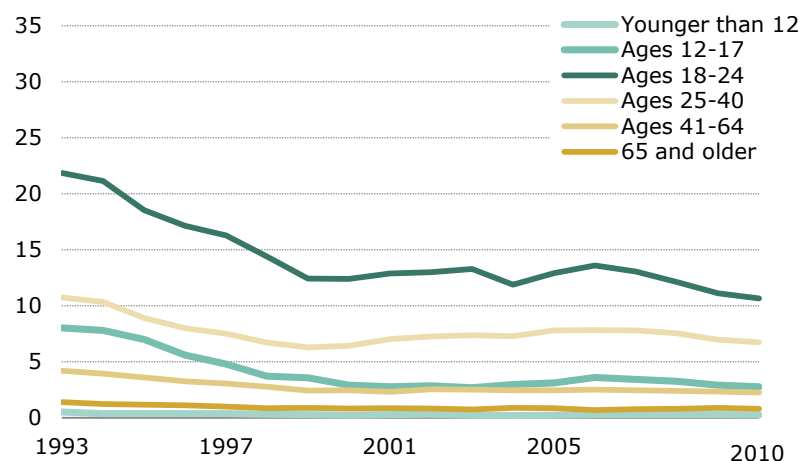
The gun homicide rates for both genders have declined by similar amounts since the mid-1990s, though the male rate is much higher—6.2 gun homicides per 100,000 people in 2010, compared with 1.1 for females.

By age group, 69% of gun homicide victims are ages 18 to 40, a proportion that has changed little since 1993. These groups also have the highest homicide rates: In 2010, there were 10.7 gun homicides per 100,000 people ages 18 to 24, compared with 6.7 among those ages 25 to 40, the next highest rate. The lowest rates are for children younger than 12 and for adults ages 65 and older.

Rates of gun homicide fell in all age groups from 1993 to 2000, most dramatically for teenagers, and leveled off or fluctuated since then. From 1993 to 2010, the gun homicide rate declined 65% for those ages 12 to 17, the largest percentage decrease among age groups. The smallest decrease, 37%, was for people ages 25 to 40.

Rate of Firearm Homicide Deaths, by Age, 1993-2010

Per 100,000 people



Note: See Appendix 1 for underlying data.

Source: CDC's National Center for Injury Prevention and Control Web-based Injury Statistics Query and Reporting System (WISQARS)

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Younger adults are disproportionately likely to be firearms homicide victims. In 2010, young adults ages 18 to 24 were 30% of gun homicide victims in 2010, a higher likelihood than their 10% share of the population would suggest. Similarly, in 2010, people ages 25 to 40 accounted for 40% of gun homicide victims, though they were 21% of the population that year.

Racial and Ethnic Groups

Looked at by race, blacks are over-represented among gun homicide victims; blacks were 55% of shooting homicide victims in 2010, but 13% of the population. By contrast, whites are underrepresented; whites were 25% of the victims of gun homicide in 2010, but 65% of the population. For Hispanics, the 17% share of gun homicide victims was about equal to their 16% proportion of the total population.

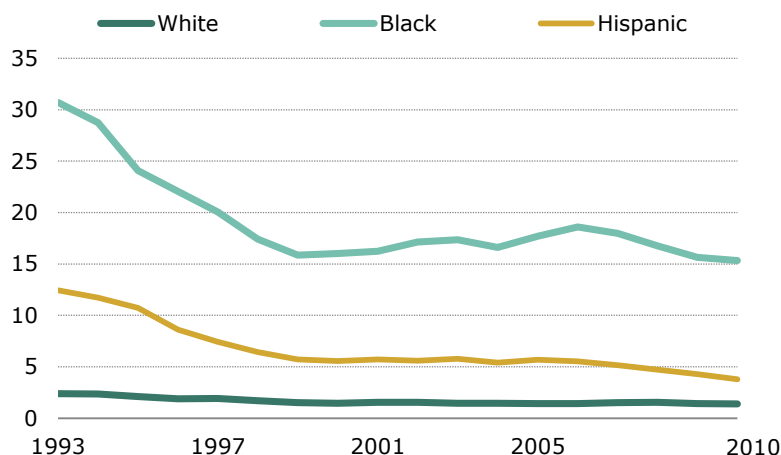
The black homicide death rate has declined 50% since its peak in 1993, and the number of black homicide

deaths fell by more than a third (37%) from 1993 to 2010. The white homicide death rate has declined by 42% over that time, and the number of white homicide deaths declined 39%. The Hispanic shooting homicide rate fell 69% from 1993 to 2000, and the number of deaths declined by 40%. From 2000 to 2010, when the overall gun homicide rate decline slowed, the Hispanic rate fell 32%, while the black and white rates declined only 4%.

The share of victims by racial or ethnic group has changed little since 1993, but the makeup of the U.S. population has altered. For example, in 1993, Hispanics were 10% of the population, blacks 12% and whites 73%. From 1993 to 2010, the Hispanic population share rose 66%, but the Hispanic share of gun homicide victims has not increased.

Rate of Firearm Homicide Deaths, by Race/Ethnicity, 1993-2010

Per 100,000 people



Note: See Appendix 1 for underlying data. Whites and blacks include only non-Hispanics. Hispanics are of any race.

Source: CDC's National Center for Injury Prevention and Control Web-based Injury Statistics Query and Reporting System (WISQARS)

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The larger decline in gun homicides among blacks and Hispanics, compared with whites, has had a disproportionate effect in driving down the overall gun homicide rate. If the black and Hispanic homicide rates had declined at the same rate as that of whites, the U.S. gun homicide rate would have declined by 35%, instead of 49%, from 1993 to 2010, according to a Pew Research Center analysis.

Suicide by Firearm

Based on death certificates, 19,392 people killed themselves with firearms in 2010, according to data from the Centers for Disease Control and Prevention. That is the highest annual total since the CDC began publishing data in 1981, when the suicide toll was 16,139. Firearm suicide was the fourth leading cause of violent-injury death in 2010, following motor vehicle accidents, unintentional poison (including drug overdose) and falls. Firearms accounted for 51% of suicides in 2010.

The firearm suicide rate peaked in 1990, at 7.6 per 100,000 people, before declining or leveling off for most years since then. However, in recent years, the rate has risen somewhat: From 2007 to 2010, it went up 9%. The firearm suicide rate in 2010 (6.3 per 100,000 people) was the same as it was in 1998. Preliminary 2011 data show 19,766 deaths, and no change in rates from 2010.

The number of firearm suicides has been greater than the number of firearm homicides since at least 1981. But as firearm homicides have declined sharply, suicides have become a greater share of firearm deaths. In 2010, 61% of gun deaths were due to suicide, compared with about half in the mid-1990s. (The remaining firearm deaths, in addition to suicide and homicide, are accidental, of undetermined intent or the result of what the CDC terms "legal intervention," generally a police shooting.)

Males are the vast majority of gun suicides (87% in 2010), and the suicide rate for males (11.2 deaths per 100,000 people) is more than seven times the female rate (1.5 deaths). The highest firearm suicide rate by age is among those ages 65 and older (10.6 per 100,000 people). The rate for older adults has been relatively steady in recent years; the rate is rising, though, among those ages 41-64, according to CDC data. Among the three largest racial and ethnic groups, whites have the highest suicide rate at 8.5 per 100,000, followed by blacks (2.7) and Hispanics (1.9).

Comparing homicide and suicide rates, suicide rates are higher than homicide rates for men; they are about equal for women. By age group, suicide rates are higher than homicide rates only for adults ages 41-64 and those ages 65 and older. Homicide rates are higher than suicide rates for blacks and Hispanics; for whites, the suicide rate is higher than the homicide rate. Detailed tables on gun suicide can be found in Appendix 1.

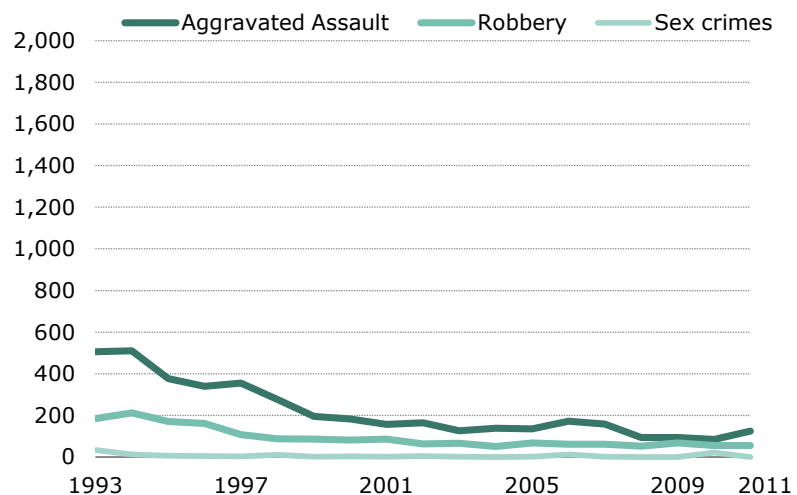
CHAPTER 3: NON-FATAL VIOLENT FIREARM CRIMES

Over the past two decades, the rate of non-fatal violent firearm crime victimizations among Americans ages 12 and older was highest in the early 1990s, and fell sharply (63%) from 1993 through 2000, according to analyses of data from the National Crime Victimization Survey. From 2000 to 2011, the rate declined 33%.

In 2009, 2010 and 2011, the rate of non-fatal firearm crime appeared to rise, compared with the prior year, but the changes are not statistically significant. In 2011, the non-fatal firearm crime rate was 75% lower than it had been in 1993.

Rate of Non-fatal Violent Firearm Crime, by Type of Crime, 1993-2011

Victimizations per 100,000 people ages 12 and older



Note: See Appendix 2 for underlying data, including cautions about small sample sizes for some years. 2006 NCVS estimates are not comparable with those in other years. See Methodology for details.

Source: Pew Research Center tabulations of National Crime Victimization Survey, U.S. Justice Department

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For non-fatal gun crimes overall, there were 725.3 victimizations per 100,000 people ages 12 and older in 1993; in 2011, it fell to 181.5 victimizations per 100,000 people.

Non-fatal firearm crimes are defined throughout this section as aggravated assault, robbery and sex crimes in which the victim saw a weapon. Aggravated assault and robbery are the main components of non-fatal firearm crime; there are too few sex crimes reported to analyze annual trends reliably.

Over the 1993-2011 period, the victimization rate for aggravated assault with firearms declined 75% and the rate for robbery with firearms declined 70%.

The rate for both gun crimes displayed the same general pattern of large declines in the 1990s. From 2000 to 2011, rates for aggravated assault declined overall. There was no clear trend for robbery with a firearm from 2000 to 2011.

Gender

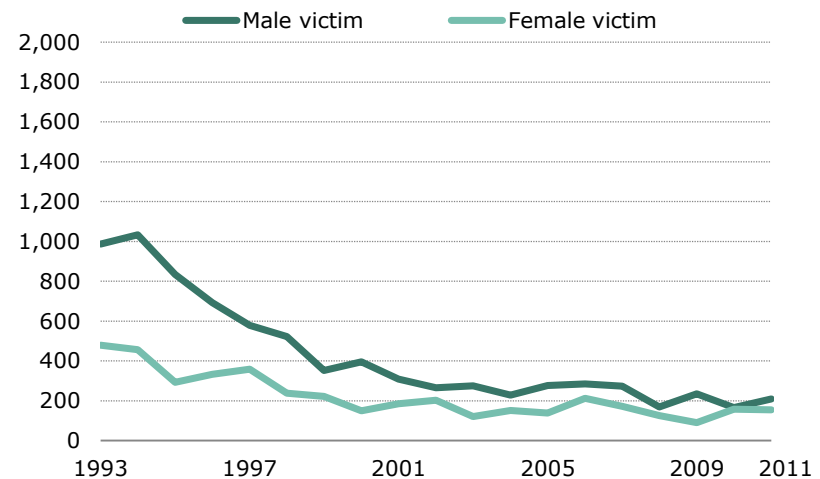
As with firearm homicide, males account for most victimizations by non-fatal violent firearm crime.¹¹ However, men and boys are not as large a share of non-fatal firearm crime victims as they were two decades ago.

Violent victimization rates involving firearms declined for both males and females from 1993 to 2011, with fluctuations in some years.

The male victimization rate declined somewhat more than the female rate—by 79% compared with 68%—from 1993 to 2011. As a result, the share of non-fatal firearm crime victimizations involving men and boys, 66% in 1993, declined to 56% in 2011. The 2011 share of victimizations is higher than the 49% male share of the U.S. population ages 12 and older.

Rate of Non-fatal Violent Firearm Crime, by Gender of Victim, 1993-2011

Victimizations per 100,000 people ages 12 and older



Note: See Appendix 2 for underlying data. 2006 NCVS estimates are not comparable with those in other years. See Methodology for details.

Source: Pew Research Center tabulations of National Crime Victimization Survey, U.S. Justice Department

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Girls and women made up 51% of the U.S. population ages 12 and older in 2011 but were 44% of the victims of non-fatal violent firearm crime in that age group.

¹¹ Firearms homicides are based on the total population and victimizations on the population ages 12 and older.

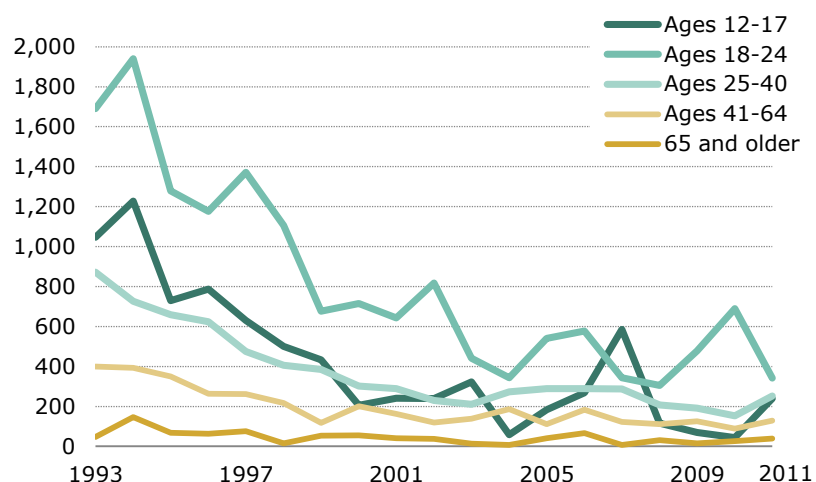
Age Groups

As with gun homicides, young adults are at higher risk than older adults of being the victim of a non-fatal gun crime.

Two decades ago, young adults ages 18 to 24 were more likely than any other age group (among the population ages 12 and older in the victimization survey) to be a victim of non-fatal firearm crime. But the victimization rate of 18- to 24-year-olds declined 80% from 1993 to 2011, compared with the 75% overall decline in non-fatal firearm victimization during those years. By 2011, the rate for this age group was only higher than rates for adults ages 41 and older, but not statistically different from the rate for 12- to 17-year-olds or 25- to 40-year-olds.

Rate of Non-fatal Violent Firearm Crime, by Age of Victim, 1993-2011

Victimizations per 100,000 people ages 12 and older



Note: See Appendix 2 for underlying data, including cautions about small sample sizes for some age groups for some years. 2006 NCVS estimates are not comparable with those in other years. See Methodology for details.

Source: Pew Research Center tabulations of National Crime Victimization Survey, U.S. Justice Department

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In both 1993 and 2011, adults ages 65 and older were less likely than other age groups to be the victim of non-fatal firearm crimes.¹² Adults ages 41 to 64 had lower victimization rates for non-fatal firearm crime in 1993 than younger age groups; in 2011, this group had lower rates than adults ages 18 to 24 and 25 to 40, but not than those ages 12 to 17.

¹² This finding should be interpreted with caution because the estimated victimization rate for adults ages 65 and older is based on a sample of fewer than 10 cases.

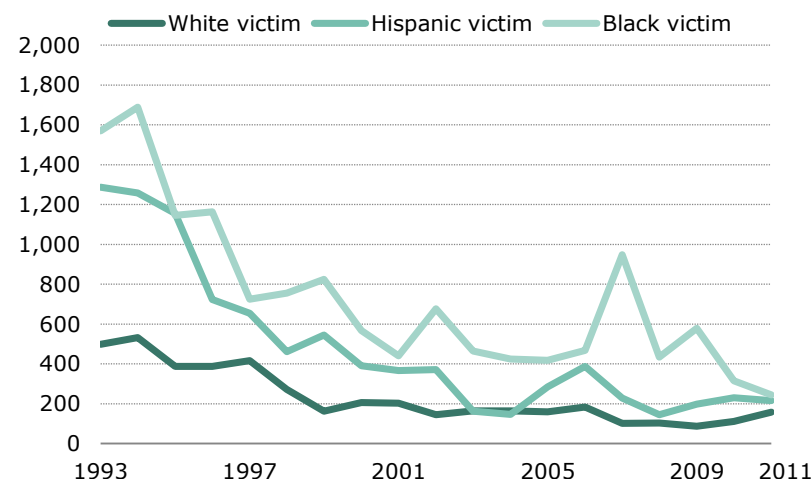
Racial and Ethnic Groups

In 2011, the white rate of non-fatal gun crime victimization appears to be somewhat lower than those of Hispanics and blacks, although the differences are not statistically significant. (Those rates were 158.7 victimizations per 100,000 people ages 12 and older for whites, 215.0 for Hispanics and 245.5 for blacks.)

That is different from the pattern for gun homicide, and represents a change from 1993, when the white victimization rate (499.1 per 100,000 people ages 12 and older) was lower than those for Hispanics (1,286.8) and blacks (1,570.0) ages 12 and older.

Rate of Non-fatal Violent Firearm Crime, by Race/Ethnicity of Victim, 1993-2011

Victimizations per 100,000 people ages 12 and older



Note: See Appendix 2 for underlying data, including cautions about small sample sizes in some years. 2006 NCVS estimates are not comparable with those in other years. See Methodology for details. Whites and blacks include only non-Hispanics. Hispanics are of any race.

Source: Pew Research Center tabulations of National Crime Victimization Survey, U.S. Justice Department

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The non-fatal firearm crime victimization rates of Hispanic and black Americans ages 12 and older fell somewhat more sharply than the white rate from 1993 to 2011: by 83% for Hispanics and 84% for blacks, compared with 68% for whites. The Hispanic population ages 12 and older has more than doubled in size since then, so its rate is a larger factor than in the past in driving the overall rate. (The black population grew 24% in that time, and the white population grew 7%).

All three groups showed a similar pattern of sharper declines from 1993 to 2000 than over the period from 2000 to 2011, for those ages 12 and older. However, in the period from 2008 to 2011, the non-fatal gun crime rate rose for whites (54%). After a single-year spike in 2007, the rate declined for blacks from 2008 to 2011 (44%).

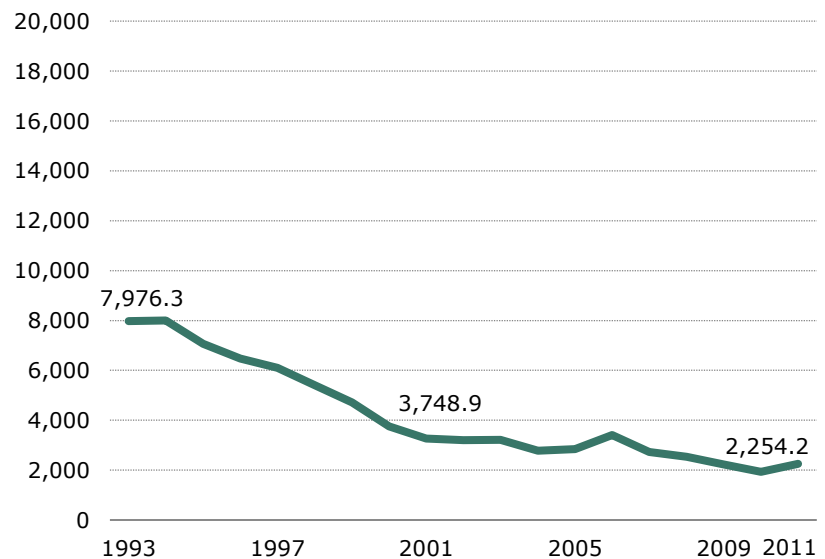
CHAPTER 4: ALL NON-FATAL VIOLENT CRIMES

As with firearm crimes, the rate of overall non-fatal violent crime—defined as aggravated or simple assault, robbery or sex crimes (with or without a gun)—also is lower than it was in the early 1990s. From 1993 to 2011, the U.S. non-fatal violent crime victimization rate for Americans ages 12 and older declined 72%.

There were 2,254 non-fatal violent crime victimizations per 100,000 Americans ages 12 and older in 2011, compared with 7,976 in 1993. The number of such victimizations in 2011—5.8 million—also was a decline from 16.8 million victimizations in 1993.

Rate of Non-fatal Violent Crime, 1993-2011

Victimizations per 100,000 people ages 12 and older



Note: Data labels shown for 1993, 2000 and 2011. 2006 NCVS estimates are not comparable with those in other years. See Methodology for details.

Source: Pew Research Center tabulations of National Crime Victimization Survey, U.S. Justice Department

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The non-fatal violent crime victimization rate declined 53% from 1993 to 2000 and decreased an additional 49% from 2000 to 2010. In 2011, the rate grew by 17%.

Looking at the main components of non-fatal violent crime, in 2011, 31% of aggravated assault victimizations involved a gun, the same share as in 1993. In 2011, 26% of robbery victimizations involved a gun, similar to the 22% share in 1993.

By gender, males accounted for 55% of non-fatal violent crime victimizations in 2011, somewhat higher than their 49% proportion of the population ages 12 and older.

Age Groups

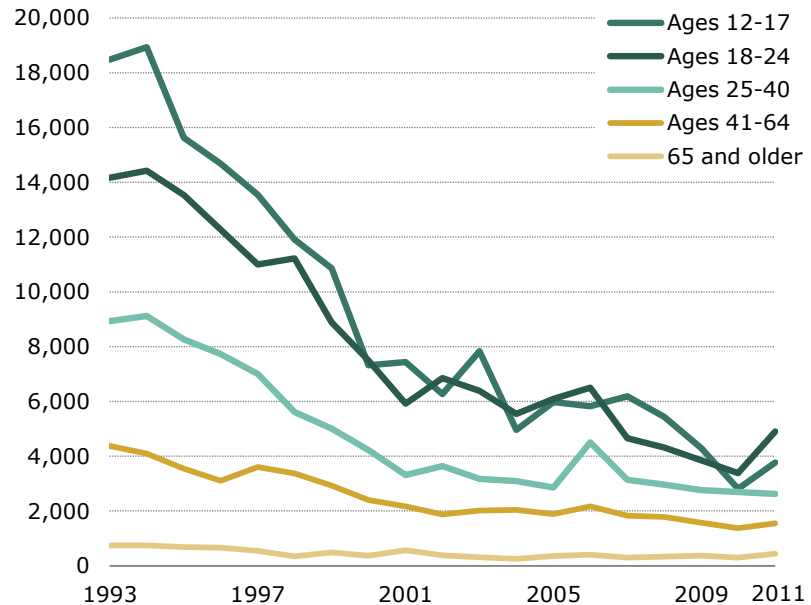
In terms of age, young adults have the highest victimization rates. The highest rate is among those ages 18 to 24, followed by those ages 12 to 17.

Those ages 12 to 24 are a higher share of victims (41% in 2011) than of the population ages 12 and older (21%). Adults ages 41 and older are a lower share of victims (29%) than their share of the population ages 12 and older (53%). Those ages 25 to 40 are a slightly larger share of victims (30%) than of the population ages 12 and older (26%).

Teens ages 12 to 17, for example, are 9% of the population ages 12 and older but were 16% of the victims of non-fatal violent crime in 2011. Adults ages 65 and older are 15% of the population ages 12 and older but were 3% of the victims of non-fatal violent crime in 2011.

Non-fatal Violent Crime Rate, by Age of Victim, 1993-2011

Victimizations per 100,000 people ages 12 and older



Note: See Appendix 3 for underlying data. 2006 NCVS estimates are not comparable with those in other years. See Methodology for details.

Source: Pew Research Center tabulations of National Crime Victimization Survey, U.S. Justice Department

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Racial and Ethnic Groups

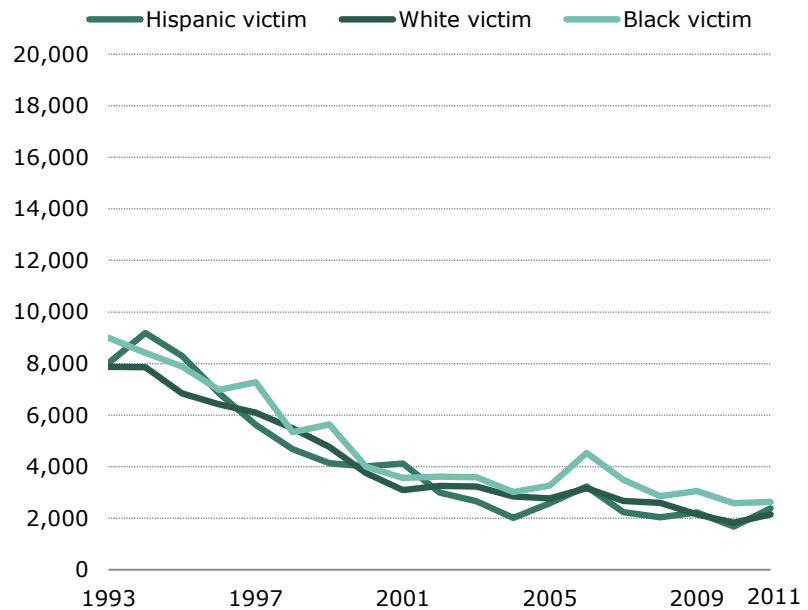
There were no statistically significant differences by racial and ethnic group in 2011 rates of non-fatal violent crime.

Non-fatal violent crime rates declined at a similar pace from 1993 to 2010 among those ages 12 and older in the nation's three largest racial and ethnic groups—77% for whites, 79% for Hispanics and 71% for blacks.

From 2010 to 2011, the non-fatal violent crime rate for Hispanics went up 42%; the rate for whites rose 18%; and the rate for blacks was essentially stable (up 2%).

Non-fatal Violent Crime Rate, by Race/Ethnicity of Victim, 1993-2011

Victimizations per 100,000 people ages 12 and older



Note: See Appendix 3 for underlying data. Whites and blacks include only non-Hispanics. Hispanics are of any race. 2006 NCVS estimates are not comparable with those in other years. See Methodology for details.

Source: Pew Research Center tabulations of National Crime Victimization Survey, U.S. Justice Department

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CHAPTER 5: CONTEXT

Crime News

Americans are hearing less about crime these days on their local television newscasts than they did a few years ago, but crime remains a common type of story on these local broadcasts, trailing only traffic and weather.

According to the “The State of the News Media 2013” report from Pew Research Center’s Project for Excellence in Journalism ([Pew Research Center’s Project for Excellence in Journalism, 2013](#)) crime accounted for 17% of the total time devoted to news on local broadcasts in 2012, compared with 29% in 2005. The largest component of local newscasts, traffic and weather stories, accounted for 29% of local newscast content in 2012, compared with 25% in 2005.

Looking at the national newscasts on ABC, CBS and NBC, crime news grew somewhat as a percentage of the network TV evening time devoted to news, to 9% in 2012 from 7% in 2007.

Crime coverage on the morning network shows grew to 14% of the time devoted to news in 2012, compared with 9% in 2007. This was due largely to stories about the death of Trayvon Martin, an unarmed Florida teenager who was fatally shot by a neighborhood watch volunteer. Trayvon Martin coverage also was a factor in the growth of crime coverage on the evening news.

News stories about fatal shootings were among the coverage most closely followed by the public in 2012, according to the Pew Research Center’s News Interest Index. The fatal mass shooting at an elementary school in Newtown, Conn., ranked second in public attention, behind the presidential election, with 57% of Americans saying they followed the story very closely. The mass shooting in an Aurora, Colo., movie theater ranked fifth, with 48% following it very closely. The Trayvon Martin shooting ranked 11th, with 35% of Americans saying they tracked the story very closely ([Pew Research Center for the People & the Press, 2012](#)).

More recently, 39% of Americans say they followed very closely the debate about gun control in late April, the week the Senate rejected gun control legislation. It was the second most closely followed story from April 18 to 21, following the bombings at the Boston marathon ([Pew Research Center for the People & the Press, 2013](#)).

Public Priority to Crime

When it comes to the public's priorities for the president and Congress, reducing crime has rebounded as a top concern. In a Pew Research Center survey in January, the month after the mass shooting in Newtown, 55% of Americans called crime reduction a top priority for Washington ([Pew Research Center, January 2013](#)). Two years ago, in 2011, just 44% said so. However, the share is much lower than it was in Pew Research Center surveys in the early 1990s or 2000s, when three-quarters or more said reducing crime should be a top priority.

Strengthening gun control laws was rated a top priority for officials in Washington by 37% of Americans in the January Pew Research Center survey. Gun control had last been included in the annual public priorities survey in 2001; in the survey that year, 47% of Americans called it a top priority.

Gun Ownership

The number of firearms available for sale to or possessed by U.S. civilians has grown in recent years, according to the Congressional Research Service and other research. A 2012 CRS report estimated that about 310 million firearms were available to or owned by civilians in the U.S. in 2009—114 million handguns, 110 million rifles and 86 million shotguns ([Congressional Research Service, 2012](#)). The figure was derived from manufacturing, export and import data published by the Bureau of Alcohol, Tobacco, Firearms and Explosives. The 2009 per capita rate of one person per gun in the U.S. had roughly doubled since 1968, the report said.

The 2007 Small Arms Survey, conducted by the Graduate Institute of International and Development Studies in Geneva ([Completing the Count, 2007](#)), estimated that 270 million firearms were owned by private citizens in the U.S. that year,¹³ or about 90 firearms per 100 people. The Small Arms Survey relied on ATF data and independent surveys.

It is not clear, however, how many U.S. households owned guns or whether the share of gun-owning U.S. households has changed over time.

According to a recent Pew Research Center survey ([Pew Research Center, March 2013](#)) 37% of adults say they or someone else in their household owns a firearm of some kind. The 2012 General Social Survey (GSS) reports 34% do. However, a Gallup survey in 2012 found that 43% of respondents said there was at least one gun in their household.

¹³ The CRS report estimated that civilians had 294 million firearms available for sale or owned in 2007.

As for whether gun ownership is rising or falling, the GSS reports a long trend of decline. In 1973, about half of households (49%) owned firearms, according to GSS data. Gallup survey data indicates that the share of households with guns is the same now as in 1972 (43%), although there was a dip in gun ownership in the 1990s.

Respondent error or misstatement in surveys about gun ownership is a widely acknowledged concern of researchers. People may be reluctant to disclose ownership, especially if they are concerned that there may be future restrictions on gun possession or if they acquired their firearms illegally. For whatever reason, husbands are more likely than wives to say there is a firearm in their households ([Wright et al., 2012](#)). Household surveys do not cover all gun ownership; they include only firearms owned by people in households.

As a 2004 National Academy of Sciences review stated, “Concerns about response errors in self-reported surveys of firearms possession and use require much more systematic research before surveys can be judged to provide accurate data to address critical issues in the study of firearms and violence. ... Without systematic research on these specific matters, scientists can only speculate” ([National Research Council, 2004](#)).

International Context

How do U.S. gun ownership or gun crime compare with those in other nations? Although international data collection suffers from the same problems as gathering information about guns in the U.S., most research agrees that civilians in the United States own more firearms both total and per capita than those in any other nation.

The Small Arms Survey in 2007 found not only that U.S. civilians had more total firearms than any other nation (270 million) but also that the rate of ownership (about 90 firearms for every 100 people) was higher than in other countries. “With less than 5 percent of the world’s population, the United States is home to 35-50 per cent of the world’s civilian-owned guns,” according to the survey, which included estimates for 178 countries.

As for gun crime, research has found that the U.S. has a higher gun homicide and overall homicide rate than most developed nations, although the U.S. does not have the world’s highest rate for either. The U.S. does not outrank other developed nations for overall crime, but crimes with firearms are more likely to occur in the U.S. ([Van Dijk, et al., 2007](#)).

The United Nations Global Study on Homicide ([UNODC, 2011](#)) estimated that 199,000 homicides, or 42% of the 468,000 worldwide total in 2010, were committed by firearm.

According to U.N. statistics, the U.S. firearm homicide rate and overall homicide rate are higher than those in Canada and in Western European and Scandinavian nations, but lower than those in many Caribbean and Latin American countries for which data are available.

Where does the U.S. rank internationally in terms of gun crime of all types? A report that compared 2003-2004 victimization survey data for 30 countries, including most developed nations, found that the U.S. ranked about average in an overall index of common crimes ([Van Dijk et al., 2007](#)).

However, the report placed the U.S. among the top countries for attacks involving firearms. “Mexico, the USA and Northern Ireland stand out with the highest percentages gun-related attacks (16%, 6% and 6% respectively).” The U.S. had the highest share of sexual assault involving guns.

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APPENDIX 1: ADDITIONAL TABLES ON FIREARM DEATHS

All Firearm Deaths, Total and by Gender, 1981-2010

Year	-----All-----		-----Male-----		-----Female-----	
	Number	Rate (per 100,000)	Number	Rate (per 100,000)	Number	Rate (per 100,000)
2010	31,672	10.3	27,356	18.0	4,316	2.7
2009	31,347	10.2	26,921	17.9	4,426	2.8
2008	31,593	10.4	27,336	18.3	4,257	2.8
2007	31,224	10.4	27,047	18.3	4,177	2.7
2006	30,896	10.4	26,712	18.2	4,184	2.8
2005	30,694	10.4	26,657	18.4	4,037	2.7
2004	29,569	10.1	25,498	17.7	4,071	2.7
2003	30,136	10.4	26,124	18.3	4,012	2.7
2002	30,242	10.5	26,098	18.5	4,144	2.8
2001	29,573	10.4	25,480	18.2	4,093	2.8
2000	28,663	10.2	24,582	17.8	4,081	2.8
1999	28,874	10.3	24,700	18.1	4,174	2.9
1998	30,708	11.1	26,189	19.4	4,519	3.2
1997	32,436	11.9	27,756	20.8	4,680	3.4
1996	34,040	12.6	29,183	22.1	4,857	3.5
1995	35,957	13.5	30,724	23.6	5,233	3.8
1994	38,505	14.6	33,021	25.7	5,484	4.1
1993	39,595	15.2	33,711	26.6	5,884	4.4
1992	37,776	14.7	32,425	25.9	5,351	4.1
1991	38,317	15.1	32,882	26.6	5,435	4.2
1990	37,155	14.9	31,736	26.1	5,419	4.2
1989	34,776	14.1	29,596	24.6	5,180	4.1
1988	33,989	13.9	28,674	24.1	5,315	4.2
1987	32,895	13.6	27,569	23.4	5,326	4.3
1986	33,373	13.9	28,084	24.0	5,289	4.3
1985	31,566	13.3	26,382	22.8	5,184	4.2
1984	31,331	13.3	26,229	22.9	5,102	4.2
1983	31,099	13.3	25,945	22.8	5,154	4.3
1982	32,957	14.2	27,517	24.4	5,440	4.6
1981	34,050	14.8	28,343	25.4	5,707	4.8

Notes: Firearm deaths include those that are unintentional, violence-related (suicide, homicide and legal intervention) and of undetermined intent.

Source: Pew Research Center tabulations of CDC's National Center for Injury Prevention and Control Web-based Injury Statistics Query and Reporting System (WISQARS)

Gun Homicide Rate Down 49% Since 1993 Peak; Public Unaware

All Firearm Deaths, by Age, 1981-2010

Year	-----Younger than 12-----		-----Ages 12-17-----		-----Ages 18-24-----	
	Number	Rate (per 100,000)	Number	Rate (per 100,000)	Number	Rate (per 100,000)
2010	180	0.4	1,157	4.6	5,244	17.1
2009	182	0.4	1,210	4.7	5,259	17.2
2008	192	0.4	1,283	5.0	5,586	18.5
2007	195	0.4	1,325	5.1	5,780	19.4
2006	185	0.4	1,408	5.4	5,971	20.2
2005	171	0.4	1,319	5.1	5,735	19.5
2004	147	0.3	1,238	4.8	5,513	18.8
2003	158	0.3	1,159	4.6	5,909	20.4
2002	191	0.4	1,252	5.0	5,756	20.2
2001	194	0.4	1,239	5.0	5,668	20.2
2000	176	0.4	1,368	5.7	5,467	20.1
1999	190	0.4	1,586	6.6	5,508	20.6
1998	235	0.5	1,736	7.3	6,061	23.3
1997	249	0.5	2,035	8.6	6,519	25.6
1996	264	0.6	2,259	9.8	6,936	27.5
1995	272	0.6	2,762	12.1	7,597	29.8
1994	278	0.6	3,040	13.7	8,610	33.5
1993	346	0.8	2,945	13.6	8,870	34.2
1992	308	0.7	2,740	13.0	8,353	32.0
1991	286	0.6	2,659	13.0	8,370	31.7
1990	312	0.7	2,386	11.9	7,628	28.4
1989	368	0.8	2,129	10.6	6,754	24.9
1988	331	0.8	1,998	9.7	6,278	23.0
1987	302	0.7	1,690	8.1	5,985	21.6
1986	267	0.6	1,667	7.8	6,187	21.9
1985	316	0.8	1,567	7.2	5,689	19.7
1984	302	0.7	1,464	6.7	5,771	19.6
1983	269	0.7	1,379	6.2	5,853	19.6
1982	338	0.8	1,462	6.5	6,504	21.6
1981	347	0.9	1,593	7.0	7,119	23.5

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All Firearm Deaths, by Age, 1981-2010 (Cont.)

Year	-----Ages 25-40-----		-----Ages 41-64-----		-----65 and older-----	
	Number	Rate (per 100,000)	Number	Rate (per 100,000)	Number	Rate (per 100,000)
2010	9,059	13.8	11,322	11.6	4,703	11.7
2009	8,918	13.6	11,047	11.4	4,723	11.9
2008	9,201	14.1	10,761	11.2	4,566	11.8
2007	9,287	14.3	10,334	10.9	4,292	11.3
2006	9,177	14.2	9,963	10.7	4,183	11.3
2005	9,237	14.3	9,897	10.8	4,325	11.8
2004	8,915	13.8	9,539	10.7	4,190	11.6
2003	9,192	14.1	9,468	10.9	4,232	11.8
2002	9,410	14.3	9,216	10.8	4,402	12.4
2001	9,416	14.2	8,673	10.5	4,364	12.4
2000	9,092	13.5	8,278	10.4	4,264	12.2
1999	9,326	13.8	7,911	10.2	4,333	12.5
1998	9,872	14.4	8,264	11.0	4,514	13.0
1997	10,778	15.6	8,331	11.4	4,497	13.1
1996	11,334	16.4	8,509	12.0	4,710	13.8
1995	12,183	17.7	8,337	12.1	4,776	14.1
1994	13,372	19.5	8,441	12.6	4,734	14.2
1993	13,716	20.0	8,749	13.5	4,935	15.0
1992	13,133	19.3	8,426	13.3	4,789	14.8
1991	13,536	20.0	8,499	13.8	4,916	15.5
1990	13,442	20.1	8,356	13.9	4,980	15.9
1989	12,560	18.9	8,077	13.7	4,852	15.8
1988	12,568	19.1	7,883	13.6	4,880	16.2
1987	11,929	18.2	8,042	14.2	4,909	16.6
1986	12,181	19.1	8,265	14.7	4,758	16.4
1985	11,385	18.3	8,139	14.6	4,443	15.6
1984	11,306	18.6	8,238	14.9	4,217	15.1
1983	11,449	19.3	8,169	15.0	3,949	14.4
1982	12,215	21.2	8,609	15.9	3,799	14.2
1981	12,630	22.6	8,950	16.6	3,377	12.9

Notes: Firearm deaths include those that are unintentional, violence-related (suicide, homicide and legal intervention) and of undetermined intent.

Source: Pew Research Center tabulations of CDC's National Center for Injury Prevention and Control Web-based Injury Statistics Query and Reporting System (WISQARS)

PEW RESEARCH CENTER

Gun Homicide Rate Down 49% Since 1993 Peak; Public Unaware

All Firearm Deaths, Total and by Race/Ethnicity, 1990-2010

	-----All-----		-----White-----		-----Hispanic-----		-----Black-----	
	Number	Rate (per 100,000)	Number	Rate (per 100,000)	Number	Rate (per 100,000)	Number	Rate (per 100,000)
Year								
2010	31,672	10.3	20,513	10.2	3,008	6.0	7,330	18.6
2009	31,347	10.2	19,955	10.0	3,202	6.5	7,345	18.8
2008	31,593	10.4	19,873	9.9	3,256	6.8	7,741	20.0
2007	31,224	10.4	18,861	9.5	3,492	7.6	8,133	21.3
2006	30,896	10.4	18,312	9.2	3,464	7.8	8,294	22.0
2005	30,694	10.4	18,521	9.3	3,469	8.1	7,865	21.1
2004	29,569	10.1	18,200	9.2	3,278	7.9	7,347	19.9
2003	30,136	10.4	18,457	9.3	3,319	8.3	7,566	20.8
2002	30,242	10.5	18,762	9.5	3,143	8.1	7,494	20.8
2001	29,573	10.4	18,676	9.4	3,087	8.3	7,063	19.8
2000	28,663	10.2	18,042	9.1	2,891	8.2	6,958	19.8
1999	28,874	10.3	18,260	9.3	2,878	8.5	6,933	20.0
1998	30,708	11.1	19,365	9.8	3,085	9.5	7,391	21.6
1997	32,436	11.9	19,912	10.2	3,331	10.8	8,264	24.6
1996	34,040	12.6	20,004	10.4	3,638	12.4	8,962	27.3
1995	35,957	13.5	20,764	10.8	4,204	15.0	9,435	29.3
1994	38,505	14.6	21,549	11.3	4,383	16.3	10,986	34.7
1993	39,595	15.2	21,960	11.6	4,399	17.1	11,434	36.8
1992	37,776	14.7	21,137	11.3	4,325	17.6	10,603	34.8
1991	38,317	15.1	21,629	11.6	4,205	17.9	10,678	35.8
1990	37,155	14.9	20,701	11.4	3,762	16.8	8,960	32.1

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All Firearm Deaths, Total and by Race/Ethnicity, 1990-2010 (Cont.)

	American Indian/ -----Alaskan Native-----		-----Asian/Pacific Islander-----	
	Number	Rate (per 100,000)	Number	Rate (per 100,000)
Year				
2010	293	11.4	383	2.4
2009	268	10.5	413	2.6
2008	256	10.1	382	2.5
2007	228	9.1	419	2.8
2006	264	10.7	459	3.2
2005	285	11.6	432	3.1
2004	261	10.7	381	2.8
2003	259	10.8	428	3.3
2002	271	11.4	417	3.3
2001	221	9.4	381	3.2
2000	226	9.6	411	3.6
1999	247	10.9	437	4.0
1998	261	11.8	442	4.2
1997	261	12.1	503	5.0
1996	223	12.2	475	5.0
1995	258	14.6	559	6.1
1994	277	16.0	549	6.3
1993	242	14.4	585	7.0
1992	199	12.2	501	6.3
1991	245	15.4	514	6.9
1990	222	14.4	401	5.7

Notes: Hispanics are of any race. White, black, American Indian/Alaskan Native, and Asian/Pacific Islander include only non-Hispanics. Data on Hispanic Origin were not gathered prior to 1990. Firearm deaths include those that are unintentional, violence-related (suicide, homicide and legal intervention) and of undetermined intent.

Source: Pew Research Center tabulations of CDC's National Center for Injury Prevention and Control Web-based Injury Statistics Query and Reporting System (WISQARS)

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Gun Homicide Rate Down 49% Since 1993 Peak; Public Unaware

Firearm Homicide Deaths, Total and by Gender, 1981-2010

Year	-----All-----		-----Male-----		-----Female-----	
	Number	Rate (per 100,000)	Number	Rate (per 100,000)	Number	Rate (per 100,000)
2010	11,078	3.6	9,340	6.2	1,738	1.1
2009	11,493	3.7	9,615	6.4	1,878	1.2
2008	12,179	4.0	10,361	6.9	1,818	1.2
2007	12,632	4.2	10,767	7.3	1,865	1.2
2006	12,791	4.3	10,886	7.4	1,905	1.3
2005	12,352	4.2	10,561	7.3	1,791	1.2
2004	11,624	4.0	9,921	6.9	1,703	1.1
2003	11,920	4.1	10,126	7.1	1,794	1.2
2002	11,829	4.1	9,899	7.0	1,930	1.3
2001	11,348	4.0	9,532	6.8	1,816	1.3
2000	10,801	3.8	9,006	6.5	1,795	1.3
1999	10,828	3.9	8,944	6.5	1,884	1.3
1998	11,798	4.3	9,771	7.2	2,027	1.4
1997	13,252	4.9	11,147	8.4	2,105	1.5
1996	14,037	5.2	11,735	8.9	2,302	1.7
1995	15,551	5.8	13,021	10.0	2,530	1.9
1994	17,527	6.7	14,766	11.5	2,761	2.1
1993	18,253	7.0	15,228	12.0	3,025	2.3
1992	17,488	6.8	14,747	11.8	2,741	2.1
1991	17,746	7.0	14,926	12.1	2,820	2.2
1990	16,218	6.5	13,629	11.2	2,589	2.0
1989	14,464	5.9	12,018	10.0	2,446	1.9
1988	13,645	5.6	11,134	9.3	2,511	2.0
1987	12,657	5.2	10,202	8.6	2,455	2.0
1986	13,029	5.4	10,656	9.1	2,373	1.9
1985	11,836	5.0	9,532	8.2	2,304	1.9
1984	11,815	5.0	9,615	8.4	2,200	1.8
1983	12,040	5.1	9,863	8.7	2,177	1.8
1982	13,830	6.0	11,402	10.1	2,428	2.0
1981	15,089	6.6	12,548	11.3	2,541	2.2

Note: There were 11,101 firearm homicide deaths in 2011 and the rate of 3.6 per 100,000 people remained the same, according to preliminary Centers for Disease Control data.

Source: Pew Research Center tabulations of CDC's National Center for Injury Prevention and Control Web-based Injury Statistics Query and Reporting System (WISQARS)

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Firearm Homicide Deaths, by Age, 1981-2010

Year	-----Younger than 12-----		-----Ages 12-17-----		-----Ages 18-24-----	
	Number	Rate (per 100,000)	Number	Rate (per 100,000)	Number	Rate (per 100,000)
2010	127	0.3	708	2.8	3,273	10.7
2009	142	0.3	745	2.9	3,398	11.1
2008	140	0.3	844	3.3	3,662	12.1
2007	140	0.3	898	3.5	3,895	13.1
2006	142	0.3	940	3.6	4,030	13.6
2005	111	0.2	810	3.1	3,808	12.9
2004	105	0.2	763	3.0	3,485	11.9
2003	121	0.3	684	2.7	3,840	13.3
2002	151	0.3	721	2.9	3,708	13.0
2001	150	0.3	685	2.8	3,611	12.9
2000	110	0.2	709	2.9	3,371	12.4
1999	142	0.3	859	3.6	3,319	12.4
1998	157	0.3	888	3.7	3,753	14.4
1997	174	0.4	1,134	4.8	4,148	16.3
1996	178	0.4	1,295	5.6	4,334	17.2
1995	183	0.4	1,597	7.0	4,726	18.6
1994	176	0.4	1,736	7.8	5,435	21.2
1993	240	0.5	1,735	8.0	5,673	21.8
1992	182	0.4	1,599	7.6	5,402	20.7
1991	167	0.4	1,509	7.4	5,386	20.4
1990	174	0.4	1,297	6.5	4,598	17.1
1989	197	0.5	1,078	5.4	3,837	14.1
1988	176	0.4	864	4.2	3,471	12.7
1987	139	0.3	704	3.4	3,181	11.5
1986	131	0.3	653	3.1	3,195	11.3
1985	149	0.4	553	2.6	2,673	9.2
1984	156	0.4	511	2.3	2,744	9.3
1983	122	0.3	503	2.3	2,775	9.3
1982	158	0.4	587	2.6	3,211	10.6
1981	149	0.4	662	2.9	3,668	12.1

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Firearm Homicide Deaths, by Age, 1981-2010 (Cont.)

Year	-----Ages 25-40-----		-----Ages 41-64-----		-----65 and older-----	
	Number	Rate (per 100,000)	Number	Rate (per 100,000)	Number	Rate (per 100,000)
2010	4,422	6.7	2,212	2.3	331	0.8
2009	4,564	7.0	2,277	2.3	361	0.9
2008	4,913	7.5	2,300	2.4	318	0.8
2007	5,048	7.8	2,346	2.5	296	0.8
2006	5,063	7.8	2,344	2.5	264	0.7
2005	5,047	7.8	2,245	2.5	322	0.9
2004	4,718	7.3	2,210	2.5	322	0.9
2003	4,797	7.4	2,188	2.5	272	0.8
2002	4,780	7.3	2,161	2.5	295	0.8
2001	4,664	7.0	1,920	2.3	307	0.9
2000	4,335	6.4	1,971	2.5	293	0.8
1999	4,270	6.3	1,912	2.5	311	0.9
1998	4,585	6.7	2,091	2.8	306	0.9
1997	5,183	7.5	2,245	3.1	351	1.0
1996	5,519	8.0	2,313	3.3	382	1.1
1995	6,152	8.9	2,471	3.6	398	1.2
1994	7,105	10.3	2,640	4.0	413	1.2
1993	7,371	10.8	2,743	4.2	465	1.4
1992	7,185	10.5	2,669	4.2	428	1.3
1991	7,432	11.0	2,757	4.5	454	1.4
1990	7,106	10.6	2,548	4.2	455	1.5
1989	6,427	9.7	2,434	4.1	460	1.5
1988	6,347	9.6	2,296	4.0	451	1.5
1987	5,845	8.9	2,280	4.0	478	1.6
1986	6,144	9.6	2,415	4.3	452	1.6
1985	5,525	8.9	2,448	4.4	467	1.6
1984	5,428	8.9	2,520	4.6	432	1.5
1983	5,573	9.4	2,627	4.8	415	1.5
1982	6,334	11.0	2,994	5.5	525	2.0
1981	6,719	12.0	3,373	6.3	493	1.9

Source: Pew Research Center tabulations of CDC's National Center for Injury Prevention and Control Web-based Injury Statistics Query and Reporting System (WISQARS)

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Firearm Homicide Deaths, Total and by Race/Ethnicity, 1990-2010

	-----All-----		-----White-----		-----Hispanic-----		-----Black-----	
	Number	Rate (per 100,000)	Number	Rate (per 100,000)	Number	Rate (per 100,000)	Number	Rate (per 100,000)
Year								
2010	11,078	3.6	2,775	1.4	1,919	3.8	6,051	15.3
2009	11,493	3.7	2,860	1.4	2,115	4.3	6,117	15.6
2008	12,179	4.0	3,117	1.6	2,260	4.7	6,481	16.8
2007	12,632	4.2	3,053	1.5	2,385	5.2	6,867	18.0
2006	12,791	4.3	2,860	1.4	2,472	5.5	7,021	18.6
2005	12,352	4.2	2,871	1.4	2,453	5.7	6,600	17.7
2004	11,624	4.0	2,921	1.5	2,241	5.4	6,119	16.6
2003	11,920	4.1	2,883	1.5	2,316	5.8	6,319	17.3
2002	11,829	4.1	3,052	1.5	2,168	5.6	6,181	17.1
2001	11,348	4.0	3,085	1.6	2,123	5.7	5,790	16.2
2000	10,801	3.8	2,861	1.4	1,958	5.5	5,622	16.0
1999	10,828	3.9	2,995	1.5	1,939	5.7	5,508	15.9
1998	11,798	4.3	3,340	1.7	2,090	6.5	5,957	17.4
1997	13,252	4.9	3,751	1.9	2,298	7.4	6,737	20.0
1996	14,037	5.2	3,631	1.9	2,529	8.6	7,231	22.1
1995	15,551	5.8	4,054	2.1	3,008	10.7	7,765	24.1
1994	17,527	6.7	4,528	2.4	3,149	11.7	9,112	28.8
1993	18,253	7.0	4,566	2.4	3,192	12.4	9,548	30.7
1992	17,488	6.8	4,546	2.4	3,237	13.2	8,899	29.2
1991	17,746	7.0	4,679	2.5	3,103	13.2	9,039	30.3
1990	16,218	6.5	4,191	2.3	2,737	12.2	7,484	26.9

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Firearm Homicide Deaths, Total and by Race/Ethnicity, 1990-2010 (Cont.)

	American Indian/ -----Alaskan Native-----		-----Asian/Pacific Islander-----	
	Number	Rate (per 100,000)	Number	Rate (per 100,000)
Year				
2010	101	3.9	155	1.0
2009	99	3.9	199	1.3
2008	86	3.4	198	1.3
2007	83	3.3	190	1.3
2006	109	4.4	270	1.9
2005	106	4.3	258	1.9
2004	96	4.0	187	1.4
2003	101	4.2	233	1.8
2002	109	4.6	233	1.9
2001	78	3.3	181	1.5
2000	80	3.4	204	1.8
1999	94	4.1	224	2.0
1998	91	4.1	232	2.2
1997	91	4.2	289	2.9
1996	74	4.1	293	3.1
1995	107	6.0	334	3.7
1994	107	6.2	318	3.6
1993	91	5.4	392	4.7
1992	79	4.8	313	4.0
1991	92	5.8	340	4.6
1990	70	4.6	245	3.5

Notes: Hispanics are of any race. White, black, American Indian/Alaskan Native, and Asian/Pacific Islander include only non-Hispanics. Data on Hispanic origin were not gathered prior to 1990.

Source: Pew Research Center tabulations of CDC's National Center for Injury Prevention and Control Web-based Injury Statistics Query and Reporting System (WISQARS)

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Firearm Suicide Deaths, Total and by Gender, 1981-2010

Year	-----All-----		-----Male-----		-----Female-----	
	Number	Rate (per 100,000)	Number	Rate (per 100,000)	Number	Rate (per 100,000)
2010	19,392	6.3	16,962	11.2	2,430	1.5
2009	18,735	6.1	16,307	10.8	2,428	1.6
2008	18,223	6.0	15,931	10.7	2,292	1.5
2007	17,352	5.8	15,181	10.3	2,171	1.4
2006	16,883	5.7	14,734	10.0	2,149	1.4
2005	17,002	5.8	14,916	10.3	2,086	1.4
2004	16,750	5.7	14,523	10.1	2,227	1.5
2003	16,907	5.8	14,827	10.4	2,080	1.4
2002	17,108	5.9	15,045	10.7	2,063	1.4
2001	16,869	5.9	14,758	10.5	2,111	1.5
2000	16,586	5.9	14,454	10.5	2,132	1.5
1999	16,599	5.9	14,479	10.6	2,120	1.5
1998	17,424	6.3	15,104	11.2	2,320	1.6
1997	17,566	6.4	15,194	11.4	2,372	1.7
1996	18,166	6.7	15,808	12.0	2,358	1.7
1995	18,503	6.9	16,060	12.3	2,443	1.8
1994	18,765	7.1	16,287	12.7	2,478	1.8
1993	18,940	7.3	16,381	12.9	2,559	1.9
1992	18,169	7.1	15,802	12.6	2,367	1.8
1991	18,526	7.3	16,120	13.1	2,406	1.9
1990	18,885	7.6	16,285	13.4	2,600	2.0
1989	18,178	7.4	15,680	13.0	2,498	2.0
1988	18,169	7.4	15,656	13.1	2,513	2.0
1987	18,136	7.5	15,539	13.2	2,597	2.1
1986	18,153	7.6	15,518	13.3	2,635	2.1
1985	17,363	7.3	14,809	12.8	2,554	2.1
1984	17,113	7.3	14,504	12.6	2,609	2.2
1983	16,600	7.1	13,959	12.3	2,641	2.2
1982	16,560	7.1	13,872	12.3	2,688	2.3
1981	16,139	7.0	13,378	12.0	2,761	2.3

Source: Pew Research Center tabulations of CDC's National Center for Injury Prevention and Control Web-based Injury Statistics Query and Reporting System (WISQARS)

PEW RESEARCH CENTER

Gun Homicide Rate Down 49% Since 1993 Peak; Public Unaware

Firearm Suicide Deaths, by Age, 1981-2010

Year	-----Younger than 12-----		-----Ages 12-17-----		-----Ages 18-24-----	
	Number	Rate (per 100,000)	Number	Rate (per 100,000)	Number	Rate (per 100,000)
2010	4	0.0	371	1.5	1,752	5.7
2009	0	0.0	401	1.6	1,665	5.5
2008	3	0.0	358	1.4	1,698	5.6
2007	2	0.0	323	1.2	1,628	5.5
2006	5	0.0	366	1.4	1,669	5.6
2005	6	0.0	406	1.6	1,634	5.5
2004	1	0.0	383	1.5	1,779	6.1
2003	5	0.0	372	1.5	1,772	6.1
2002	4	0.0	419	1.7	1,751	6.1
2001	2	0.0	449	1.8	1,769	6.3
2000	6	0.0	531	2.2	1,840	6.8
1999	6	0.0	552	2.3	1,860	7.0
1998	7	0.0	641	2.7	2,016	7.7
1997	7	0.0	672	2.9	2,035	8.0
1996	16	0.0	704	3.0	2,166	8.6
1995	9	0.0	827	3.6	2,416	9.5
1994	12	0.0	890	4.0	2,630	10.2
1993	8	0.0	824	3.8	2,568	9.9
1992	10	0.0	811	3.9	2,427	9.3
1991	7	0.0	781	3.8	2,477	9.4
1990	11	0.0	747	3.7	2,551	9.5
1989	13	0.0	703	3.5	2,439	9.0
1988	7	0.0	758	3.7	2,376	8.7
1987	10	0.0	710	3.4	2,354	8.5
1986	9	0.0	709	3.3	2,521	8.9
1985	8	0.0	688	3.2	2,524	8.7
1984	7	0.0	565	2.6	2,512	8.5
1983	7	0.0	567	2.6	2,511	8.4
1982	11	0.0	551	2.5	2,690	8.9
1981	4	0.0	572	2.5	2,764	9.1

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Firearm Suicide Deaths, by Age, 1981-2010 (Cont.)

Year	-----Ages 25-40-----		-----Ages 41-64-----		-----65 and older-----	
	Number	Rate (per 100,000)	Number	Rate (per 100,000)	Number	Rate (per 100,000)
2010	4,258	6.5	8,729	8.9	4,276	10.6
2009	4,004	6.1	8,415	8.7	4,248	10.7
2008	3,932	6.0	8,089	8.4	4,143	10.7
2007	3,859	6.0	7,643	8.1	3,895	10.3
2006	3,725	5.8	7,289	7.8	3,828	10.3
2005	3,787	5.9	7,279	8.0	3,889	10.6
2004	3,834	5.9	6,994	7.8	3,756	10.4
2003	3,962	6.1	6,942	8.0	3,854	10.7
2002	4,204	6.4	6,722	7.9	4,006	11.3
2001	4,315	6.5	6,385	7.7	3,943	11.2
2000	4,334	6.4	6,001	7.5	3,869	11.1
1999	4,576	6.8	5,679	7.3	3,921	11.3
1998	4,806	7.0	5,837	7.7	4,113	11.9
1997	5,090	7.4	5,747	7.9	4,008	11.7
1996	5,262	7.6	5,824	8.2	4,184	12.3
1995	5,457	7.9	5,530	8.1	4,258	12.6
1994	5,574	8.1	5,462	8.2	4,191	12.6
1993	5,610	8.2	5,625	8.7	4,301	13.1
1992	5,284	7.7	5,402	8.5	4,233	13.1
1991	5,519	8.2	5,406	8.8	4,329	13.6
1990	5,693	8.5	5,481	9.1	4,396	14.1
1989	5,487	8.3	5,288	8.9	4,247	13.8
1988	5,551	8.4	5,207	9.0	4,264	14.2
1987	5,380	8.2	5,386	9.5	4,294	14.5
1986	5,326	8.3	5,441	9.7	4,143	14.3
1985	5,086	8.2	5,242	9.4	3,813	13.4
1984	5,151	8.5	5,282	9.6	3,590	12.9
1983	5,056	8.5	5,088	9.3	3,366	12.3
1982	5,044	8.7	5,138	9.5	3,120	11.6
1981	5,032	9.0	5,027	9.3	2,734	10.4

Source: Pew Research Center tabulations of CDC's National Center for Injury Prevention and Control Web-based Injury Statistics Query and Reporting System (WISQARS)

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Gun Homicide Rate Down 49% Since 1993 Peak; Public Unaware

Firearm Suicide Deaths, Total and by Race/Ethnicity, 1990-2010

	-----All-----		-----White-----		-----Hispanic-----		-----Black-----	
	Number	Rate (per 100,000)	Number	Rate (per 100,000)	Number	Rate (per 100,000)	Number	Rate (per 100,000)
Year								
2010	19,392	6.3	16,928	8.5	962	1.9	1,057	2.7
2009	18,735	6.1	16,351	8.2	955	1.9	1,024	2.6
2008	18,223	6.0	15,968	8.0	863	1.8	1,034	2.7
2007	17,352	5.8	15,073	7.6	931	2.0	975	2.6
2006	16,883	5.7	14,721	7.4	817	1.8	994	2.6
2005	17,002	5.8	14,829	7.5	824	1.9	997	2.7
2004	16,750	5.7	14,507	7.3	888	2.1	995	2.7
2003	16,907	5.8	14,737	7.4	835	2.1	993	2.7
2002	17,108	5.9	14,865	7.5	834	2.2	1,041	2.9
2001	16,869	5.9	14,648	7.4	798	2.1	1,069	3.0
2000	16,586	5.9	14,333	7.3	813	2.3	1,073	3.1
1999	16,599	5.9	14,316	7.3	794	2.3	1,112	3.2
1998	17,424	6.3	15,081	7.7	840	2.6	1,098	3.2
1997	17,566	6.4	15,113	7.7	850	2.8	1,189	3.5
1996	18,166	6.7	15,240	7.9	923	3.1	1,288	3.9
1995	18,503	6.9	15,509	8.1	983	3.5	1,274	4.0
1994	18,765	7.1	15,653	8.2	1,021	3.8	1,353	4.3
1993	18,940	7.3	15,904	8.4	982	3.8	1,323	4.3
1992	18,169	7.1	15,249	8.1	880	3.6	1,245	4.1
1991	18,526	7.3	15,636	8.4	906	3.9	1,205	4.0
1990	18,885	7.6	15,274	8.4	840	3.8	1,113	4.0

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Firearm Suicide Deaths, Total and by Race/Ethnicity, 1990-2010 (Cont.)

	American Indian/ -----Alaskan Native-----		-----Asian/Pacific Islander-----	
	Number	Rate (per 100,000)	Number	Rate (per 100,000)
Year				
2010	169	6.6	211	1.3
2009	151	5.9	199	1.3
2008	144	5.7	172	1.1
2007	126	5.0	212	1.4
2006	139	5.6	170	1.2
2005	155	6.3	143	1.0
2004	143	5.9	178	1.3
2003	125	5.2	180	1.4
2002	140	5.9	167	1.3
2001	124	5.3	179	1.5
2000	126	5.4	185	1.6
1999	128	5.6	199	1.8
1998	143	6.5	196	1.9
1997	143	6.6	194	1.9
1996	126	6.9	170	1.8
1995	119	6.7	197	2.2
1994	140	8.1	204	2.3
1993	123	7.3	162	1.9
1992	92	5.6	163	2.1
1991	112	7.1	161	2.2
1990	120	7.8	136	1.9

Notes: Hispanics are of any race. White, black, American Indian/Alaskan Native, and Asian/Pacific Islander include only non-Hispanics. Data on Hispanic origin were not gathered prior to 1990.

Source: Pew Research Center tabulations of CDC's National Center for Injury Prevention and Control Web-based Injury Statistics Query and Reporting System (WISQARS)

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APPENDIX 2: ADDITIONAL TABLES ON NON-FATAL VIOLENT FIREARM CRIMES

Non-fatal Firearm Crimes, Total and by Gender, 1993-2011

Victimizations among people ages 12 and older

Year	-----All-----		-----Male-----		-----Female-----	
	Number	Rate	Number	Rate	Number	Rate
	(in thousands)	(per 100,000)	(in thousands)	(per 100,000)	(in thousands)	(per 100,000)
2011	467	181.5	264	209.3	203	154.7
2010	415	162.1	207	166.0	208	158.5
2009	410	161.4	292	235.3	118	90.9
2008	371	147.2	208	169.2	163	126.2
2007	555	221.6	334	273.8	220	171.9
2006	614	248.5	344	285.7	270	213.2
2005	504	205.9	330	277.3	174	138.4
2004	457	188.9	269	228.9	188	151.0
2003	467	195.3	319	275.0	148	120.2
2002	540	233.2	298	265.2	242	203.0
2001	563	245.7	344	309.6	219	185.5
2000	610	269.1	434	395.2	176	150.6
1999	641	285.4	382	352.0	259	223.0
1998	835	376.5	563	522.9	273	238.8
1997	1,024	465.8	617	579.3	407	359.0
1996	1,101	506.7	728	692.8	373	332.5
1995	1,193	554.8	867	834.1	326	293.6
1994	1,568	735.8	1,066	1,034.2	502	456.2
1993	1,530	725.3	1,008	987.4	522	479.5

Notes: 2006 NCVS estimates are not comparable with those in other years. See Methodology for details. Includes aggravated assault, robbery and sex crimes committed with a firearm.

Source: Pew Research Center tabulations of National Crime Victimization Survey, U.S. Justice Department

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Non-fatal Firearm Crimes, Total and by Age, 1993-2011

Victimizations among people ages 12 and older

Year	-----All-----		-----Ages 12-17-----		-----Ages 18-24-----	
	Number	Rate	Number	Rate	Number	Rate
	(in thousands)	(per 100,000)	(in thousands)	(per 100,000)	(in thousands)	(per 100,000)
2011	467	181.5	58	238.7	102	341.8
2010	415	162.1	*11	*44.2	206	689.6
2009	410	161.4	*17	*69.0	141	478.4
2008	371	147.2	*29	*116.0	89	305.3
2007	555	221.6	*149	*585.5	100	342.6
2006	614	248.5	68	268.5	164	577.7
2005	504	205.9	*46	*182.5	154	539.7
2004	457	188.9	*15	*58.9	97	343.4
2003	467	195.3	81	323.3	123	441.4
2002	540	233.2	59	238.8	224	817.0
2001	563	245.7	58	240.2	175	643.4
2000	610	269.1	49	205.5	190	714.3
1999	641	285.4	104	433.4	176	676.5
1998	835	376.5	118	500.7	281	1,105.9
1997	1,024	465.8	148	629.7	344	1,372.4
1996	1,101	506.7	183	787.9	291	1,176.7
1995	1,193	554.8	167	729.9	320	1,279.4
1994	1,568	735.8	275	1,228.0	494	1,940.9
1993	1,530	725.3	229	1,046.5	434	1,689.7

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Non-fatal Firearm Crimes, Total and by Age, 1993-2011 (Cont.)*Victimizations among people ages 12 and older*

Year	-----Ages 25-40-----		-----Ages 41-64-----		-----65 and older-----	
	Number	Rate	Number	Rate	Number	Rate
	(in thousands)	(per 100,000)	(in thousands)	(per 100,000)	(in thousands)	(per 100,000)
2011	166	252.5	126	128.5	*16	*39.1
2010	101	153.3	87	89.3	*10	*27.0
2009	126	191.3	121	125.8	*6	*14.5
2008	136	206.8	105	110.7	*12	*31.3
2007	189	287.5	115	122.2	*3	*7.3
2006	188	288.7	170	183.3	*24	*66.7
2005	187	289.0	101	111.8	*14	*41.2
2004	178	273.0	164	185.8	*2	*6.8
2003	139	211.1	119	138.4	*5	*13.9
2002	145	229.4	99	119.8	*12	*37.4
2001	186	289.6	131	162.3	*13	*40.2
2000	195	301.0	158	200.7	*18	*54.3
1999	253	385.5	90	118.2	*18	*54.2
1998	270	406.5	161	217.3	*5	*14.5
1997	319	474.0	189	262.2	*24	*76.5
1996	422	623.1	184	263.7	*20	*63.7
1995	448	659.3	237	350.0	*21	*67.2
1994	494	726.0	260	392.7	45	145.9
1993	595	871.8	257	399.2	*14	*47.0

Notes: *Interpret with caution. Estimate based on 10 or fewer sample cases. Figures are not available for people younger than 12. 2006 NCVS estimates are not comparable with those in other years. See Methodology for details. Includes aggravated assault, robbery and sex crimes committed with a firearm.

Source: Pew Research Center tabulations of National Crime Victimization Survey, U.S. Justice Department

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Non-fatal Firearm Crimes, Total and by Race/Ethnicity, 1993-2011

Victimizations among people ages 12 and older

	-----All-----		-----White-----		-----Hispanic-----		-----Black-----		-----Other-----	
	Number (in thousands)	Rate (per 100,000)	Number (in thousands)	Rate (per 100,000)	Number (in thousands)	Rate (per 100,000)	Number (in thousands)	Rate (per 100,000)	Number (in thousands)	Rate (per 100,000)
Year										
2011	467	181.5	274	158.7	81	215.0	76	245.5	37	223.7
2010	415	162.1	195	112.0	82	229.9	96	315.8	*42	*263.4
2009	410	161.4	151	87.0	70	198.6	172	579.6	*17	*110.4
2008	371	147.2	179	102.9	50	144.4	125	434.7	*17	*114.1
2007	555	221.6	176	102.3	79	228.2	272	948.3	*29	*188.1
2006	614	248.5	317	183.4	121	388.2	134	468.0	*43	*293.8
2005	504	205.9	274	159.6	90	284.8	117	418.2	*23	*170.0
2004	457	188.9	281	165.2	45	147.0	118	424.8	*12	*94.4
2003	467	195.3	280	165.1	49	162.2	126	464.2	*12	*96.8
2002	540	233.2	241	144.3	100	371.8	192	677.3	*7	*72.1
2001	563	245.7	337	202.3	93	366.4	123	441.1	*10	*108.2
2000	610	269.1	343	206.8	96	390.7	156	568.0	*16	*175.2
1999	641	285.4	269	162.5	125	544.6	223	824.7	*24	*262.8
1998	835	376.5	447	271.3	100	461.5	201	755.5	87	995.0
1997	1,024	465.8	683	416.0	138	654.0	190	724.5	*13	*152.8
1996	1,101	506.7	635	388.1	148	723.2	295	1,164.4	*23	*291.3
1995	1,193	554.8	631	387.3	224	1,155.4	289	1,145.6	50	659.1
1994	1,568	735.8	864	532.5	233	1,258.3	424	1,689.2	47	649.4
1993	1,530	725.3	808	499.1	220	1,286.8	389	1,570.0	113	1,572.9

Notes: *Interpret with caution. Estimate based on 10 or fewer sample cases. Hispanics are of any race. White, black and "other" include only non-Hispanics. 2006 NCVS estimates are not comparable with those in other years. See Methodology for details. Includes aggravated assault, robbery and sex crimes committed with a firearm.

Source: Pew Research Center tabulations of National Crime Victimization Survey, U.S. Justice Department

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Non-fatal Firearm Crimes, Total and by Type of Crime, 1993-2011

Victimizations among people ages 12 and older

Year	-----All-----		--Aggravated assault--		-----Robbery-----		-----Sex crimes-----	
	Number (in thousands)	Rate (per 100,000)	Number (in thousands)	Rate (per 100,000)	Number (in thousands)	Rate (per 100,000)	Number (in thousands)	Rate (per 100,000)
2011	467	181.5	322	124.9	143	55.5	*3	*1.0
2010	415	162.1	218	85.2	141	54.9	*56	*22.0
2009	410	161.4	239	93.9	172	67.5	---	---
2008	371	147.2	238	94.4	133	52.8	---	---
2007	555	221.6	397	158.5	155	61.9	*3	*1.1
2006	614	248.5	427	172.7	154	62.5	*33	*13.4
2005	504	205.9	330	134.9	168	68.7	*6	*2.4
2004	457	188.9	335	138.6	122	50.3	---	---
2003	467	195.3	302	126.4	159	66.4	*6	*2.4
2002	540	233.2	382	165.1	146	63.1	*11	*4.9
2001	563	245.7	360	157.2	197	86.0	*6	*2.4
2000	610	269.1	417	183.7	187	82.5	*7	*2.9
1999	641	285.4	440	196.0	195	87.0	*6	*2.5
1998	835	376.5	615	277.1	195	87.9	*26	*11.6
1997	1,024	465.8	781	355.1	236	107.4	*7	*3.3
1996	1,101	506.7	738	339.8	351	161.4	*12	*5.5
1995	1,193	554.8	810	376.4	368	171.1	*15	*7.2
1994	1,568	735.8	1,089	510.8	453	212.8	*26	*12.2
1993	1,530	725.3	1,068	506.4	390	185.1	71	33.8

Notes: *Interpret with caution. Estimate based on 10 or fewer sample cases. "----" means no cases available. 2006 NCVS estimates are not comparable with those in other years. See Methodology for details.

Source: Pew Research Center tabulations of National Crime Victimization Survey, U.S. Justice Department

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APPENDIX 3: ADDITIONAL TABLES ON ALL NON-FATAL VIOLENT CRIMES

All Non-fatal Violent Crimes, Total and by Gender, 1993-2011

Victimizations among people ages 12 and older

Year	-----All-----		-----Male-----		-----Female-----	
	Number (in thousands)	Rate (per 100,000)	Number (in thousands)	Rate (per 100,000)	Number (in thousands)	Rate (per 100,000)
2011	5,805	2,254.2	3,206	2,542.6	2,599	1,977.5
2010	4,936	1,928.4	2,511	2,008.6	2,425	1,851.9
2009	5,669	2,231.1	2,760	2,225.4	2,909	2,236.4
2008	6,393	2,534.7	3,317	2,694.9	3,077	2,382.0
2007	6,814	2,721.9	3,751	3,071.1	3,064	2,389.3
2006	8,430	3,409.9	4,482	3,720.5	3,949	3,114.8
2005	6,948	2,841.6	4,044	3,399.5	2,904	2,313.0
2004	6,726	2,782.8	3,553	3,024.6	3,173	2,554.1
2003	7,679	3,208.9	4,014	3,459.5	3,665	2,972.9
2002	7,425	3,205.9	3,756	3,346.5	3,668	3,073.7
2001	7,477	3,261.8	3,828	3,446.6	3,648	3,088.1
2000	8,503	3,748.9	4,809	4,379.0	3,694	3,157.4
1999	10,601	4,720.5	5,486	5,049.0	5,115	4,412.5
1998	12,011	5,413.1	6,835	6,352.5	5,176	4,528.6
1997	13,425	6,106.9	7,198	6,752.9	6,227	5,498.9
1996	14,060	6,472.1	7,860	7,482.3	6,199	5,526.0
1995	15,202	7,068.1	8,657	8,329.0	6,545	5,889.0
1994	17,059	8,003.8	9,522	9,236.5	7,537	6,848.9
1993	16,823	7,976.3	9,891	9,690.1	6,932	6,369.0

Notes: 2006 NCVS estimates are not comparable with those in other years. See Methodology for details. Includes aggravated and simple assault, robbery and sex crimes, committed with and without a firearm.

Source: Pew Research Center tabulations of National Crime Victimization Survey, U.S. Justice Department

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Gun Homicide Rate Down 49% Since 1993 Peak; Public Unaware

All Non-fatal Violent Crimes, Total and by Age, 1993-2011*Victimizations among people ages 12 and older*

Year	-----All-----		-----Ages 12-17-----		-----Ages 18-24-----	
	Number (in thousands)	Rate (per 100,000)	Number (in thousands)	Rate (per 100,000)	Number (in thousands)	Rate (per 100,000)
2011	5,805	2,254.2	915	3,765.2	1,460	4,903.4
2010	4,936	1,928.4	688	2,813.6	1,012	3,388.5
2009	5,669	2,231.1	1,059	4,295.9	1,131	3,846.9
2008	6,393	2,534.7	1,360	5,434.4	1,261	4,317.0
2007	6,814	2,721.9	1,571	6,182.9	1,356	4,661.4
2006	8,430	3,409.9	1,485	5,825.9	1,852	6,506.7
2005	6,948	2,841.6	1,518	5,978.0	1,741	6,095.4
2004	6,726	2,782.8	1,254	4,965.5	1,571	5,541.2
2003	7,679	3,208.9	1,974	7,831.0	1,779	6,382.8
2002	7,425	3,205.9	1,554	6,272.3	1,876	6,851.2
2001	7,477	3,261.8	1,802	7,442.5	1,607	5,919.8
2000	8,503	3,748.9	1,757	7,316.8	1,999	7,501.2
1999	10,601	4,720.5	2,596	10,865.5	2,313	8,886.8
1998	12,011	5,413.1	2,816	11,906.0	2,853	11,224.8
1997	13,425	6,106.9	3,189	13,549.6	2,756	10,998.8
1996	14,060	6,472.1	3,410	14,678.8	3,038	12,268.7
1995	15,202	7,068.1	3,578	15,626.3	3,386	13,538.2
1994	17,059	8,003.8	4,246	18,932.8	3,667	14,420.4
1993	16,823	7,976.3	4,043	18,480.4	3,642	14,163.3

Continued on next page

All Non-fatal Violent Crimes, Total and by Age, 1993-2011 (Cont.)*Victimizations among people ages 12 and older*

Year	-----Ages 25-40-----		-----Ages 41-64-----		-----65 and older-----	
	Number (in thousands)	Rate (per 100,000)	Number (in thousands)	Rate (per 100,000)	Number (in thousands)	Rate (per 100,000)
2011	1,731	2,628.6	1,523	1,555.5	176	443.8
2010	1,784	2,700.2	1,337	1,379.6	116	299.3
2009	1,822	2,768.2	1,514	1,573.7	143	375.6
2008	1,956	2,968.1	1,691	1,780.2	125	337.3
2007	2,061	3,137.3	1,718	1,828.3	109	299.8
2006	2,938	4,510.9	2,012	2,173.5	143	402.6
2005	1,854	2,862.2	1,708	1,883.3	127	360.9
2004	2,008	3,085.9	1,807	2,043.0	86	249.1
2003	2,082	3,168.1	1,738	2,015.1	106	310.0
2002	2,307	3,644.2	1,562	1,880.7	126	379.6
2001	2,128	3,312.7	1,755	2,172.6	185	563.3
2000	2,738	4,226.3	1,887	2,398.7	122	373.6
1999	3,293	5,011.2	2,242	2,932.5	157	483.9
1998	3,731	5,617.0	2,501	3,369.5	111	344.0
1997	4,713	7,010.2	2,593	3,600.5	174	544.4
1996	5,240	7,728.3	2,162	3,101.3	211	664.1
1995	5,617	8,271.9	2,406	3,549.9	215	681.4
1994	6,209	9,122.5	2,707	4,091.0	230	740.7
1993	6,093	8,927.4	2,816	4,374.1	230	748.5

Notes: Figures are not available for people younger than 12. 2006 NCVS estimates are not comparable with those in other years. See Methodology for details. Includes aggravated and simple assault, robbery and sex crimes, committed with and without a firearm.

Source: Pew Research Center tabulations of National Crime Victimization Survey, U.S. Justice Department

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All Non-fatal Violent Crimes, Total and by Race/Ethnicity, 1993-2011*Victimizations among people ages 12 and older*

	-----All-----		-----White-----		-----Hispanic-----		-----Black-----		-----Other-----	
	Number (in thousands)	Rate (per 100,000)	Number (in thousands)	Rate (per 100,000)	Number (in thousands)	Rate (per 100,000)	Number (in thousands)	Rate (per 100,000)	Number (in thousands)	Rate (per 100,000)
Year										
2011	5,805	2,254.2	3,715	2,152.4	895	2,384.3	811	2,636.4	384	2,309.3
2010	4,936	1,928.4	3,182	1,831.6	604	1,684.9	787	2,590.7	363	2,268.0
2009	5,669	2,231.1	3,737	2,151.8	786	2,220.7	905	3,056.4	241	1,563.3
2008	6,393	2,534.7	4,499	2,592.2	702	2,033.0	823	2,852.8	370	2,413.8
2007	6,814	2,721.9	4,607	2,676.5	772	2,242.1	998	3,485.2	438	2,885.2
2006	8,430	3,409.9	5,486	3,171.2	1,005	3,228.0	1,294	4,533.6	645	4,432.8
2005	6,948	2,841.6	4,751	2,772.5	822	2,587.1	913	3,271.9	462	3,429.1
2004	6,726	2,782.8	4,849	2,846.6	621	2,012.5	837	3,021.6	419	3,275.6
2003	7,679	3,208.9	5,490	3,232.3	805	2,657.6	976	3,586.0	409	3,412.9
2002	7,425	3,205.9	5,433	3,257.3	808	2,994.9	1,024	3,609.5	160	1,690.3
2001	7,477	3,261.8	5,159	3,095.5	1,048	4,118.1	993	3,570.3	277	2,979.0
2000	8,503	3,748.9	6,220	3,754.6	984	4,016.0	1,096	3,998.4	202	2,191.4
1999	10,601	4,720.5	7,880	4,765.4	950	4,138.2	1,524	5,638.1	245	2,669.1
1998	12,011	5,413.1	9,044	5,486.9	1,016	4,680.4	1,420	5,338.2	532	6,066.2
1997	13,425	6,106.9	10,001	6,094.8	1,190	5,623.2	1,911	7,273.3	324	3,894.6
1996	14,060	6,472.1	10,491	6,414.4	1,405	6,855.0	1,768	6,981.1	395	5,030.0
1995	15,202	7,068.1	11,144	6,838.9	1,605	8,291.2	1,985	7,881.6	467	6,168.0
1994	17,059	8,003.8	12,748	7,857.3	1,700	9,188.6	2,112	8,415.8	498	6,838.5
1993	16,823	7,976.3	12,738	7,869.6	1,371	8,019.1	2,231	9,002.4	484	6,738.9

Notes: Hispanics are of any race. White, black and "other" include only non-Hispanics. 2006 NCVS estimates are not comparable with those in other years. See Methodology for details. Includes aggravated and simple assault, robbery and sex crimes, committed with and without a firearm.

Source: Pew Research Center tabulations of National Crime Victimization Survey, U.S. Justice Department

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All Non-fatal Violent Crimes, Total and by Type of Crime, 1993-2011

Victimizations among people ages 12 and older

Year	-----All-----		---Aggravated--- -----assault-----		--Simple assault--		-----Robbery-----		----Sex crimes----	
	Number (in thousands)	Rate (per 100,000)	Number (in thousands)	Rate (per 100,000)	Number (in thousands)	Rate (per 100,000)	Number (in thousands)	Rate (per 100,000)	Number (in thousands)	Rate (per 100,000)
2011	5,805	2,254.2	1,052	408.5	3,953	1,534.8	557	216.2	244	94.7
2010	4,936	1,928.4	858	335.1	3,241	1,266.3	569	222.1	269	104.9
2009	5,669	2,231.1	1,029	405.1	3,699	1,455.8	635	249.9	306	120.3
2008	6,393	2,534.7	969	384.2	4,395	1,742.3	680	269.5	350	138.6
2007	6,814	2,721.9	1,219	486.9	4,571	1,826.1	776	309.8	248	99.2
2006	8,430	3,409.9	1,754	709.4	5,281	2,135.9	932	377.1	464	187.5
2005	6,948	2,841.6	1,281	524.1	4,689	1,917.9	769	314.6	208	85.0
2004	6,726	2,782.8	1,419	586.9	4,435	1,835.0	616	255.0	256	105.8
2003	7,679	3,208.9	1,362	569.3	5,283	2,207.7	708	296.0	325	135.9
2002	7,425	3,205.9	1,333	575.4	5,118	2,209.9	624	269.6	350	151.0
2001	7,477	3,261.8	1,384	603.7	4,949	2,158.9	668	291.3	477	207.9
2000	8,503	3,748.9	1,565	689.9	5,685	2,506.6	886	390.7	367	161.7
1999	10,601	4,720.5	1,962	873.6	7,028	3,129.7	1,019	453.8	591	263.4
1998	12,011	5,413.1	2,318	1,044.9	8,330	3,754.4	971	437.5	391	176.3
1997	13,425	6,106.9	2,895	1,317.0	8,788	3,997.3	1,189	540.8	554	251.8
1996	14,060	6,472.1	2,877	1,324.5	9,320	4,290.1	1,425	656.2	437	201.3
1995	15,202	7,068.1	2,894	1,345.7	10,394	4,832.6	1,351	627.9	563	261.9
1994	17,059	8,003.8	3,413	1,601.3	11,296	5,299.9	1,676	786.3	674	316.4
1993	16,823	7,976.3	3,481	1,650.5	10,691	5,068.9	1,753	831.0	898	425.9

Notes: 2006 NCVS estimates are not comparable with those in other years. See Methodology for details.

Source: Pew Research Center tabulations of National Crime Victimization Survey, U.S. Justice Department

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APPENDIX 4: METHODOLOGY

Data on Homicides, Suicides and Other Deaths and Data on Firearms Injuries

The Web-based Injury Statistics Query and Reporting System (WISQARS) is the primary source for data on deaths, homicides and suicides. WISQARS is part of the National Center for Injury Prevention and Control in the Centers for Disease Control and Prevention (CDC) and can be accessed at www.cdc.gov/ncipc/wisqars. It is also the primary source for data on non-fatal firearms related injuries.

WISQARS data on deaths are drawn from information contained in death certificates filed in state vital statistics offices. This information includes causes of death reported by attending physicians, medical examiners and coroners, including deaths due to firearms. The data also include demographic information about the deceased reported by funeral directors, who obtain that information from family members and other informants. Data on the annual number of deaths used in this report are drawn from WISQARS for 1981 through 2011.

WISQARS data on non-fatal firearms injuries come from the National Electronic Injury Surveillance System–All Injury Program (NEISS-AIP), a collaborative operation of the CDC's National Center for Injury Prevention and Control (NCIPC) and the U.S. Consumer Product Safety Commission. Information is collected from a sample of hospital emergency rooms that represent a range of hospital types and locations. Data on non-fatal injuries can be accessed at <http://www.cdc.gov/ncipc/wisqars/nonfatal/datasources.htm>.

For this report, homicides are defined as fatal injuries inflicted by another person with intent to injure or kill. Note that deaths due to legal intervention or operations or deaths due to war are excluded. Justifiable homicide is not identified in the WISQARS data.

Calculating Annual Death Rates

Throughout this report, annual death rates per 100,000 people are shown based on data provided by WISQARS. The annual death rate is calculated as follows:

$$\text{Annual death rate} = \left[\frac{(\text{number of deaths in a year})}{(\text{year's population estimate})} \right] \times [100,000]$$

WISQARS provides the number of deaths in a given year. Population data, used in constructing rates, come from the Census Bureau's annual population estimates. For 1990 through 2011, population estimates were obtained via WISQARS. For 1981 through 1989, population estimates were obtained from the Census Bureau through http://www.census.gov/popest/data/national/asrh/1980s/80s_nat_detail.html.

Data on Criminal Victimizations

Crime victimization estimates are drawn from the National Crime Victimization Survey (NCVS) of the Bureau of Justice Statistics (BJS). The NCVS provides national estimates of the levels and characteristics of criminal victimization in the U.S., including crimes not reported to police departments. The NCVS is an annual survey of some 140,000 persons ages 12 and older in about 80,000 households. A household that is selected participates in the NCVS for three years, with survey respondents interviewed every six months. In addition to persons living in households, the survey includes persons living in group quarters such as dormitories but excludes persons living in institutional settings such as military barracks, mental hospitals, or correctional facilities. The survey also excludes persons who are homeless or visiting from abroad.

The NCVS has been conducted annually since 1972 and is the primary source of information on crime victimizations in the U.S. NCVS respondents are asked about non-fatal personal crime victimizations such as rape, sexual assault, robbery, aggravated assault, simple assault and personal larceny. Respondents are also asked about household property crime victimizations such as burglary, motor vehicle theft and other thefts. Survey respondents who have been victims of a crime are then asked about details related to the crime, including whether the offender had a weapon, such as a gun. Fatal crimes such as homicides are not included in the NCVS. Respondent demographic characteristics are also collected.

NCVS data collection began in 1972. This report uses data collected from 1993, the first year employing an intensive methodological redesign, through 2011. In addition, analysis of crime victimizations is limited to those that occurred in the U.S. and criminal victimizations that occurred in a single data collection year.

This report analyzes victimizations and not incidents; more than one person may be victimized by a single incident.

Criminal Victimization Statistics and Measures

Most statistics based on the NCVS were obtained using the BJS's online NCVS Victimization Analysis Tool (NVAT). The NVAT can be accessed through <http://bjs.gov/index.cfm?ty=nvat>. The BJS also provided the Pew Research Center with a single data file containing concatenated incident data files from the 1993 through 2011 NCVS data collections. That file was used to tabulate crime victimization statistics for those ages 25 to 40 and ages 41 to 64.

Two measures of victimization based on the NCVS are used in this report—the estimated number of crime victimizations and the estimated crime victimization rate per 100,000 population. These measures are reported for guns, or firearms, non-fatal violent crime victimizations and for all violent crime victimizations. In some cases, crime victimization estimates based a sample size of fewer than 10 cases are reported. These estimates are denoted by an asterisk (*) in the report's appendix tables and should be interpreted with caution. For some demographic subgroups in some years, no crime victimization estimates are provided because of no sample cases were available. These instances are denoted with dashes (---) in the report's appendix tables.

Throughout the report, NCVS data from 2006 are reported but should be interpreted with caution. In 2006, several methodological changes were made to the NCVS data collection that distinguish it from other years (Truman and Planty, 2012).

Counting Series Victimizations

The analysis in this report utilizes the protocol developed by the BJS to analyze series victimizations in the NCVS. A series victimization (or repeat victimization) involves a crime in which a victim finds it difficult to distinguish multiple incidents from each other and provide details of each individual incident. Examples of such crimes include intimate partner violence or bullying by schoolmates.

Since 2012 (Lauritsen, et. al., 2012), the BJS has developed the following protocol for counting series victimizations. Today, the BJS includes series victimizations in its annual estimates of victimization. For any given series victimization over a six-month period, up to 10 incidents are counted as individual criminal victimizations. Prior to 2012, series victimizations were often excluded from BJS victimization estimates.

As a result of this change, which has been incorporated into the data analysis for this report, the number of victimizations estimated in the NCVS for years prior to 2011 is higher than

estimates published prior to 2012. For more details, see *Criminal Victimations, 2011* (Truman and Planty, 2012).

Testing Statistical Significance

Throughout the report, comparisons of crime victimization rates between demographic subgroups or comparisons of crime rates across years were tested for statistical significance. Since the NCVS has a complex sample design, any tests of statistical significance require taking that complex design into account.

For this report, all statistical tests for the NCVS were conducted using spreadsheets provided by the BJS. These spreadsheets contain formulas for statistical tests that account for the NCVS's complex sample design.

Differences Between the NCVS and the UCR

The NCVS and the FBI's Uniform Crime Report (UCR) data are the two main components of the nation's crime reporting system. However, the two collections differ significantly in methodology and in crime definitions.

The NCVS is a survey of the general public ages 12 and older asking about crime victimizations, including those not reported to police. By comparison, the UCR covers crimes against persons and businesses known to and recorded by law enforcement agencies.

The universe of crimes measured in the NCVS and the UCR differs. For example, the UCR includes homicide, arson, and commercial crimes, while the NCVS does not.

The NCVS does not measure criminal victimizations among children under age 12, persons in institutions such as correctional institutions or nursing homes, homeless people or people from other countries who come to the U.S. for tourism, business or other temporary reasons. Victimations among these groups may be included in the UCR.

According to the BJS (Truman and Planty, 2012), preliminary estimates from the FBI indicate that violent crimes and property crimes reported by the UCR declined from 2010 to 2011. By contrast, the NCVS reports that over the same period the number of violent crimes and property crimes increased. Even when limiting NCVS victimizations to those reported to police, the number of violent crimes and property crimes remained unchanged between 2010 and 2011.

Public Opinion Survey Methodology

The public opinion survey analysis in this report is based on a telephone survey of 924 adults ages 18 and older conducted March 14-17, 2013, in the continental U.S. Some 512 respondents were interviewed on a landline telephone and 412 were interviewed on a cellular telephone, including 197 who had no landline telephone. The survey was conducted by interviewers at Princeton Data Source and University Survey under the direction of Princeton Survey Research Associates International. Interviews were conducted in English. Respondents in the landline sample were selected by randomly asking for the youngest adult male or female who is now at home. Interviews in the cell sample were conducted with the person who answered the phone, if that person was an adult 18 years of age or older. The survey has a margin of error of plus or minus 3.9 percentage points at the 95% level of confidence.

The combined landline and cell phone sample are weighted using an iterative technique that matches gender, age, education, race, Hispanic origin and region to parameters from the 2011 Census Bureau's American Community Survey and population density to parameters from the Decennial Census. The sample also is weighted to match current patterns of telephone status, based on extrapolations from the 2012 National Health Interview Survey. The weighting procedure also accounts for the fact that respondents with both landline and cell phones have a greater probability of being included in the combined sample and adjusts for household size among respondents with a landline phone. Sampling errors and statistical tests of significance take into account the effect of weighting.



SPECIAL REPORT

MAY 2013

NCJ 241730

Firearm Violence, 1993-2011

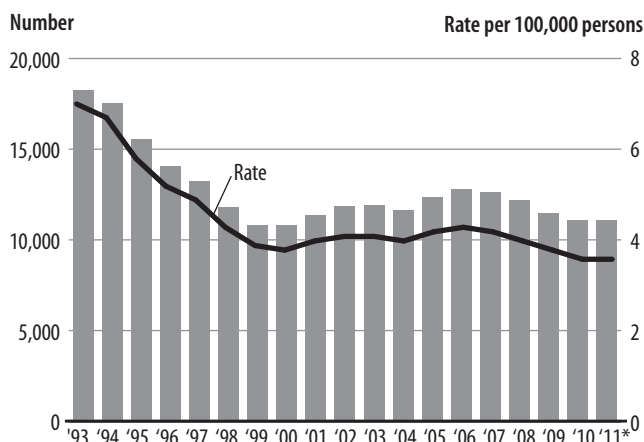
Michael Planty, Ph.D., and Jennifer L. Truman, Ph.D., *BJS Statisticians*

In 2011, a total of 478,400 fatal and nonfatal violent crimes were committed with a firearm ([table 1](#)). Homicides made up about 2% of all firearm-related crimes. There were 11,101 firearm homicides in 2011, down by 39% from a high of 18,253 in 1993 ([figure 1](#)). The majority of the decline in firearm-related homicides occurred between 1993 and 1998. Since 1999, the number of firearm homicides increased from 10,828 to 12,791 in 2006 before declining to 11,101 in 2011.

Nonfatal firearm-related violent victimizations against persons age 12 or older declined 70%, from 1.5 million in 1993 to 456,500 in 2004 ([figure 2](#)). The number then fluctuated between about 400,000 to 600,000 through 2011.¹ While the number of firearm crimes declined over time, the percentage of all violence that involved a firearm did not change substantively, fluctuating between 6% and 9% over the same period. In 1993, 9% of all violence was committed with a firearm, compared to 8% in 2011.

¹Many percentages and counts presented in this report are based on nonfatal firearm victimizations. Since firearm homicides accounted for about 2% of all firearm victimizations, when firearm homicides are included in the total firearm estimates, the findings do not change significantly.

FIGURE 1
Firearm homicides, 1993–2011



Note: Excludes homicides due to legal intervention and operations of war. See appendix table 1 for numbers and rates.

*Preliminary estimates retrieved from Hoyert DL, Xu JQ. (2012) Deaths: Preliminary data for 2011. *National Vital Statistics Reports*, 61(6).

Source: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS), 1993–2010. Retrieved March 2013 from www.cdc.gov/ncipc/wisqars.

HIGHLIGHTS

- Firearm-related homicides declined 39%, from 18,253 in 1993 to 11,101 in 2011.
- Nonfatal firearm crimes declined 69%, from 1.5 million victimizations in 1993 to 467,300 victimizations in 2011.
- For both fatal and nonfatal firearm victimizations, the majority of the decline occurred during the 10-year period from 1993 to 2002.
- Firearm violence accounted for about 70% of all homicides and less than 10% of all nonfatal violent crime from 1993 to 2011.
- About 70% to 80% of firearm homicides and 90% of nonfatal firearm victimizations were committed with a handgun from 1993 to 2011.
- From 1993 to 2010, males, blacks, and persons ages 18 to 24 had the highest rates of firearm homicide.
- In 2007–11, about 23% of victims of nonfatal firearm crime were injured.
- About 61% of nonfatal firearm violence was reported to the police in 2007–11.
- In 2007–11, less than 1% of victims in all nonfatal violent crimes reported using a firearm to defend themselves during the incident.
- In 2004, among state prison inmates who possessed a gun at the time of offense, less than 2% bought their firearm at a flea market or gun show and 40% obtained their firearm from an illegal source.

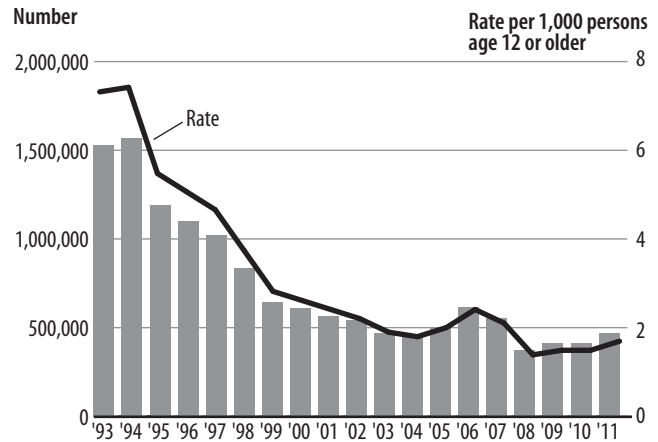
The primary source of information on firearm-related homicides was obtained from mortality data based on death certificates in the National Vital Statistics System of the National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention's (CDC) Web-based Injury Statistics Query and Reporting System (WISQARS). These mortality data include causes of death reported by attending physicians, medical examiners, and coroners, and demographic information about decedents reported by funeral directors who obtain that information from family members and other informants. The NCHS collects, compiles, verifies, and prepares these data for release to the public.

The estimates of nonfatal violent victimization are based on data from the Bureau of Justice Statistics' (BJS) National Crime Victimization Survey (NCVS), which collects information on nonfatal crimes against persons age 12 or older reported and not reported to the police from a nationally representative sample of U.S. households. Homicide rates are presented per 100,000 persons and the nonfatal victimization rates are presented per 1,000 persons age 12 or older. Additional information on firearm violence in this report comes from the School-Associated Violent Deaths Surveillance Study (SAVD), the FBI's Supplemental Homicide Reports (SHR), the Survey of Inmates in State

Correctional Facilities (SISCF), and the Survey of Inmates in Federal Correctional Facilities (SIFCF). Each source provides different information about victims and incident characteristics. Estimates are shown for different years based on data availability and measures of reliability. (For more information about these sources, see *Methodology*.)

FIGURE 2

Nonfatal firearm victimizations, 1993–2011



Note: See appendix table 2 for numbers, rates, and standard errors.

Source: Bureau of Justice Statistics, National Crime Victimization Survey, 1993–2011.

TABLE 1

Criminal firearm violence, 1993–2011

Year	Total fatal and nonfatal firearm violence	Number			Rate of nonfatal firearm victimization ^c	Percent	
		Firearm homicides	Nonfatal firearm victimizations ^a	Nonfatal firearm incidents ^b		All violence involving firearms	All firearm violence that was homicide
1993	1,548,000	18,253	1,529,700	1,222,700	7.3	9.2%	1.2%
1994	1,585,700	17,527	1,568,200	1,287,200	7.4	9.3	1.1
1995	1,208,800	15,551	1,193,200	1,028,900	5.5	7.9	1.3
1996	1,114,800	14,037	1,100,800	939,500	5.1	7.9	1.3
1997	1,037,300	13,252	1,024,100	882,900	4.7	7.7	1.3
1998	847,200	11,798	835,400	673,300	3.8	7.0	1.4
1999	651,700	10,828	640,900	523,600	2.9	6.1	1.7
2000	621,000	10,801	610,200	483,700	2.7	7.3	1.7
2001	574,500	11,348	563,100	507,000	2.5	7.7	2.0
2002	551,800	11,829	540,000	450,800	2.3	7.4	2.1
2003	479,300	11,920	467,300	385,000	2.0	6.2	2.5
2004	468,100	11,624	456,500	405,800	1.9	6.9	2.5
2005	515,900	12,352	503,500	446,400	2.1	7.4	2.4
2006	627,200	12,791	614,400	552,000	2.5	7.4	2.0
2007	567,400	12,632	554,800	448,400	2.2	8.3	2.2
2008	383,500	12,179	371,300	331,600	1.5	6.0	3.2
2009	421,600	11,493	410,100	383,400	1.6	7.4	2.7
2010	426,100	11,078	415,000	378,800	1.6	8.6	2.6
2011 ^d	478,400	11,101	467,300	414,600	1.8	8.2	2.3

Note: See appendix table 3 for standard errors.

^aA victimization refers to a single victim that experienced a criminal incident.

^bAn incident is a specific criminal act involving one or more victims or victimizations.

^cPer 1,000 persons age 12 or older.

^dPreliminary homicide estimates retrieved from Hoyert DL, Xu JQ. (2012) Deaths: Preliminary data for 2011. *National Vital Statistics Reports*, 61(6).

Sources: Bureau of Justice Statistics, National Crime Victimization Survey, 1993–2011; and Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, Web-based Injury Statistics Query and Reporting System (WISQARS), 1993–2010. Retrieved March 2013 from www.cdc.gov/ncipc/wisqars.

Trend estimates of nonfatal firearm violence are presented as annual 1-year averages or 2-year rolling averages, as noted in each table or figure. For ease of presentation, 2-year estimates are referenced according to the most recent year. For example, estimates reported for 2011 represent the average estimates for 2010 and 2011. Other tables in this report focus on a single 5-year aggregate period from 2007 through 2011. These approaches—using rolling averages and aggregating years—increase the reliability and stability of estimates, which facilitates comparisons over time and between subgroups.

The majority of firearm crimes were committed with a handgun

From 1993 to 2011, about 60% to 70% of homicides were committed with a firearm (table 2). Over the same period, between 6% and 9% of all nonfatal violent victimizations were committed with a firearm, with about 20% to 30% of robberies and 22% to 32% of aggravated assaults involving a firearm.

Handguns accounted for the majority of both homicide and nonfatal firearm violence (table 3). A handgun was used in about 83% of all firearm homicides in 1994, compared to 73% in 2011. Other types of firearms, such as shotguns and rifles, accounted for the remainder of firearm homicides. For nonfatal firearm violence, about 9 in 10 were committed with a handgun, and this remained stable from 1994 to 2011.

TABLE 2

Percent of violence involving a firearm, by type of crime, 1993–2011

Year	Homicide	Nonfatal violence ^a	Robbery	Aggravated assault
1993	71.2%	9.1%	22.3%	30.7%
1994	71.4	9.2	27.1	31.9
1995	69.0	7.8	27.3	28.0
1996	68.0	7.8	24.6	25.7
1997	68.0	7.6	19.9	27.0
1998	65.9	7.0	20.1	26.5
1999	64.1	6.0	19.2	22.4
2000	64.4	7.2	21.1	26.6
2001 ^b	55.9	7.5	29.5	26.0
2002	67.1	7.3	23.4	28.7
2003	67.2	6.1	22.4	22.2
2004	67.0	6.8	19.7	23.6
2005	68.2	7.2	21.8	25.7
2006	68.9	7.3	16.6	24.3
2007	68.8	8.1	20.0	32.6
2008	68.3	5.8	19.6	24.6
2009	68.4	7.2	27.0	23.2
2010	68.1	8.4	24.7	25.4
2011 ^c	69.6	8.0	25.7	30.6

Note: See appendix table 4 for standard errors.

^aNonfatal violence includes rape, sexual assault, robbery, aggravated and simple assault. A small percentage of rape and sexual assaults involved firearms but are not shown in table due to small sample sizes.

^bThe homicide estimates that occurred as a result of the events of September 11, 2001, are included in the total number of homicides.

^cPreliminary homicide estimates retrieved from Hoyert DL, Xu JQ. (2012) Deaths: Preliminary data for 2011. *National Vital Statistics Reports*, 61(6).

Sources: Bureau of Justice Statistics, National Crime Victimization Survey, 1993–2011; and Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, Web-based Injury Statistics Query and Reporting System (WISQARS), 1993–2010. Retrieved March 2013 from www.cdc.gov/ncipc/wisqars.

TABLE 3

Criminal firearm violence, by type of firearm, 1994–2011

Year	Homicide				Nonfatal violence					
	Handgun		Other firearm*		Handgun		Other firearm*		Gun type unknown	
	Annual number	Percent	Annual number	Percent	Average annual number	Percent	Average annual number	Percent	Average annual number	Percent
1994	13,510	82.7%	2,830	17.3%	1,387,100	89.5%	150,200	9.7%	11,700!	0.8%!
1995	12,090	81.9	2,670	18.1	1,240,200	89.8	132,800	9.6	7,700!	0.6!
1996	10,800	81.1	2,510	18.9	999,600	87.1	141,000	12.3	6,400!	0.6!
1997	9,750	78.8	2,630	21.2	894,200	84.2	159,800	15.0	8,400!	0.8!
1998	8,870	80.4	2,160	19.6	783,400	84.3	141,100	15.2	5,300!	0.6!
1999	8,010	78.8	2,150	21.2	659,600	89.4	74,100	10.0	4,500!	0.6!
2000	8,020	78.6	2,190	21.4	555,800	88.8	65,300	10.4	4,500!	0.7!
2001	7,820	77.9	2,220	22.1	506,600	86.3	65,900	11.2	14,100!	2.4!
2002	8,230	75.8	2,620	24.2	471,600	85.5	63,200	11.5	16,700!	3.0!
2003	8,890	80.3	2,180	19.7	436,100	86.6	53,200	10.6	14,400!	2.9!
2004	8,330	78.0	2,350	22.0	391,700	84.8	53,400	11.6	16,900!	3.7!
2005	8,550	75.1	2,840	24.9	410,600	85.5	56,200	11.7	13,200!	2.8!
2006	9,060	77.0	2,700	23.0	497,400	89.0	47,600	8.5	14,000!	2.5!
2007	8,570	73.6	3,080	26.4	509,700	87.2	65,600	11.2	9,300!	1.6!
2008	7,930	71.8	3,120	28.2	400,700	86.5	57,400	12.4	5,000!	1.1!
2009	7,370	71.3	2,970	28.7	348,700	89.2	37,600	9.6	4,400!	1.1!
2010	6,920	69.6	3,030	30.4	382,100	92.6	26,700	6.5	3,800!	0.9!
2011	7,230	72.9	2,690	27.1	389,400	88.3	49,700	11.3	2,100!	0.5!

Note: Nonfatal violence data based on 2-year rolling averages beginning in 1993. Homicide data are presented as annual estimates. See appendix table 5 for standard errors.

*Includes rifle, shotgun, and other types of firearms.

! Interpret with caution. Estimate based on 10 or fewer sample cases, or coefficient of variation is greater than 50%.

Sources: Bureau of Justice Statistics, National Crime Victimization Survey, 1993–2011; and FBI, Supplementary Homicide Reports, 1994–2011.

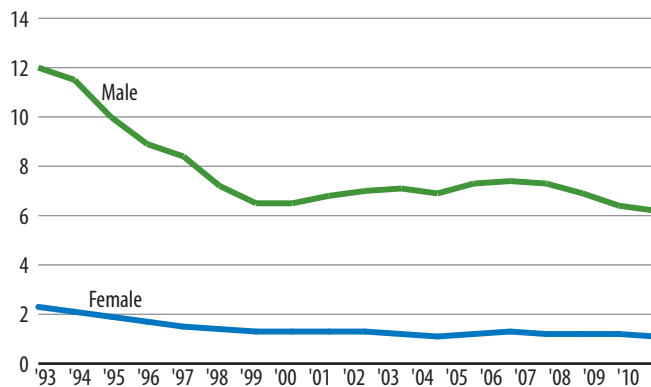
Males, blacks, and persons ages 18 to 24 were most likely to be victims of firearm violence

Sex

In 2010, the rate of firearm homicide for males was 6.2 per 100,000, compared to 1.1 for females (**figure 3**). Firearm homicide for males declined by 49% (from 12.0 per 100,000 males in 1993 to 6.2 in 2010), compared to a 51% decline for females (from 2.3 per 100,000 females in 1993 to 1.1 in 2010). The majority of the decline for both males and females occurred in the first part of the period (1993 to 2000). Over the more recent 10-year period from 2001 to 2010, the decline in firearm homicide for both males and females slowed, resulting in about a 10% decline each.

FIGURE 3
Firearm homicides, by sex, 1993–2010

Rate per 100,000 persons



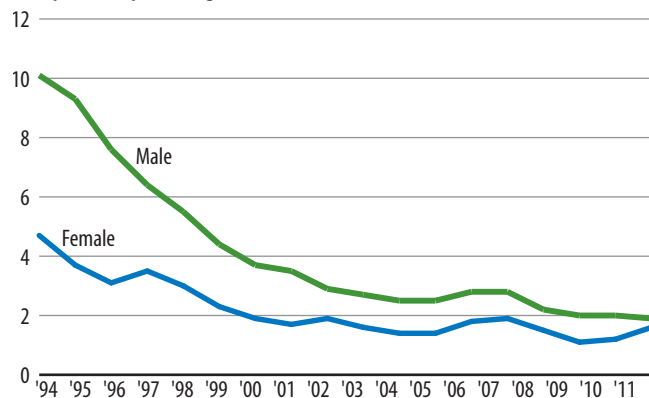
Note: See appendix table 6 for numbers and rates.

Source: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, Web-based Injury Statistics Query and Reporting System (WISQARS), 1993–2010. Retrieved March 2013 from www.cdc.gov/ncipc/wisqars.

In 2011, the rate of nonfatal firearm violence for males (1.9 per 1,000 males) was not significantly different than the rate for females (1.6 per 1,000) (**figure 4**). From 1994 to 2011, the rate of nonfatal firearm violence for males declined 81%, from 10.1 to 1.9 per 1,000 males. During the same period, the rate of nonfatal firearm violence against females dropped 67%, from 4.7 to 1.6 per 1,000 females. As with fatal firearm violence, the majority of the decline occurred in the first part of the period. From 2002 to 2011, the rate of nonfatal firearm violence for males declined 35%, while there was no statistical change in the rate for females.

FIGURE 4
Nonfatal firearm violence, by sex, 1994–2011

Rate per 1,000 persons age 12 or older



Note: Data based on 2-year rolling averages beginning in 1993. See appendix table 7 for rates and standard errors.

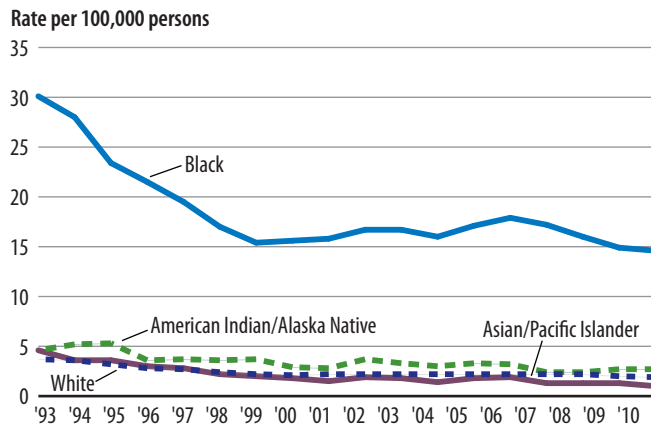
Source: Bureau of Justice Statistics, National Crime Victimization Survey, 1993–2011.

Race/Hispanic origin

In 2010, the rate of firearm homicide for blacks was 14.6 per 100,000, compared to 1.9 for whites, 2.7 for American Indians and Alaska Natives, and 1.0 for Asians and Pacific Islanders (figure 5). From 1993 to 2010, the rate of firearm homicides for blacks declined by 51%, down from 30.1 per 100,000 blacks, compared to a 48% decline for whites and a 43% decline for American Indians and Alaska Natives. Asian and Pacific Islanders declined 79% over the same period, from 4.6 to 1.0 per 100,000. Although blacks experienced a decline similar to whites and American Indians and Alaska Natives, the rate of firearm homicide for blacks was 5 to 6 times higher than every other racial group in 2010. As with other demographic groups, the majority of the decline occurred in the first part of the period and slowed from 2001 to 2010.

The rate of firearm homicide for both Hispanics and non-Hispanics was about 4 per 100,000 each in 2010 (figure 6). However, the Hispanic rate had a larger and more consistent decline over time. The Hispanic rate declined 54% from 1993 to 2001 and declined 34% since 2001. In comparison, the non-Hispanic rate declined more slowly, down 42% from 1993 to 2001 and down 5% since 2001.

FIGURE 5
Firearm homicides, by race, 1993–2010

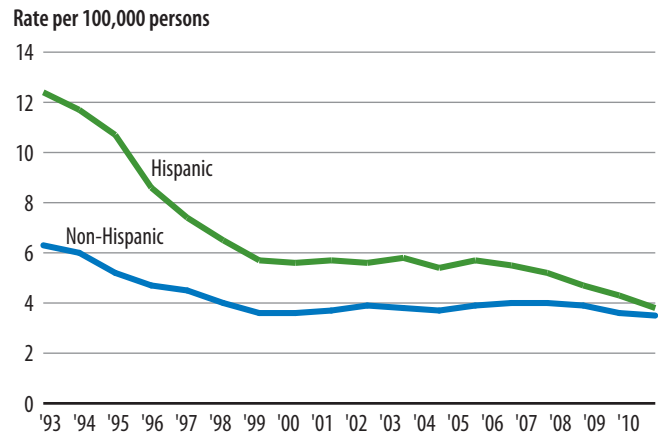


Note: See appendix table 8 for numbers and rates.

Source: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, Web-based Injury Statistics Query and Reporting System (WISQARS), 1993–2010. Retrieved March 2013 from www.cdc.gov/ncipc/wisqars.

In 2011, non-Hispanic blacks (2.8 per 1,000) and Hispanics (2.2 per 1,000) had higher rates of nonfatal firearm violence than non-Hispanic whites (1.4 per 1,000) (figure 7). The rate of nonfatal firearm violence for Hispanics was not statistically different from the rate for blacks. From 1994 to 2011, the rates of nonfatal firearm violence for blacks and Hispanics both declined by 83%, compared to 74% for whites.

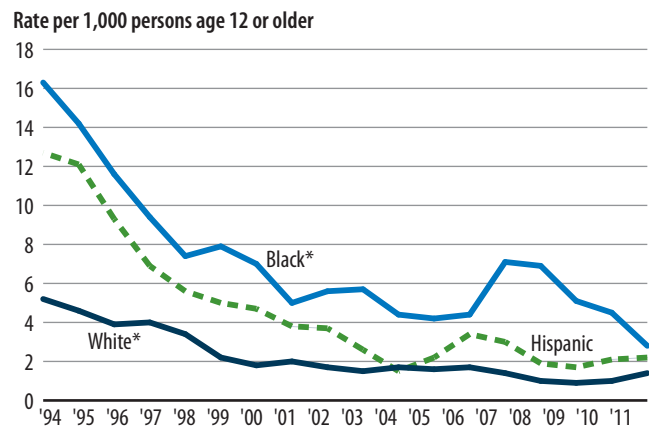
FIGURE 6
Firearm homicides, by Hispanic origin, 1993–2010



Note: See appendix table 9 for numbers and rates.

Source: Bureau of Justice Statistics, Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, Web-based Injury Statistics Query and Reporting System (WISQARS), 1993–2010. Retrieved March 2013 from www.cdc.gov/ncipc/wisqars.

FIGURE 7
Nonfatal firearm violence, by race and Hispanic origin, 1994–2011



Note: Data based on 2-year rolling averages beginning in 1993. See appendix table 10 for rates and standard errors.

*Excludes persons of Hispanic or Latino origin.

Source: Bureau of Justice Statistics, National Crime Victimization Survey, 1993–2011.

Age

In 2010, the rate of firearm homicide was 10.7 per 100,000 for persons ages 18 to 24, compared to 8.1 for persons ages 25 to 34 and 0.3 for persons age 11 or younger (table 4).

Firearm homicide against persons ages 18 to 34 accounted for about 30% of all firearm homicides in 2010. From 1993 to 2010, the rate of homicides for persons ages 18 to 24 declined 51%, compared to a 35% decline for persons ages 25 to 34 and 50% for persons age 11 or younger.

In 2011, persons ages 18 to 24 had the highest rate of nonfatal firearm violence (5.2 per 1,000). From 1994 to 2011, the rates of nonfatal firearm violence declined for persons ages 18 to 49, with each group declining between 72% and 77%. The rate for persons ages 12 to 17 declined 88%, from 11.4 to 1.4 per 1,000.

Persons living in urban areas had the highest rates of nonfatal firearm violence

Region

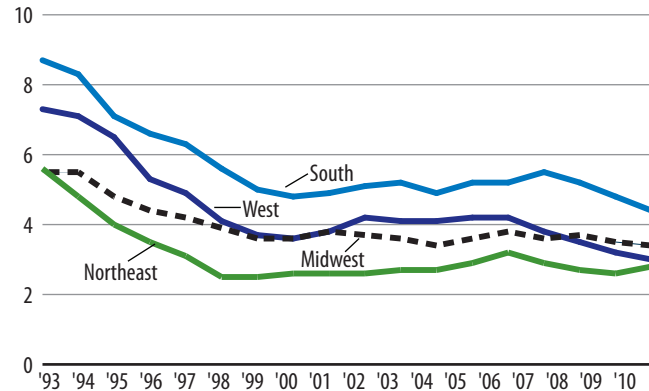
In 2010, the South had the highest rate of firearm homicides at 4.4 per 100,000 persons, compared to 3.4 in the Midwest, 3.0 in the West, and 2.8 in the Northeast (figure 8).

From 1993 to 2010, the rate of firearm homicides in the South declined by 49%, compared to a 50% decline in the Northeast, a 37% decline in the Midwest, and a 59% decline in the West.

FIGURE 8

Firearm homicides, by region, 1993–2011

Rate per 100,000 persons



Note: See appendix table 13 for numbers and rates.

Source: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS), 1993–2010. Retrieved March 2013 from www.cdc.gov/ncipc/wisqars.

TABLE 4

Fatal and nonfatal firearm violence, by age, 1993–2011

Year	Firearm homicide rate per 100,000 persons						Nonfatal firearm violence rate per 1,000 persons age 12 or older				
	11 or younger	12–17	18–24	25–34	35–49	50 or older	12–17	18–24	25–34	35–49	50 or older
1993	0.5	8.0	21.9	12.4	6.7	2.2	~	~	~	~	~
1994	0.4	7.8	21.2	12.0	6.3	2.1	11.4	18.1	8.7	6.3	1.6
1995	0.4	7.0	18.6	10.6	5.3	2.0	9.8	16.1	7.7	5.5	1.6
1996	0.4	5.6	17.2	9.4	4.9	1.8	7.6	12.3	6.8	4.8	1.4
1997	0.4	4.8	16.3	9.0	4.6	1.6	7.1	12.8	5.4	4.5	1.2
1998	0.3	3.7	14.4	7.9	4.2	1.5	5.7	12.4	4.5	3.8	1.0
1999	0.3	3.6	12.4	7.6	3.7	1.4	4.7	8.9	4.6	2.6	0.7
2000	0.2	2.9	12.4	7.7	3.8	1.4	3.2	7.0	3.6	2.5	1.0
2001	0.3	2.8	12.9	8.4	3.9	1.3	2.2	6.8	3.1	2.4	1.0
2002	0.3	2.9	13.0	8.8	4.0	1.4	2.4	7.3	3.1	1.8	0.8
2003	0.3	2.7	13.3	9.0	4.0	1.3	2.8	6.3	2.7	1.6	0.7
2004	0.2	3.0	11.9	8.9	3.9	1.4	1.9	3.9	2.5	2.1	0.8
2005	0.2	3.1	12.9	9.6	4.1	1.3	1.2	4.4	3.1	1.8	1.0
2006	0.3	3.6	13.6	9.6	4.1	1.4	2.3	5.6	3.4	1.8	1.0
2007	0.3	3.5	13.1	9.5	4.2	1.3	4.3	4.6	3.0	2.2	0.9
2008	0.3	3.3	12.1	9.0	4.1	1.3	3.5	3.2	2.7	1.6	0.7
2009	0.3	2.9	11.1	8.1	3.9	1.4	0.9	3.9	2.3	1.5	0.6
2010	0.3	2.8	10.7	8.1	3.6	1.4	0.6!	5.8	2.0	1.3	0.6
2011	...	...	...	...	...	...	1.4	5.2	2.2	1.4	0.7

Note: Nonfatal firearm violence data based on 2-year rolling averages beginning in 1993. Homicide data are annual estimates. See appendix table 11 for firearm homicide numbers and appendix table 12 for nonfatal firearm violence standard errors..

~Not applicable.

...Not available.

! Interpret with caution. Estimate based on 10 or fewer sample cases, or coefficient of variation is greater than 50%.

Source: Bureau of Justice Statistics, National Crime Victimization Survey, 1993–2011; and Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS), 1993–2010. Retrieved March 2013 from www.cdc.gov/ncipc/wisqars.

In 2011, residents in the South (1.9 per 1,000) had higher rates of nonfatal firearm violence than those in the Northeast (1.3 per 1,000) (**figure 9**). Residents in the South (1.9 per 1,000), Midwest (1.7 per 1,000), and West (1.8 per 1,000) had statistically similar rates of nonfatal firearm violence.

Urban-rural location

The publicly available National Vital Statistics System fatal data files do not contain information about the incident's urban-rural location or population size. This information is limited to nonfatal firearm victimizations. Urban residents generally experienced the highest rate of nonfatal firearm violence (**figure 10**). In 2011, the rate of nonfatal firearm violence for residents in urban areas was 2.5 per 1,000,

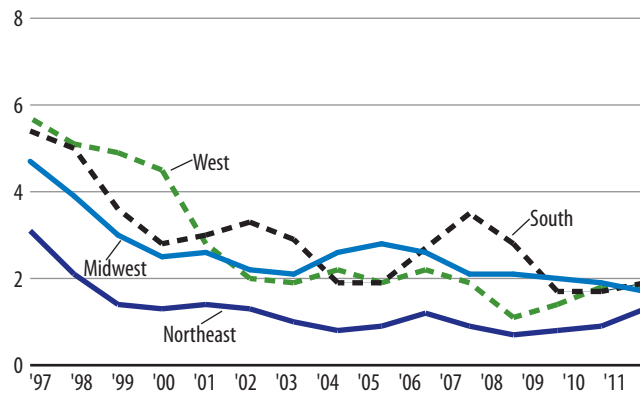
compared to 1.4 per 1,000 for suburban residents and 1.2 for rural residents. From 1994 to 2011, the rates of nonfatal firearm violence for all three locations declined between 76% and 78%.

Population size

In 2011, higher rates of nonfatal violence occurred in areas with a population of more than 250,000 residents than in areas with a population under 250,000 (**table 5**). From 1997 to 2011, the rates of nonfatal firearm violence for populations between 250,000 and 499,999 and 1 million residents or more declined between 57% and 62%, compared to a 37% decline for residents living in populations between 500,000 and 999,999 residents.

FIGURE 9
Nonfatal firearm violence, by region, 1997–2011

Rate per 1,000 persons age 12 or older

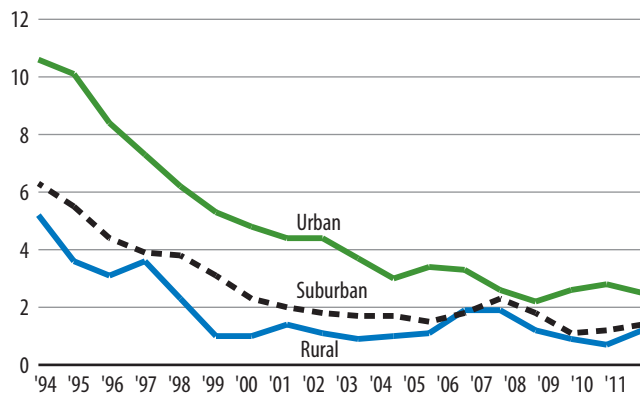


Note: Data based on 2-year rolling averages beginning in 1996. Region information was not available from 1993 to 1995. See appendix table 14 for rates and standard errors.

Source: Bureau of Justice Statistics, National Crime Victimization Survey, 1996–2011.

FIGURE 10
Nonfatal firearm violence, by urban-rural location, 1994–2011

Rate per 1,000 persons age 12 or older



Note: Data based on 2-year rolling averages beginning in 1993. See appendix table 15 for rates and standard errors.

Source: Bureau of Justice Statistics, National Crime Victimization Survey, 1993–2011.

TABLE 5
Nonfatal firearm violence, by population size, 1997–2011

Year	Rate per 1,000 persons age 12 or older					
	Not a place*	Less than 100,000	100,000–249,999	250,000–499,999	500,000–999,999	1 million or more
1997	3.9	3.8	7.0	10.3	7.3	7.3
1998	3.0	3.9	4.8	7.0	9.2	5.7
1999	1.9	3.1	3.1	5.5	9.0	6.4
2000	1.5	2.2	3.9	6.5	6.3	5.6
2001	1.4	2.1	4.1	6.1	5.5	5.1
2002	1.2	2.3	2.8	3.9	4.9	5.3
2003	1.4	2.0	2.8	3.3	5.1	3.6
2004	1.4	1.4	3.0	4.1	5.5	2.7
2005	1.2	1.6	2.9	3.6	4.5	4.6
2006	1.6	2.1	2.6	2.6	3.8	4.9
2007	1.5	2.6	2.7	2.4	5.4	2.1
2008	0.8	2.1	2.1	3.2	4.9	1.4
2009	0.9	1.1	2.2	3.0	4.0	3.5
2010	0.9	1.2	1.8	2.8	5.1	4.0
2011	1.4	1.2	1.3	3.9	4.6	3.2

Note: Data based on 2-year rolling averages beginning in 1996. Population size information was not available from 1993 to 1995. See appendix table 16 for rates and standard errors.

*A concentration of population that is not either legally bounded as an incorporated place having an active government or delineated for statistical purposes as a census designated place with definite geographic boundaries, such as a city, town, or village.

Source: Bureau of Justice Statistics, National Crime Victimization Survey, 1996–2011.

About 11% of nonfatal violence committed by a stranger involved a firearm

Intimate partners suffered about 4.7 million nonfatal violent victimizations in the 5-year period from 2007 through 2011, and the offender used a firearm in about 4% of these victimizations (about 195,700 incidents) (**table 6**). Similar to intimate partner violent victimizations, offenders who were either a relative or known to the victim (e.g., a friend or acquaintance) used a firearm in about 4% to 7% of these total victimizations. In comparison, persons

victimized by strangers experienced about 11 million violent victimizations, and the offender used a firearm in 11% of these victimizations.²

In 2007–11, the majority of nonfatal firearm violence occurred in or around the victim's home (42%) or in an open area, on the street, or while on public transportation (23%) (**table 7**). Less than 1% of all nonfatal firearm violence occurred in schools.

²The fatal data from the National Vital Statistics System does not have victim-offender relationship information. The SHR victim-offender relationship data are not shown due to the large amount of missing data.

TABLE 6

Nonfatal firearm and nonfirearm violence, by victim-offender relationship, 2007–2011

Relationship to victim	Total nonfatal violence	Firearm violence		Nonfirearm violence	
		Number	Percent of total violence	Number	Percent of total violence
Total	29,611,300	2,218,500	7.5%	27,392,800	92.5%
Nonstranger	15,715,900	738,000	4.7	14,977,900	95.3
Intimate ^a	4,673,600	195,700	4.2	4,477,900	95.8
Other relative	2,157,700	158,100	7.3	1,999,500	92.7
Friend/acquaintance	8,884,600	384,100	4.3	8,500,500	95.7
Stranger	10,983,100	1,177,900	10.7	9,805,200	89.3
Unknown^b	2,912,300	302,600	10.4	2,609,600	89.6

Note: Detail may not sum to total due to rounding. See appendix table 17 for standard errors.

^aIncludes current or former spouses, boyfriends, or girlfriends.

^bIncludes relationships unknown and number of offenders unknown.

Source: Bureau of Justice Statistics, National Crime Victimization Survey, 2007–2011.

TABLE 7

Nonfatal firearm and nonfirearm violence, by location of crime, 2007–2011

Location	Total nonfatal violence		Firearm violence		Nonfirearm violence	
	Number	Percent	Number	Percent	Number	Percent
Total	29,618,300	100%	2,218,500	100%	27,399,800	100%
Victims home or lodging	6,491,400	21.9	427,600	19.3	6,063,800	22.1
Near victim's home	4,804,700	16.2	504,500	22.7	4,300,200	15.7
In, at, or near a friend, neighbor, or relative's home	2,175,900	7.3	132,600	6.0	2,043,300	7.5
Commercial place	2,878,600	9.7	195,400	8.8	2,683,200	9.8
Parking lot or garage	1,688,400	5.7	340,600	15.4	1,347,900	4.9
School*	3,931,100	13.3	12,600 !	0.6 !	3,918,500	14.3
Open area, on street, or public transportation	4,636,900	15.7	508,400	22.9	4,128,500	15.1
Other location	3,011,200	10.2	96,800	4.4	2,914,400	10.6

! Interpret with caution. Estimate based on 10 or fewer sample cases, or coefficient of variation is greater than 50%. See appendix table 18 for standard errors.

*Includes inside a school building or on school property.

Source: Bureau of Justice Statistics, National Crime Victimization Survey, 2007–2011.

School-related homicides of youth ages 5 to 18 accounted for less than 2% of all youth homicides

The number of homicides at schools declined over time, from an average of 29 per year in the 1990s (school year 1992-93 to 1999-00) to an average of 20 per year in the 2000s (school

year 2000-01 to 2009-10) (**table 8**). Generally, homicides in schools comprised less than 2% of all homicides of youth ages 5 to 18. During the 2000s, an average of about 1,600 homicides of youth ages 5 to 18 occurred per year. The majority of homicides against youth both at school and away from school were committed with a firearm.

TABLE 8

School-associated homicides of youth ages 5 to 18, by location and school years, 1992-93 to 2009-10

School year	Homicides of youth ages 5 to 18		Percent of all homicides of youth at school
	Total homicides ^a	Homicides at school ^{b,c}	
1992-93	2,719	34	1.3%
1993-94	2,911	29	1.0
1994-95	2,691	28	1.0
1995-96	2,548	32	1.3
1996-97	2,210	28	1.3
1997-98	2,104	34	1.6
1998-99	1,791	33	1.8
1999-00	1,566	14	0.9
2000-01	1,501	14	0.9
2001-02	1,494	16	1.1
2002-03	1,538	18	1.2
2003-04	1,459	23	1.6
2004-05	1,545	22	1.4
2005-06	1,687	21	1.2
2006-07	1,796	32	1.8
2007-08	1,740	21	1.2
2008-09	1,579	17	1.1
2009-10	...	17	...

Note: At school includes on school property, on the way to or from regular sessions at school, and while attending or traveling to or from a school-sponsored event.

...Not available.

^aYouth ages 5 to 18 from July 1, 1992, through June 30, 2009.

^bYouth ages 5 to 18 from July 1, 1992, through June 30, 2010.

^cThe data from school year 1999-00 through 2009-10 are subject to change until interviews with school and law enforcement officials have been completed. The details learned during the interviews can occasionally change the classification of a case.

Sources: Table 1.1 from Robers, S., Zhang, J., and Truman, J. (2012). *Indicators of School Crime and Safety: 2011* (NCES 2012-002/NCJ 236021). National Center for Education Statistics, U.S. Department of Education, and Bureau of Justice Statistics, Office of Justice Programs, U.S. Department of Justice. Homicide data are from: Centers for Disease Control and Prevention (CDC), 1992-2010 School-Associated Violent Deaths Surveillance Study (SAVD); FBI and Supplementary Homicide Reports (SHR), 1992-2009.

In 2007-11, about 23% of all nonfatal firearm victims were injured

In 2007-11, about 23% of all nonfatal firearm victims were physically injured during the victimization (**table 9**). About 7% suffered serious injuries (e.g., a gunshot wound, broken bone, or internal injuries), while 16% suffered minor injuries

(e.g., bruises or cuts). Of the nonfatal firearm victims who were injured, 72% received some type of care, with about 82% receiving care in a hospital or medical office.

The victim reported that the offender had fired the weapon in 7% of all nonfatal firearm victimizations. The victim suffered a gunshot wound in 28% of these victimizations (not shown in table).

TABLE 9
Nonfatal firearm and nonfirearm violence, by injury and treatment received, 2007–2011

Injury and treatment	Total nonfatal violence		Firearm violence		Nonfirearm violence	
	Number	Percent	Number	Percent	Number	Percent
Injury	29,618,300	100%	2,218,500	100%	27,399,800	100%
Not injured	22,187,500	74.9	1,707,800	77.0	20,479,700	74.7
Injured	7,430,800	25.1	510,700	23.0	6,920,100	25.3
Serious ^a	1,249,300	4.2	148,300	6.7	1,147,000	4.2
Gun shot	46,000	0.2	46,000	2.1	~	~
Minor ^b	5,742,700	19.4	357,100	16.1	5,385,700	19.7
Rape without other injuries	374,300	1.3	5,400!	0.2!	368,900	1.3
Treatment for injury^c	7,430,800	100%	510,700	100%	6,920,100	100%
No treatment	4,304,300	57.9	140,700	27.5	4,163,600	60.2
Any treatment	3,103,500	41.8	370,000	72.5	2,733,500	39.5
Treatment setting^d	3,103,500	100%	370,000	100%	2,733,500	100%
At the scene/home of victim, neighbor, or friend/location	1,078,000	34.7	68,000	18.4	1,010,000	36.9
In doctor's office/hospital emergency room/overnight at hospital	2,025,600	65.3	302,000	81.6	1,723,500	63.1

Note: See appendix table 19 for standard errors.

! Interpret with caution. Estimate based on 10 or fewer sample cases, or coefficient of variation is greater than 50%.

~Not applicable.

^aIncludes injuries such as gun shots, knife wounds, internal injuries, unconsciousness, and broken bones.

^bIncludes bruises, cuts, and other minor injuries.

^cIncludes only victims who were injured.

^dIncludes only victims who were injured and received treatment.

Source: Bureau of Justice Statistics, National Crime Victimization Survey, 2007–2011.

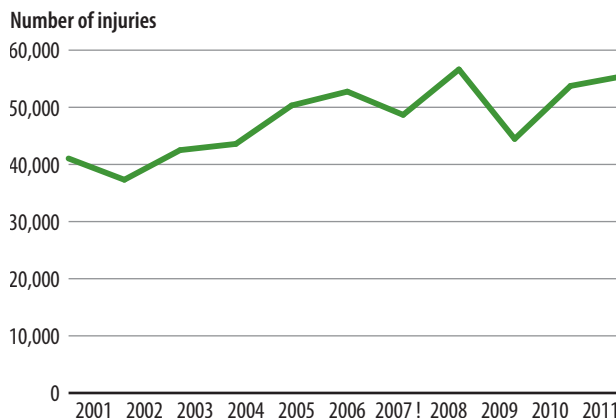
Nonfatal shooting victims

According to the NCVS, an average of about 22,000 nonfatal shooting victims occurred annually from 1993 to 2002 (not shown in table). From 2002 to 2011, the number of victims declined by about half to 12,900 per year. In the 5-year aggregate period from 2007-11, a total of 46,000 nonfatal firearm victims were wounded with a firearm and another 58,483 were victims of a firearm homicide. The total firearm nonfatal gunshot injuries and homicides accounted for 5% of all firearm violent crimes in 2007-11.

Data on nonfatal injury are also available in the National Electronic Injury Surveillance System All Injury Program (NEISS-AIP), which is operated by the U.S. Consumer Product Safety Commission (CPSC). According to these data, an average of 47,870 nonfatal assault injuries resulted from a firearm from 2001 to 2011 (**figure 11**). In 2007-11, the average number of nonfatal injuries from a firearm increased slightly to 51,810.

The differences noted between the NCVS and NEISS-AIP firearm injury estimates are due in part to a variety of technical issues. Both estimates are generated from samples and are subject to sampling error. The NCVS is a residential household survey that does not include the homeless, persons in institutional settings such as jails, prisons, mental health facilities, and certain other group quarters. Therefore, NCVS may miss injuries that involve persons who are homeless, victims who require lengthy stays in a hospital, and offenders who are incarcerated or placed in other institutional settings after the incident.

FIGURE 11
Nonfatal firearm injuries, 2001–2011



Note: See appendix table 20 for numbers and standard errors.

! Interpret with caution. Estimate based on fewer than 20 NEISS cases (based on unweighted data), national estimates less than 1,200 (based on weighted data), or the coefficient of variation (CV) of the estimate greater than 30%.

Source: Consumer Product Safety Commission, National Electronic Injury Surveillance System All Injury Program (NEISS-AIP), 2001–2011. Accessed from the National Center for Injury Prevention and Control, CDC.

The majority of firearm violence is reported to the police

In 2007-11, about 61% of nonfatal firearm violence was reported to the police, compared to 46% of nonfirearm violence (table 10). Among the nonfatal firearm victimizations that went unreported in 2007-11, the most common reasons victims gave for not reporting the crime was fear of reprisal (31%) and that the police could not or would not do anything to help (27%).

In 2007-11, about 1% of nonfatal violent crime victims used a firearm in self defense

In 2007-11, there were 235,700 victimizations where the victim used a firearm to threaten or attack an offender (table 11). This amounted to approximately 1% of all nonfatal violent victimizations in the 5-year period. The percentage of nonfatal violent victimizations involving firearm use in

self defense remained stable at under 2% from 1993 to 2011 (not shown in table). In 2007-11, about 44% of victims of nonfatal violent crime offered no resistance, 1% attacked or threatened the offender with another type of weapon, 22% attacked or threatened without a weapon (e.g., hit or kicked), and 26% used nonconfrontational methods (e.g., yelling, running, hiding, or arguing).

In instances where the victim was armed with a firearm, the offender was also armed with a gun in 32% of the victimizations, compared to 63% of victimizations where the offender was armed with a lesser weapon, such as a knife, or unarmed (not shown in table). A small number of property crime victims also used a firearm in self defense (103,000 victims or about 0.1% of all property victimizations); however, the majority of victims (86%) were not present during the incident. No information was available on the number of homicide victims that attempted to defend themselves with a firearm or by other means.

TABLE 10

Nonfatal firearm and nonfirearm violence reported and not reported to police, 2007-2011

	Total nonfatal violence	Firearm violence	Nonfirearm violence
Total	100%	100%	100%
Reported	46.9%	61.5%	45.7%
Not reported	51.7%	37.6%	52.9%
Reason not reported	100%	100%	100%
Dealt with it another way	35.0	12.1	36.4
Not important enough to respondent	18.4	6.2	19.1
Police could not or would not help	16.7	27.1	16.1
Fear of reprisal	6.5	31.3	5.1
Did not want to get offender in trouble advised not to report	5.1	4.3!	5.1
Other/unknown/not one most important reason	18.2	19.0	18.2

Note: Detail may not sum to total due to rounding. Reasons for not reporting represent the reason the victim stated was most important. See appendix table 21 for standard errors.

! Interpret with caution. Estimate based on 10 or fewer sample cases, or coefficient of variation is greater than 50%.

Source: Bureau of Justice Statistics, National Crime Victimization Survey, 2007-2011.

TABLE 11

Self-protective behaviors, by type of crime, 2007-2011

Self-protective behavior	Violent crime		Property crime	
	Number	Percent	Number	Percent
Total	29,618,300	100%	84,495,500	100%
Offered no resistance	12,987,300	43.8	10,162,000	12.0
Threatened or attacked with a firearm	235,700	0.8	103,000	0.1
Threatened or attacked with other weapon	391,100	1.3	38,200	--
Threatened or attacked without a weapon	6,552,900	22.1	421,300	0.5
Nonconfrontational tactics ^a	7,768,700	26.2	1,187,100	1.4
Other	1,641,300	5.5	223,400	0.3
Unknown	41,300	0.1	12,200!	--
Victim was not present ^b	~	~	72,348,200	85.6

Note: See appendix table 22 for standard errors.

! Interpret with caution. Estimate based on 10 or fewer sample cases, or coefficient of variation is greater than 50%.

~Not applicable.

--Less than 0.05%.

^aIncludes yelling, running, or arguing.

^bIncludes property crime where the victim was not present.

Source: Bureau of Justice Statistics, National Crime Victimization Survey, 2007-2011.

Firearm use by offenders

In 2004, an estimated 16% of state prison inmates and 18% of federal inmates reported that they used, carried, or possessed a firearm when they committed the crime for which they were serving a prison sentence (table 12). This represented a slight change from 1997, where an estimated 18% of state prison inmates and 16% of federal inmates reported having a firearm when they committed the crime for their current sentence. During the offense that brought them to prison, 13% of state inmates and 16% of federal inmates carried a handgun. In addition, about 1% had a rifle and another 2% had a shotgun. Of inmates armed with a firearm during the offense, about 7% of state inmates and 8% of federal inmates were armed with either a single shot firearm or a conventional semiautomatic, and 2% of state inmates and 3% of federal inmates were armed with a military-style semiautomatic or fully automatic firearm (table 13).

TABLE 12

Possession of firearms by state and federal prison inmates at time of offense, by type of firearm, 1997 and 2004

Type of firearm	1997		2004	
	State	Federal	State	Federal
Total	100%	100%	100%	100%
Firearm	18.3%	15.8%	15.8%	17.8%
Handgun	15.1	13.6	13.3	15.5
Rifle	1.3	1.4	1.3	1.5
Shotgun	2.3	2.1	1.7	2.0
Other	0.4	0.5	0.1	0.1
No firearm	81.7%	84.2%	84.2%	82.2%

Note: Includes only inmates with a current conviction. Estimates may differ from previously published BJS reports. To account for differences in the 1997 and 2004 inmate survey questionnaires, the analytical methodology used in 1997 was revised to ensure comparability with the 2004 survey. Detail may not sum to total as inmates may have had possessed more than one firearm.

Source: Bureau of Justice Statistics, Survey of Inmates in State and Federal Correctional Facilities, 1997 and 2004.

TABLE 13

Possession of firearms by state and federal prison inmates at time of offense, by specific type of firearm, 1997 and 2004

Specific type of firearm	1997		2004	
	State	Federal	State	Federal
Single shot	9.9%	7.6%	7.5%	8.2%
Conventional semiautomatic	7.8	8.3	6.6	7.9
Military-style semiautomatic or fully automatic	1.5	1.7	2.0	3.2
Other	0.1	0.2	0.1	0.1

Note: Includes only inmates with a current conviction. Estimates may differ from previously published BJS reports. To account for differences in the 1997 and 2004 inmate survey questionnaires, the analytical methodology used in 1997 was revised to ensure comparability with the 2004 survey.

Source: Bureau of Justice Statistics, Survey of Inmates in State and Federal Correctional Facilities, 1997 and 2004.

In 2004, among state prison inmates who possessed a gun at the time of offense, fewer than 2% bought their firearm at a flea market or gun show, about 10% purchased it from a retail store or pawnshop, 37% obtained it from family or friends, and another 40% obtained it from an illegal source (table 14). This was similar to the percentage distribution in 1997.

TABLE 14

Source of firearms possessed by state prison inmates at time of offense, 1997 and 2004

Source of firearm	Percent of state prison inmates	
	1997	2004
Total	100%	100%
Purchased or traded from—	14.0%	11.3%
Retail store	8.2	7.3
Pawnshop	4.0	2.6
Flea market	1.0	0.6
Gun show	0.8	0.8
Family or friend	40.1%	37.4%
Purchased or traded	12.6	12.2
Rented or borrowed	18.9	14.1
Other	8.5	11.1
Street/illegal source	37.3%	40.0%
Theft or burglary	9.1	7.5
Drug dealer/off street	20.3	25.2
Fence/black market	8.0	7.4
Other	8.7%	11.2%

Note: Includes only inmates with a current conviction. Estimates may differ from previously published BJS reports. To account for differences in the 1997 and 2004 inmate survey questionnaires, the analytical methodology used in 1997 was revised to ensure comparability with the 2004 survey.

Source: Bureau of Justice Statistics, Survey of Inmates in State and Federal Correctional Facilities, 1997 and 2004.

Methodology

Estimates in this report are based primarily on data from the Bureau of Justice Statistics' (BJS) National Crime Victimization Survey (NCVS) and the National Center for Health Statistics' (NCHS) Centers for Disease Control and Prevention Center for Disease Control's Web-based Injury Statistics Query and Reporting System (WISQARS). Additional estimates come from the School-Associated Violent Deaths Surveillance Study (SAVD), the National Electronic Injury Surveillance System All Injury Program (NEISS-AIP) data, the FBI's Supplemental Homicide Reports (SHR), the Survey of Inmates in State Correctional Facilities (SISCF), and the Survey of Inmates in Federal Correctional Facilities (SIFCF).

The National Crime Victimization Survey (NCVS)

The NCVS is an annual data collection conducted by the U.S. Census Bureau for BJS. The NCVS is a self-report survey in which interviewed persons are asked about the number and characteristics of victimizations experienced during the prior 6 months. The NCVS collects information on nonfatal personal crimes (rape or sexual assault, robbery, aggravated assault, simple assault, and personal larceny) and household property crimes (burglary, motor vehicle theft, and other theft) both reported and not reported to police. In addition to providing annual level and change estimates on criminal victimization, the NCVS is the primary source of information on the nature of criminal victimization incidents. Survey respondents provide information about themselves (such as age, sex, race and ethnicity, marital status, education level, and income) and if they experienced a victimization. For crime victims, data are collected about each victimization incident, including information about the offender (such as age, race and ethnicity, sex, and victim-offender relationship), characteristics of the crime (including time and place of occurrence, use of weapons, nature of injury, and economic consequences), whether the crime was reported to police, reasons why the crime was or was not reported, and experiences with the criminal justice system.

The NCVS is administered to persons age 12 or older from a nationally representative sample of households in the United States. In 2011, about 143,120 persons age 12 or older from 79,800 households across the country were interviewed during the year. Once selected, households remain in the sample for 3 years, and eligible persons in these households are interviewed every 6 months for a total of seven interviews. New households rotate into the sample on an ongoing basis to replace outgoing households that have been in sample for the 3-year period. The sample includes persons living in group quarters (such as dormitories, rooming houses, and religious group dwellings) and excludes persons

living in military barracks and institutional settings (such as correctional or hospital facilities) and the homeless. (For more information, see the *Survey Methodology for Criminal Victimization in the United States, 2008*, NCJ 231173, BJS website, May 2011.)

The 79,800 households that participated in the NCVS in 2011 represent a 90% household response rate. The person level response rate—the percentage of persons age 12 or older in participating households who completed an NCVS interview—was 88% in 2011.

For this report, prior to applying the weights to the data, all victimizations that occurred outside of the U.S. were excluded. From 1993 to 2011, less than 1% of the unweighted violent victimizations occurred outside of the U.S. and was excluded from the analyses.

Weighting adjustments for estimating personal victimization

Estimates in this report use data primarily from the 1993 to 2011 NCVS data files weighted to produce annual estimates for persons age 12 or older living in U.S. households. Because the NCVS relies on a sample rather than a census of the entire U.S. population, weights are designed to inflate sample point estimates to known population totals and to compensate for survey nonresponse and other aspects of the sample design.

The NCVS data files include both household and person weights. The household weight is commonly used to calculate estimates of property crimes, such as motor vehicle theft or burglary, which are identified with the household. Person weights provide an estimate of the population represented by each person in the sample. Person weights are most frequently used to compute estimates of crime victimizations of persons in the total population. Both household and person weights, after proper adjustment, are also used to form the denominator in calculations of crime rates.

The victimization weights used in this analysis account for the number of persons present during an incident and for repeat victims of series incidents. The weight counts series incidents as the actual number of incidents reported by the victim, up to a maximum of ten incidents. Series victimizations are victimizations that are similar in type but occur with such frequency that a victim is unable to recall each individual event or to describe each event in detail. Survey procedures allow NCVS interviewers to identify and classify these similar victimizations as series victimizations and collect detailed information on only the most recent incident in the series. In 2011, about 2% of all victimizations were series incidents. Weighting series incidents as the number of incidents up to a maximum of

ten produces more reliable estimates of crime levels, while the cap at ten minimizes the effect of extreme outliers on the rates. Additional information on the series enumeration is detailed in *Methods for Counting High Frequency Repeat Victimization in the National Crime Victimization Survey*, NCJ 237308, BJS website, April 2012.

Standard error computations

When national estimates are derived from a sample, as is the case with the NCVS, caution must be taken when comparing one estimate to another estimate or when comparing estimates over time. Although one estimate may be larger than another, estimates based on a sample have some degree of sampling error. The sampling error of an estimate depends on several factors, including the amount of variation in the responses, the size of the sample, and the size of the subgroup for which the estimate is computed. When the sampling error around the estimates is taken into consideration, the estimates that appear different may, in fact, not be statistically different.

One measure of the sampling error associated with an estimate is the standard error. The standard error can vary from one estimate to the next. In general, for a given metric, an estimate with a smaller standard error provides a more reliable approximation of the true value than an estimate with a larger standard error. Estimates with relatively large standard errors are associated with less precision and reliability and should be interpreted with caution.

In order to generate standard errors around estimates from the NCVS, the Census Bureau produces generalized variance function (GVF) parameters for BJS. The GVFs take into account aspects of the NCVS complex sample design and represent the curve fitted to a selection of individual standard errors based on the Jackknife Repeated Replication technique. The GVF parameters were used to generate standard errors for each point estimate (such as counts, percentages, and rates) in the report. For average annual estimates, standard errors were based on the ratio of the sums of victimizations and respondents across years.

In this report, BJS conducted tests to determine whether differences in estimated numbers and percentages were statistically significant once sampling error was taken into account. Using statistical programs developed specifically for the NCVS, all comparisons in the text were tested for significance. The primary test procedure used was Student's t-statistic, which tests the difference between two sample estimates. To ensure that the observed differences between estimates were larger than might be expected due to sampling variation, the significance level was set at the 95% confidence level.

Data users can use the estimates and the standard errors of the estimates provided in this report to generate a confidence interval around the estimate as a measure of the margin of error. The following example illustrates how standard errors can be used to generate confidence intervals:

According to the NCVS, in 2011, the rate of nonfatal firearm violence was 1.8 per 1,000 (see table 1). Using the GVFs, BJS determined that the estimate has a standard error of 0.2 (see appendix table 3). A confidence interval around the estimate was generated by multiplying the standard errors by ± 1.96 (the t-score of a normal, two-tailed distribution that excludes 2.5% at either end of the distribution). Thus, the confidence interval around the 1.8 estimate from 2011 is 1.8 ± 0.2 (0.2×1.96) or (1.4 to 2.2). In other words, if different samples using the same procedures were taken from the U.S. population in 2011, 95% of the time the rate of nonfatal firearm violence was between 1.4 and 2.2 per 1,000.

In this report, BJS also calculated a coefficient of variation (CV) for all estimates, representing the ratio of the standard error to the estimate. CVs provide a measure of reliability and a means to compare the precision of estimates across measures with differing levels or metrics. If the CV was greater than 50%, or the unweighted sample had 10 or fewer cases, the estimate would have been noted with a “!” symbol (interpret data with caution; estimate is based on 10 or fewer sample cases, or the coefficient of variation exceeds 50%).

Many of the variables examined in this report may be related to one another and to other variables not included in the analyses. Complex relationships among variables were not fully explored in this report and warrant more extensive analysis. Readers are cautioned not to draw causal inferences based on the results presented.

Methodological changes to the NCVS in 2006

Methodological changes implemented in 2006 may have affected the crime estimates for that year to such an extent that they are not comparable to estimates from other years. Evaluation of 2007 and later data from the NCVS conducted by BJS and the Census Bureau found a high degree of confidence that estimates for 2007, 2008, 2009, and 2010 are consistent with and comparable to estimates for 2005 and previous years. The reports, *Criminal Victimization, 2006*, NCJ 219413, December 2007; *Criminal Victimization, 2007*, NCJ 224390, December 2008; *Criminal Victimization, 2008*, NCJ 227777, September 2009; *Criminal Victimization, 2009*, NCJ 231327, October 2010; *Criminal Victimization, 2010*, NCJ 235508, September 2011; and *Criminal Victimization, 2011*, NCJ 239437, October 2012, are available on the BJS website.

Although caution is warranted when comparing data from 2006 to other years, the aggregation of multiple years of data in this report diminishes the potential variation between 2006 and other years. In general, findings do not change significantly if data for 2006 are excluded from the analyses.

Web-based Injury Statistics Query and Reporting System Fatal (WISQARS™ Fatal)

WISQARS Fatal provides mortality data related to injury. The mortality data reported in WISQARS Fatal come from death certificate data reported to the CDC's National Center for Health Statistics (NCHS). Data include causes of death reported by attending physicians, medical examiners, and coroners. It also includes demographic information about decedents reported by funeral directors, who obtain that information from family members and other informants. NCHS collects, compiles, verifies, and prepares these data for release to the public. The data provide information about what types of injuries are leading causes of deaths, how common they are, and who they affect. These data are intended for a broad audience—the public, the media, public health practitioners and researchers, and public health officials—to increase their knowledge of injury.

WISQARS Fatal mortality reports provide tables of the total numbers of injury-related deaths and the death rates per 100,000 U.S. population. The reports list deaths according to cause (mechanism) and intent (manner) of injury by state, race, Hispanic origin, sex, and age groupings. Data in this report are provided for homicides by firearm from 1993 to 2010, including some preliminary 2011 estimates. The injury mortality data were classified based on the International Classification of Diseases (ICD)-10 classification system from 1999 and later, and the ICD-9 system for 1998 and earlier. The comparability study showed that the comparability for homicide and firearm homicide between the two systems was very high; therefore, data are shown from both periods.³

National Electronic Injury Surveillance System All Injury Program (NEISS-AIP)

The NEISS-AIP is operated by the U.S. Consumer Product Safety Commission (CPSC). It is a collaborative effort by the National Center for Injury Prevention and Control (NCIPC) and CPSC. The NEISS is a national probability sample of hospitals in the U.S. and its territories. Data are collected about all types and external causes of nonfatal injuries and poisonings treated in U.S. hospital emergency departments, whether or not they are associated with consumer products. This report uses the estimates on nonfatal assault injuries from a firearm. This excludes injuries that were unintentional, by legal intervention, or self-harm.

³National Center for Health Statistics. (2001). Comparability of cause of death between ICD-9 and ICD-10: Preliminary estimates. Retrieved from http://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_02.pdf.

School-Associated Violent Deaths Surveillance Study (SAVD)

The SAVD is an epidemiological study developed by the Centers for Disease Control and Prevention in conjunction with the U.S. Department of Education and the U.S. Department of Justice. SAVD seeks to describe the epidemiology of school-associated violent deaths, identify common features of these deaths, estimate the rate of school-associated violent death in the United States, and identify potential risk factors for these deaths. The surveillance system includes descriptive data on all school-associated violent deaths in the United States, including all homicides, suicides, or legal intervention in which the fatal injury occurred on the campus of a functioning elementary or secondary school; while the victim was on the way to or from regular sessions at such a school; or while attending or on the way to or from an official school-sponsored event. Victims of such incidents include nonstudents, as well as students and staff members. SAVD includes descriptive information about the school, event, victim(s), and offender(s). The SAVD Surveillance System has collected data from July 1, 1992, through the present.

SAVD uses a four-step process to identify and collect data on school-associated violent deaths. Cases are initially identified through a search of the LexisNexis newspaper and media database. Then law enforcement officials are contacted to confirm the details of the case and to determine if the event meets the case definition. Once a case is confirmed, a law enforcement official and a school official are interviewed regarding details about the school, event, victim(s), and offender(s). A copy of the full law enforcement report is also sought for each case. The information obtained on schools includes school demographics, attendance/absentee rates, suspensions/expulsions and mobility, school history of weapon-carrying incidents, security measures, violence prevention activities, school response to the event, and school policies about weapon carrying. Event information includes the location of injury, the context of injury (e.g., while classes were being held or during break), motives for injury, method of injury, and school and community events happening around the time period. Information obtained on victim(s) and offender(s) includes demographics, circumstances of the event (date/time, alcohol or drug use, and number of persons involved), types and origins of weapons, criminal history, psychological risk factors, school-related problems, extracurricular activities, and family history, including structure and stressors.

For several reasons, all data from 1999 to the present are flagged as preliminary. For some recent data, the interviews with school and law enforcement officials to verify case details have not been completed. The details learned during the interviews can occasionally change the classification of a case. Also, new cases may be identified because of the expansion of the scope of the media files used for case identification. Sometimes other cases not identified during

earlier data years using the independent case finding efforts (which focus on nonmedia sources of information) will be discovered. Also, other cases may occasionally be identified while the law enforcement and school interviews are being conducted to verify known cases.

The FBI's Uniform Crime Reporting (UCR) Program, Supplementary Homicide Reports (SHR)

The FBI's SHR were used for information about gun type used in firearm homicides. The UCR program collects and publishes criminal offense, arrest, and law enforcement personnel statistics. Under the UCR program, law enforcement agencies submit information to the FBI monthly. Offense information is collected on the eight Part I offenses: homicide, forcible rape, robbery, aggravated assault, burglary, larceny-theft, motor vehicle theft, and arson. The UCR program collects data on only those crimes that come to the attention of law enforcement.

Homicide incident information—through SHR data—is submitted with details on location, victim, and offender characteristics. Homicide is defined as murder and non-negligent manslaughter, which is the willful killing of one human being by another. The analyses excludes deaths caused by negligence, suicide, or accident; justifiable homicides; and attempts to murder. Deaths from the terrorist attacks of September 11, 2001, are not included in any of the analyses.

Not all agencies that report offense information to the FBI also submit supplemental data on homicides. About 90 percent of homicides are included in the SHR. However, adjustments can be made to the weights to correct for missing victim reports. Estimates from the SHR used in this report were generated by BJS using a weight developed by BJS that reconciles the counts of SHR homicide victims with those in the UCR for the 1992 through 2011 data years.

Surveys of Inmates in State and Federal Correctional Facilities (SISCF and SIFCF)

The SISCF and the SIFCF have provided nationally representative data on state prison inmates and sentenced federal inmates held in federally owned and operated facilities. The SISCF was conducted in 1974, 1979, 1986, 1991, 1997, and 2004, and the SIFCF in 1991, 1997, and 2004. The 2004 SISCF was conducted for BJS by the U.S. Census Bureau, which also conducted the SIFCF for BJS and the Federal Bureau of Prisons. Both surveys provide information about current offense and criminal history, family background and personal characteristics, prior drug and alcohol use and treatment, gun possession, and prison treatment, programs, and services. The surveys are the only national source of detailed information on criminal offenders, particularly special populations such as drug and alcohol users and offenders who have mental health problems. Systematic random sampling was used to select the inmates, and the 2004 surveys of state and federal inmates were administered through CAPI. In 2004, 14,499 state prisoners in 287 state prisons and 3,686 federal prisoners in 39 federal prisons were interviewed.

APPENDIX TABLE 1**Numbers and rates for figure 1: Firearm homicides, 1993–2011**

Year	Number	Rate per 100,000 persons
1993	18,253	7.0
1994	17,527	6.7
1995	15,551	5.8
1996	14,037	5.2
1997	13,252	4.9
1998	11,798	4.3
1999	10,828	3.9
2000	10,801	3.8
2001	11,348	4.0
2002	11,829	4.1
2003	11,920	4.1
2004	11,624	4.0
2005	12,352	4.2
2006	12,791	4.3
2007	12,632	4.2
2008	12,179	4.0
2009	11,493	3.8
2010	11,078	3.6
2011	11,101	3.6

Source: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS), 1993–2010. Retrieved March 2013 from www.cdc.gov/ncipc/wisqars.

APPENDIX TABLE 2**Numbers, rates, and standard errors for figure 2: Nonfatal firearm victimizations, 1993–2011**

	Number	Standard error	Rate per 1,000 persons age 12 or older	Standard error
1993	1,529,700	104,582	7.3	0.5
1994	1,568,200	83,431	7.4	0.4
1995	1,193,200	70,572	5.5	0.3
1996	1,100,800	68,653	5.1	0.3
1997	1,024,100	72,643	4.7	0.3
1998	835,400	69,401	3.8	0.3
1999	640,900	54,713	2.9	0.2
2000	610,200	55,220	2.7	0.2
2001	563,100	53,309	2.5	0.2
2002	540,000	50,299	2.3	0.2
2003	467,300	47,783	2.0	0.2
2004	456,500	47,513	1.9	0.2
2005	503,500	55,594	2.1	0.2
2006	614,400	61,310	2.5	0.2
2007	554,800	55,886	2.2	0.2
2008	371,300	45,794	1.5	0.2
2009	410,100	48,765	1.6	0.2
2010	415,000	47,172	1.6	0.2
2011	467,300	53,197	1.8	0.2

Source: Bureau of Justice Statistics, National Crime Victimization Survey, 1993–2011.

APPENDIX TABLE 3**Standard errors for table 1: Criminal firearm violence, 1993–2011**

Year	Total fatal and nonfatal firearm violence	Number		Rate of nonfatal firearm victimization	Percent of all violence involving firearms
		Nonfatal firearm victimizations	Nonfatal firearm incidents		
1993	105,349	104,582	91,169	0.5	0.6%
1994	84,005	83,431	73,911	0.4	0.4
1995	71,131	70,572	64,501	0.3	0.4
1996	69,183	68,653	62,377	0.3	0.5
1997	73,220	72,643	66,331	0.3	0.5
1998	70,022	69,401	60,556	0.3	0.5
1999	55,268	54,713	48,457	0.2	0.5
2000	55,810	55,220	48,015	0.2	0.6
2001	53,967	53,309	49,987	0.2	0.7
2002	50,946	50,299	45,234	0.2	0.6
2003	48,494	47,783	42,668	0.2	0.6
2004	48,200	47,513	44,433	0.2	0.7
2005	56,378	55,594	51,864	0.2	0.8
2006	62,038	61,310	57,669	0.2	0.7
2007	56,652	55,886	49,166	0.2	0.8
2008	46,637	45,794	42,966	0.2	0.7
2009	49,561	48,765	46,881	0.2	0.8
2010	47,913	47,172	44,695	0.2	0.9
2011	53,942	53,197	49,563	0.2	0.8

~Not applicable.

Source: Bureau of Justice Statistics, National Crime Victimization Survey, 1993–2011.

APPENDIX TABLE 4**Standard errors for table 2: Percent of violence involving a
firearm, by type of crime, 1993–2011**

Year	Nonfatal violence	Robbery	Aggravated assault
1993	0.6%	2.2%	1.9%
1994	0.4	1.9	1.5
1995	0.4	2.1	1.5
1996	0.4	2.0	1.5
1997	0.5	2.2	1.7
1998	0.5	2.5	1.9
1999	0.5	2.3	1.8
2000	0.6	2.6	2.2
2001	0.6	3.4	2.3
2002	0.6	3.2	2.5
2003	0.6	3.1	2.3
2004	0.7	3.2	2.4
2005	0.8	3.3	2.8
2006	0.7	2.7	2.4
2007	0.8	2.9	2.9
2008	0.7	3.3	3.1
2009	0.8	3.8	2.9
2010	0.9	3.7	3.1
2011	0.8	4.0	3.2

Source: Bureau of Justice Statistics, National Crime Victimization Survey, 1993–2011.

APPENDIX TABLE 5**Standard errors for table 3: Criminal firearm violence, by type of firearm, 1994–2011**

Year	Handgun		Nonfatal violence Other firearm		Gun type unknown	
	Number	Percent	Number	Percent	Number	Percent
1994	94,313	1.8%	26,713	1.6%	6,951	0.4%
1995	77,109	1.6	21,832	1.5	4,899	0.4
1996	66,253	1.9	21,995	1.8	4,366	0.4
1997	68,335	2.3	25,950	2.2	5,534	0.5
1998	68,151	2.6	25,521	2.5	4,522	0.5
1999	63,909	2.5	18,379	2.3	4,189	0.6
2000	57,439	2.8	17,323	2.6	4,260	0.7
2001	53,625	3.1	17,115	2.7	7,586	1.3
2002	48,977	3.1	16,006	2.7	7,929	1.4
2003	46,655	3.2	14,670	2.7	7,392	1.4
2004	45,846	3.6	15,535	3.1	8,509	1.8
2005	50,621	3.8	17,269	3.3	8,153	1.7
2006	56,341	3.1	15,872	2.7	8,415	1.5
2007	56,630	3.2	18,308	2.9	6,598	1.1
2008	48,199	3.6	16,622	3.3	4,666	1.0
2009	47,110	3.7	14,157	3.4	4,688	1.2
2010	50,636	3.1	11,837	2.7	4,313	1.0
2011	43,185	3.1	13,868	2.9	2,676	0.6

Source: Bureau of Justice Statistics, National Crime Victimization Survey, 1993–2011.

APPENDIX TABLE 6**Numbers and rates for figure 3: Firearm homicides, by sex, 1993–2010**

Year	Number		Rate per 100,000 persons	
	Male	Female	Male	Female
1993	15,228	3,025	12.0	2.3
1994	14,766	2,761	11.5	2.1
1995	13,021	2,530	10.0	1.9
1996	11,735	2,302	8.9	1.7
1997	11,147	2,105	8.4	1.5
1998	9,771	2,027	7.2	1.4
1999	8,944	1,884	6.5	1.3
2000	9,006	1,795	6.5	1.3
2001	9,532	1,816	6.8	1.3
2002	9,899	1,930	7.0	1.3
2003	10,126	1,794	7.1	1.2
2004	9,921	1,703	6.9	1.1
2005	10,561	1,791	7.3	1.2
2006	10,886	1,905	7.4	1.3
2007	10,767	1,865	7.3	1.2
2008	10,361	1,818	6.9	1.2
2009	9,615	1,878	6.4	1.2
2010	9,340	1,738	6.2	1.1

Source: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS), 1993–2010. Retrieved March 2013 from www.cdc.gov/ncipc/wisqars.**APPENDIX TABLE 7****Rates and standard errors for figure 4: Nonfatal firearm violence, by sex, 1994–2011**

Year	Male		Female	
	Rate*	Standard error	Rate*	Standard error
1994	10.1	0.6	4.7	0.4
1995	9.3	0.5	3.7	0.3
1996	7.6	0.4	3.1	0.2
1997	6.4	0.4	3.5	0.3
1998	5.5	0.4	3.0	0.3
1999	4.4	0.4	2.3	0.2
2000	3.7	0.3	1.9	0.2
2001	3.5	0.3	1.7	0.2
2002	2.9	0.3	1.9	0.2
2003	2.7	0.2	1.6	0.2
2004	2.5	0.2	1.4	0.2
2005	2.5	0.3	1.4	0.2
2006	2.8	0.3	1.8	0.2
2007	2.8	0.3	1.9	0.2
2008	2.2	0.2	1.5	0.2
2009	2.0	0.2	1.1	0.2
2010	2.0	0.2	1.2	0.2
2011	1.9	0.2	1.6	0.2

*Per 1,000 persons age 12 or older.

Source: Bureau of Justice Statistics, National Crime Victimization Survey, 1993–2011.

APPENDIX TABLE 8**Numbers and rates for figure 5: Firearm homicides, by race, 1993–2010**

Year	Number				Rate per 100,000 persons			
	White	Black	American Indian/ Alaska Native	Asian/Pacific Islander	White	Black	American Indian/ Alaska Native	Asian/Pacific Islander
1993	7,918	9,824	106	405	3.7	30.1	4.6	4.6
1994	7,774	9,302	123	328	3.6	28.0	5.2	3.6
1995	7,144	7,935	130	342	3.2	23.4	5.3	3.6
1996	6,240	7,403	90	304	2.8	21.5	3.6	3.0
1997	6,025	6,841	96	290	2.7	19.5	3.7	2.8
1998	5,412	6,053	99	234	2.4	17.0	3.6	2.2
1999	4,918	5,577	104	229	2.2	15.4	3.7	2.0
2000	4,806	5,699	86	210	2.1	15.6	2.9	1.8
2001	5,188	5,885	87	188	2.2	15.8	2.8	1.5
2002	5,185	6,285	117	242	2.2	16.7	3.7	1.9
2003	5,173	6,397	109	241	2.2	16.7	3.3	1.8
2004	5,119	6,201	104	200	2.2	16.0	3.0	1.4
2005	5,266	6,703	117	266	2.2	17.1	3.3	1.8
2006	5,279	7,113	119	280	2.2	17.9	3.2	1.9
2007	5,380	6,960	91	201	2.2	17.2	2.4	1.3
2008	5,305	6,569	97	208	2.2	16.0	2.4	1.3
2009	4,950	6,216	112	215	2.0	14.9	2.7	1.3
2010	4,647	6,151	113	167	1.9	14.6	2.7	1.0

Source: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS), 1993–2010. Retrieved March 2013 from www.cdc.gov/ncipc/wisqars.

APPENDIX TABLE 9**Numbers and rates for figure 6: Firearm homicides, by Hispanic origin, 1993–2010**

Year	Number		Rate per 100,000 persons	
	Hispanic	Non-Hispanic	Hispanic	Non-Hispanic
1993	3,192	14,597	12.4	6.3
1994	3,149	14,065	11.7	6.0
1995	3,008	12,260	10.7	5.2
1996	2,529	11,229	8.6	4.7
1997	2,298	10,868	7.4	4.5
1998	2,090	9,620	6.5	4.0
1999	1,939	8,821	5.7	3.6
2000	1,958	8,767	5.6	3.6
2001	2,123	9,134	5.7	3.7
2002	2,168	9,575	5.6	3.9
2003	2,316	9,536	5.8	3.8
2004	2,241	9,323	5.4	3.7
2005	2,453	9,835	5.7	3.9
2006	2,472	10,260	5.5	4.0
2007	2,385	10,193	5.2	4.0
2008	2,260	9,882	4.7	3.9
2009	2,115	9,275	4.3	3.6
2010	1,919	9,082	3.8	3.5

Source: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS), 1993–2010. Retrieved March 2013 from www.cdc.gov/ncipc/wisqars.

APPENDIX TABLE 10**Rates and standard errors for figure 7: Nonfatal firearm violence, by race and Hispanic origin, 1994–2011**

Year	White		Black		Hispanic		American Indian/ Alaska Native		Asian/Pacific Islander		Two or more races	
	Rate*	Standard error	Rate*	Standard error	Rate*	Standard error	Rate*	Standard error	Rate*	Standard error	Rate*	Standard error
1994	5.2	0.3	16.3	1.3	12.7	1.4	15.3!	5.3	10.3	2.0	~	~
1995	4.6	0.3	14.2	1.1	12.1	1.1	16.3	4.9	4.9	1.1	~	~
1996	3.9	0.2	11.6	0.9	9.3	0.9	13.3!	4.4	3.4	0.9	~	~
1997	4.0	0.3	9.4	0.9	6.9	0.8	3.7!	2.6	2.0	0.7	~	~
1998	3.4	0.3	7.4	0.8	5.6	0.8	20.9!	6.6	3.9	1.0	~	~
1999	2.2	0.2	7.9	0.9	5.0	0.8	25.1!	7.5	4.0	1.1	~	~
2000	1.8	0.2	7.0	0.8	4.7	0.7	4.8!	3.2	1.9	0.7	~	~
2001	2.0	0.2	5.0	0.7	3.8	0.6	1.1!	1.5	1.5!	0.6	~	~
2002	1.7	0.2	5.6	0.7	3.7	0.6	1.1!	1.4	0.9!	0.4	~	~
2003	1.5	0.2	5.7	0.7	2.6	0.4	--	~	1.0!	0.5	~	~
2004	1.7	0.2	4.4	0.6	1.5	0.3	--	~	1.1!	0.5	0.9!	1.1
2005	1.6	0.2	4.2	0.7	2.2	0.4	--	~	1.2!	0.5	2.8!	2.0
2006	1.7	0.2	4.4	0.7	3.4	0.6	1.8!	1.9	2.1!	0.7	4.0!	2.2
2007	1.4	0.2	7.1	0.9	3.0	0.5	3.3!	2.4	1.7!	0.6	4.7!	2.1
2008	1.0	0.1	6.9	0.8	1.9	0.4	3.2!	2.3	1.0!	0.5	2.7!	1.5
2009	0.9	0.1	5.1	0.7	1.7	0.4	2.9!	2.3	0.9!	0.4	1.4!	1.2
2010	1.0	0.1	4.5	0.7	2.1	0.4	9.2!	4.2	0.3!	0.2	5.7!	2.5
2011	1.4	0.1	2.8	0.4	2.2	0.4	8.6!	3.4	0.6!	0.3	7.6	2.3

*Per 1,000 persons age 12 or older.

! Interpret with caution. Estimate based on 10 or fewer sample cases, or coefficient of variation is greater than 50%.

~Not applicable.

--Less than 0.05.

Source: Bureau of Justice Statistics, National Crime Victimization Survey, 1993–2011.

APPENDIX TABLE 11**Numbers for table 4: Firearm homicides, by age, 1993–2011**

Year	11 or younger	12–17	18–24	25–34	35–49	50 or older
1993	240	1,735	5,673	5,295	3,808	1,476
1994	176	1,736	5,435	5,059	3,700	1,399
1995	183	1,597	4,726	4,448	3,222	1,351
1996	178	1,295	4,334	3,918	3,030	1,266
1997	174	1,134	4,148	3,706	2,905	1,168
1998	157	888	3,753	3,231	2,669	1,082
1999	142	859	3,319	3,048	2,419	1,026
2000	110	709	3,371	3,074	2,488	1,037
2001	150	685	3,611	3,308	2,530	1,053
2002	151	721	3,708	3,465	2,646	1,125
2003	121	684	3,840	3,540	2,624	1,093
2004	105	763	3,485	3,503	2,533	1,214
2005	111	810	3,808	3,780	2,689	1,145
2006	142	940	4,030	3,767	2,688	1,216
2007	140	898	3,895	3,751	2,737	1,202
2008	140	844	3,662	3,612	2,655	1,264
2009	142	745	3,398	3,300	2,538	1,364
2010	127	708	3,273	3,331	2,294	1,340

Source: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS), 1993–2010. Retrieved March 2013 from www.cdc.gov/ncipc/wisqars.

APPENDIX TABLE 12

Standard errors for table 4: Nonfatal firearm violence, by age, 1994–2011

Year	12-17	18-24	25-34	35-49	50 or older
1994	1.2	1.4	0.8	0.6	0.2
1995	0.9	1.2	0.6	0.4	0.2
1996	0.8	1.0	0.6	0.4	0.2
1997	0.8	1.1	0.6	0.4	0.2
1998	0.8	1.1	0.5	0.4	0.2
1999	0.7	1.0	0.6	0.3	0.2
2000	0.6	0.8	0.5	0.3	0.2
2001	0.5	0.8	0.4	0.3	0.2
2002	0.5	0.8	0.4	0.3	0.1
2003	0.5	0.7	0.4	0.2	0.1
2004	0.4	0.6	0.4	0.3	0.2
2005	0.4	0.7	0.5	0.3	0.2
2006	0.5	0.8	0.5	0.3	0.2
2007	0.7	0.7	0.5	0.3	0.2
2008	0.6	0.5	0.4	0.3	0.1
2009	0.3	0.6	0.4	0.3	0.1
2010	0.2	0.8	0.4	0.2	0.1
2011	0.3	0.6	0.3	0.2	0.1

*Rate per 1,000 persons age 12 or older.

!Interpret with caution. Estimate based on 10 or fewer sample cases, or coefficient of variation is greater than 50%.

Source: Bureau of Justice Statistics, National Crime Victimization Survey, 1993–2011.

APPENDIX TABLE 13

Numbers and rates for figure 8: Firearm homicides, by region, 1993–2011

Year	Number				Rate per 100,000 persons			
	Northeast	South	Midwest	West	Northeast	South	Midwest	West
1993	2,918	7,863	3,365	4,107	5.6	8.7	5.5	7.3
1994	2,489	7,577	3,391	4,070	4.8	8.3	5.5	7.1
1995	2,100	6,659	2,980	3,812	4.0	7.1	4.8	6.5
1996	1,838	6,248	2,791	3,160	3.5	6.6	4.4	5.3
1997	1,641	6,020	2,661	2,930	3.1	6.3	4.2	4.9
1998	1,347	5,434	2,490	2,527	2.5	5.6	3.9	4.1
1999	1,327	4,905	2,319	2,277	2.5	5.0	3.6	3.7
2000	1,391	4,846	2,284	2,280	2.6	4.8	3.6	3.6
2001	1,407	4,989	2,477	2,475	2.6	4.9	3.8	3.8
2002	1,406	5,292	2,381	2,750	2.6	5.1	3.7	4.2
2003	1,489	5,395	2,324	2,712	2.7	5.2	3.6	4.1
2004	1,485	5,164	2,212	2,763	2.7	4.9	3.4	4.1
2005	1,554	5,536	2,387	2,875	2.9	5.2	3.6	4.2
2006	1,715	5,701	2,505	2,870	3.2	5.2	3.8	4.2
2007	1,577	6,055	2,354	2,646	2.9	5.5	3.6	3.8
2008	1,506	5,778	2,439	2,456	2.7	5.2	3.7	3.5
2009	1,440	5,438	2,359	2,256	2.6	4.8	3.5	3.2
2010	1,552	5,082	2,296	2,148	2.8	4.4	3.4	3.0

Source: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS), 1993–2010. Retrieved March 2013 from www.cdc.gov/ncipc/wisqars.

APPENDIX TABLE 14**Rates and standard errors for figure 9: Nonfatal firearm violence, by region, 1997–2011**

Year	Northeast		Midwest		South		West	
	Rate*	Standard error	Rate*	Standard error	Rate*	Standard error	Rate*	Standard error
1997	3.1	0.4	4.7	0.5	5.4	0.4	5.7	0.5
1998	2.1	0.3	3.9	0.4	5.0	0.4	5.1	0.5
1999	1.4	0.3	3.0	0.4	3.6	0.4	4.9	0.5
2000	1.3	0.3	2.5	0.3	2.8	0.3	4.5	0.5
2001	1.4	0.3	2.6	0.4	3.0	0.3	2.8	0.4
2002	1.3	0.3	2.2	0.3	3.3	0.3	2.0	0.3
2003	1.0	0.2	2.1	0.3	2.9	0.3	1.9	0.3
2004	0.8	0.2	2.6	0.3	1.9	0.2	2.2	0.3
2005	0.9	0.2	2.8	0.4	1.9	0.3	1.9	0.3
2006	1.2	0.3	2.6	0.4	2.7	0.3	2.2	0.3
2007	0.9	0.2	2.1	0.3	3.5	0.4	1.9	0.3
2008	0.7	0.2	2.1	0.3	2.8	0.3	1.1	0.2
2009	0.8	0.2	2.0	0.3	1.7	0.2	1.4	0.3
2010	0.9	0.2	1.9	0.3	1.7	0.2	1.8	0.3
2011	1.3	0.2	1.7	0.3	1.9	0.2	1.8	0.3

*Rate per 1,000 persons age 12 or older.

Source: Bureau of Justice Statistics, National Crime Victimization Survey, 1996–2011.

APPENDIX TABLE 15**Rates and standard errors for figure 10: Nonfatal firearm violence, by urban-rural location, 1994–2011**

Year	Urban		Suburban		Rural	
	Rate*	Standard error	Rate*	Standard error	Rate*	Standard error
1994	10.6	0.7	6.3	0.4	5.2	0.5
1995	10.1	0.6	5.5	0.4	3.6	0.4
1996	8.4	0.5	4.4	0.3	3.1	0.4
1997	7.3	0.5	3.9	0.3	3.6	0.4
1998	6.2	0.5	3.8	0.3	2.3	0.3
1999	5.3	0.5	3.1	0.3	1.0	0.2
2000	4.8	0.5	2.3	0.2	1.0	0.2
2001	4.4	0.4	2.0	0.2	1.4	0.3
2002	4.4	0.4	1.8	0.2	1.1	0.2
2003	3.7	0.4	1.7	0.2	0.9	0.2
2004	3.0	0.3	1.7	0.2	1.0	0.2
2005	3.4	0.4	1.5	0.2	1.1	0.3
2006	3.3	0.4	1.8	0.2	1.9	0.4
2007	2.6	0.3	2.3	0.2	1.9	0.3
2008	2.2	0.3	1.8	0.2	1.2	0.3
2009	2.6	0.3	1.1	0.2	0.9	0.2
2010	2.8	0.3	1.2	0.2	0.7	0.2
2011	2.5	0.3	1.4	0.2	1.2	0.2

*Rate per 1,000 persons age 12 or older.

Source: Bureau of Justice Statistics, National Crime Victimization Survey, 1993–2011.

APPENDIX TABLE 16**Rates and standard errors for table 5: Nonfatal firearm violence, by population size, 1997–2011**

Year	Not a place		Under 100,000		100,000–249,999		250,000–499,999		500,000–999,999		1 million or more	
	Rate*	Standard error	Rate*	Standard error	Rate*	Standard error	Rate*	Standard error	Rate*	Standard error	Rate*	Standard error
1997	3.9	0.4	3.8	0.3	7.0	0.9	10.3	1.3	7.3	1.3	7.3	1.0
1998	3.0	0.3	3.9	0.3	4.8	0.8	7.0	1.1	9.2	1.6	5.7	0.9
1999	1.9	0.3	3.1	0.3	3.1	0.6	5.5	1.0	9.0	1.6	6.4	1.0
2000	1.5	0.2	2.2	0.2	3.9	0.7	6.5	1.1	6.3	1.3	5.6	0.9
2001	1.4	0.2	2.1	0.2	4.1	0.7	6.1	1.1	5.5	1.2	5.1	0.9
2002	1.2	0.2	2.3	0.2	2.8	0.6	3.9	0.8	4.9	1.1	5.3	0.8
2003	1.4	0.2	2.0	0.2	2.8	0.5	3.3	0.7	5.1	1.1	3.6	0.7
2004	1.4	0.2	1.4	0.2	3.0	0.6	4.1	0.9	5.5	1.2	2.7	0.6
2005	1.2	0.2	1.6	0.2	2.9	0.6	3.6	0.9	4.5	1.2	4.6	0.9
2006	1.6	0.2	2.1	0.2	2.6	0.6	2.6	0.8	3.8	1.0	4.9	0.9
2007	1.5	0.2	2.6	0.3	2.7	0.5	2.4	0.7	5.4	1.1	2.1	0.5
2008	0.8	0.2	2.1	0.2	2.1	0.5	3.2	0.8	4.9	1.0	1.4	0.4
2009	0.9	0.2	1.1	0.2	2.2	0.5	3.0	0.8	4.0	1.0	3.5	0.7
2010	0.9	0.2	1.2	0.2	1.8	0.5	2.8	0.8	5.1	1.1	4.0	0.8
2011	1.4	0.2	1.2	0.2	1.3	0.3	3.9	0.8	4.6	0.9	3.2	0.6

*Rate per 1,000 persons age 12 or older.

Source: Bureau of Justice Statistics, National Crime Victimization Survey, 1996–2011.

APPENDIX TABLE 17**Standard errors for table 6: Nonfatal firearm and nonfirearm violence, by victim-offender relationship, 2007–2011**

Relationship to victim	Total nonfatal violence	Firearm violence		Nonfirearm violence	
		Number	Percent of total violence	Number	Percent of total violence
Total	520,018	107,331	0.3%	495,683	0.4%
Nonstranger	351,653	56,980	0.3	341,349	0.4
Intimate	167,301	27,453	0.6	163,040	0.6
Other relative	105,593	24,480	1.1	100,985	1.2
Friend/acquaintance	247,394	39,620	0.4	240,775	0.5
Stranger	281,855	74,319	0.6	262,843	0.7
Unknown	126,046	34,768	1.1	118,113	1.2

Source: Bureau of Justice Statistics, National Crime Victimization Survey, 2007–2011.

APPENDIX TABLE 18**Standard errors for table 7: Nonfatal firearm and nonfirearm violence, by location of crime, 2007–2011**

Location	Total nonfatal violence		Firearm violence		Nonfirearm violence	
	Number	Percent	Total number	Percent	Total number	Percent
Total	520,094	~	107,331	~	495,761	~
Victims home or lodging	204,185	0.6%	42,032	1.6%	195,889	0.6%
Near victim's home	170,118	0.5	46,062	1.8	159,113	0.5
In, at, or near a friend, neighbor, or relative's home	106,117	0.3	22,283	1.0	102,275	0.3
Commercial place	125,178	0.4	27,429	1.2	120,070	0.4
Parking lot or garage	91,497	0.3	37,086	1.5	80,309	0.3
School	150,761	0.5	6,544	0.3	150,471	0.5
Open area, on street, or public transportation	166,506	0.5	46,260	1.8	155,261	0.5
Other location	128,572	0.4	18,853	0.8	126,101	0.4

~Not applicable.

Source: Bureau of Justice Statistics, National Crime Victimization Survey, 2007–2011.

APPENDIX TABLE 19**Standard errors for table 9: Nonfatal firearm and nonfirearm violence, by injury and treatment received, 2007–2011**

Injury and treatment	Total nonfatal violence		Firearm violence		Nonfirearm violence	
	Number	Percent	Total number	Percent	Total number	Percent
Injury	520,094	~	107,331	~	495,761	~
Not injured	435,239	0.7%	92,106	1.8%	414,216	0.7%
Injured	221,742	0.6	46,376	1.8	212,304	0.6
Serious injuries	76,874	0.2	23,654	1.0	73,196	0.3
Gun shot	12,758	--	12,758	0.6	~	~
Minor injuries	189,519	0.5	38,061	1.5	182,281	0.6
Rape without other injuries	39,058	0.1	4,232	0.2	38,750	0.1
Treatment for injury	221,742	~	46,376	~	212,304	~
No treatment	159,205	1.3%	22,999	3.7%	156,054	1.3%
Any treatment	130,902	1.2	38,813	3.8	121,399	1.3
Treatment setting	130,902	~	38,813	~	121,399	~
At the scene/home of victim, neighbor, or friend/ other location	70,643	1.7%	15,653	3.8%	68,065	1.9%
In doctor's office, hospital emergency room, or overnight at hospital	101,753	1.8	34,730	3.8	92,599	1.9

--Less than 0.05%.

~Not applicable.

Source: Bureau of Justice Statistics, National Crime Victimization Survey, 2007–2011.

APPENDIX TABLE 20**Numbers and standard errors for figure 11: Nonfatal firearm injuries, 2001–2011**

Year	Number	Standard error
2001	41,044	10,287
2002	37,321	9,282
2003	42,505	11,558
2004	43,592	11,764
2005	50,320	14,431
2006	52,748	15,027
2007	48,676 !	15,139
2008	56,626	16,648
2009	44,466	11,767
2010	53,738	15,769
2011	55,544	15,671

! Interpret with caution. Estimate based on fewer than 20 NEISS cases (based on unweighted data), national estimates less than 1,200 (based on weighted data), or the coefficient of variation (CV) of the estimate greater than 30%.

Source: Consumer Product Safety Commission, National Electronic Injury Surveillance System All Injury Program (NEISS-AIP), 2001–2011, accessed from the National Center for Injury Prevention and Control, CDC.

APPENDIX TABLE 21**Standard errors for table 10: Nonfatal firearm and nonfirearm violence reported and not reported to police, 2007–2011**

	Total nonfatal violence	Firearm violence	Nonfirearm violence
Total	~	~	~
Reported	0.7%	2.1%	0.7%
Not reported	0.7	2.1	0.8
Reason not reported	~	~	~
Dealt with it another way	0.9%	2.1%	0.9%
Not important enough to respondent	0.7	1.6	0.7
Police could not or would not do anything to help	0.7	3.0	0.7
Fear of reprisal	0.4	3.1	0.4
Did not want to get offender in trouble with law, or advised not to report	0.4	1.3	0.4
Other, unknown, or not one most important reason	0.7	2.6	0.7

~Not applicable.

Source: Bureau of Justice Statistics, National Crime Victimization Survey, 2007–2011.

APPENDIX TABLE 22**Standard errors for table 11: Self-protective behaviors, by type of crime, 2007–2011**

Self-protective behavior	Violent crime		Property crime	
	Total number	Percent	Total number	Percent
Total	520,094	~	619,179	~
Offered no resistance	312,558	0.7%	295,645	0.3%
Threatened or attacked with a firearm	30,347	0.1	24,437	--
Threatened or attacked with other weapon	40,012	0.1	14,630	--
Threatened or attacked without a weapon	205,362	0.6	51,411	0.1
Nonconfrontational tactics	227,856	0.6	90,178	0.1
Other reaction	90,004	0.3	36,683	--
Unknown reaction	12,068	--	8,176	--
Victim was not present	~	~	641,196	0.4

~Not applicable.

--Less than 0.05%.

Source: Bureau of Justice Statistics, National Crime Victimization Survey, 2007–2011.



The Bureau of Justice Statistics is the statistics agency of the U.S. Department of Justice. William J. Sabol is acting director.

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Public Mass Shootings in the United States: Selected Implications for Federal Public Health and Safety Policy

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Summary

This report focuses on mass shootings and selected implications they have for federal policy in the areas of public health and safety. While such crimes most directly impact particular citizens in very specific communities, addressing these violent episodes involves officials at all levels of government and professionals from numerous disciplines.

This report does not discuss gun control and does not systematically address the broader issue of gun violence. Also, it is not intended as an exhaustive review of federal programs addressing the issue of mass shootings.

Defining Public Mass Shooting

Policy makers may confront numerous questions about shootings such as the December 2012 incident at Sandy Hook Elementary School in Newtown, CT, that claimed 27 lives (not including the shooter). Foremost, what are the parameters of this threat? How should it be defined?

There is no broadly agreed-to, specific conceptualization of this issue, so this report uses its own definition for *public mass shootings*. These are incidents occurring in relatively public places, involving four or more deaths—not including the shooter(s)—and gunmen who select victims somewhat indiscriminately. The violence in these cases is not a means to an end—the gunmen do not pursue criminal profit or kill in the name of terrorist ideologies, for example.

One Measure of the Death Toll Exacted by Public Mass Shootings. Applying this understanding of the issue, the Congressional Research Service (CRS) has identified 78 public mass shootings that have occurred in the United States since 1983. This suggests the scale of this threat and is intended as a thorough review of the phenomenon but should not be characterized as exhaustive or definitive. According to CRS estimates, over the last three decades public mass shootings have claimed 547 lives and led to an additional 476 injured victims. Significantly, while tragic and shocking, public mass shootings account for few of the murders or non-negligent homicides related to firearms that occur annually in the United States.

Policymaking Challenges in Public Health and Safety

Aside from trying to develop a sense of this phenomenon's scope, policy makers may face other challenges when addressing this topic. To help describe some of the health and safety issues public mass shootings pose, this report discusses selected policy in three areas: *law enforcement*, *public health*, and *education*. While mass shootings may occur in a number of settings, the education realm is one that has received particular attention from policy makers, officials, and the public alike—at least since the 1999 shooting at Columbine High School in Littleton, CO. The tragedy at Sandy Hook Elementary has renewed such concerns for many.

In the areas of law enforcement, public health, and education, this report discusses some key efforts to *prevent* mass shootings as well as efforts geared toward *preparedness* and *response*. Policy measures that deal with *recovery* are also discussed within the context of education and public health initiatives.

Policy Effectiveness and Outlay of Resources. Many of the policymaking challenges regarding public mass shootings boil down to two interrelated matters: (1) a need to determine the effectiveness of existing programs and (2) figuring out where to disburse limited resources.

Finally, baseline metrics related to this problem are often unclear or unavailable. This lack of clarity starts with identifying the number of shootings themselves, since no broadly agreed-to definition exists. Several questions flow from this issue. How many people have such incidents victimized? How much does prevention of, preparedness for, and response to such incidents cost the federal government? What measurements can be used to determine the effectiveness of such programs?

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Shooting incidents such as the one at Sandy Hook Elementary School in December 2012 and the one at an Aurora, CO, movie theater in July 2012 have focused attention on federal policy issues in the law enforcement, public health, and education arenas, among others. The Congressional Research Service (CRS) has identified 78 public mass shootings that have occurred in the United States since 1983. These shootings have claimed almost 550 lives according to CRS estimates.²

How does the death toll tied to public mass shootings compare with figures related to the preeminent threat that federal law enforcement has confronted in the last decade? CRS estimates that since the terrible events of September 11, 2001 (9/11), Al-Qaeda-inspired homegrown terrorists have killed 14 people in two incidents in the United States.³ Since 9/11, according to CRS estimates, 281 people have died in 38 public mass shootings.⁴ Arguably, the comparatively low death toll associated with Al Qaeda-inspired incidents at least partly results from a large-scale federal focus on homeland security and counterterrorism efforts.

President Obama's Plan to Reduce Gun Violence

On January 16, 2012, President Obama announced a slate of proposals aimed at reducing gun violence—not just public mass shootings, the topic of this report—in the United States.¹ The proposals focus on four areas:

- Closing background check loopholes,
- Banning military-style assault weapons and high-capacity magazines,
- Making schools safer, and
- Increasing access to mental health services.

Some of the President's proposals, such as encouraging better information sharing among and between states and federal agencies and providing incentives for police departments to use existing grants to hire school resource officers, can be addressed through executive actions. Other proposals, such as reinstating the assault weapons ban and providing funding for a range of mental health programs and services, require action by Congress. The President's proposals touch on a number of issues that public mass shootings raise for federal safety and public health policy.

It is important to caution the reader that, while tragic and shocking, public mass shootings account for few of the murders⁵ related to firearms that occur annually in the United States. According to the Federal Bureau of Investigation (FBI, the Bureau), in 2011, firearms were used to murder 8,583 people.⁶ To provide further context, over the last two decades, the nation has

¹ The White House, *Now Is the Time: The President's Plan to Protect Our Children and Our Communities by Reducing Gun Violence*, January 16, 2013, http://www.whitehouse.gov/sites/default/files/docs/wh_now_is_the_time_full.pdf. Hereafter: *The President's Plan*.

² For more information on this report's approach regarding the concept of "public mass shooting," please see the section titled "Defining and Identifying Public Mass Shootings."

³ Incidentally, these deaths stemmed from two shooting incidents in which the gunmen were likely motivated by ideology tied to Al Qaeda. For more information, please see CRS Report R41416, *American Jihadist Terrorism: Combating a Complex Threat*, by Jerome P. Bjelopera.

⁴ This count does not include shooters killed in these incidents.

⁵ For this report, murder implies the willful killing of one human being by another.

⁶ Federal Bureau of Investigation, *Uniform Crime Reports, Crime in the United States, 2011*, Table 8, "Expanded Homicide Data," <http://www.fbi.gov/about-us/cjis/ucr/crime-in-the-u.s./2011/crime-in-the-u.s.-2011/tables/expanded-homicide-data-table-8>. The Federal Bureau of Investigation (FBI, the Bureau) counts what it describes as "murder and nonnegligent manslaughter" for these statistics. Preliminary figures for 2012 suggest "an increase of 1.9 percent in the number of violent crimes ... for the first 6 months of 2012 when compared with figures reported for the same time in 2011." See Federal Bureau of Investigation, *Uniform Crime Reports, Crime in the United States, 2012, January-June Preliminary Semiannual Uniform Crime Report*, <http://www.fbi.gov/about-us/cjis/ucr/crime-in-the-u.s/2012/preliminary-semiannual-uniform-crime-report-january-june-2012>. It is unknown, however, whether this preliminary reported increase in violent crimes was coupled with an increase in firearm-related homicides.

experienced a general *decline* in violent crime. In 1992, 1.9 million violent crimes were reported, while 2011 saw 1.2 million.⁷ In the same period, the national murder rate dropped from 9.3 to 4.7 per 100,000 inhabitants.⁸

Roadmap for the Report

As a starting point, this report delves into public mass shootings over the last three decades, exploring the nature of this threat. *Of note, this report does not focus on gun violence, writ large, nor does it discuss gun control.*⁹

In its broader discussion of related federal public health and safety issues, the report covers selected policy implications in three areas: *law enforcement*, *public health*, and *education*. While mass shootings may occur in a number of public settings, the education realm is one which has generated concern from policy makers, officials, and the public alike—at least since the 1999 shooting at Columbine High School in Littleton, CO. The tragedy at Sandy Hook Elementary has renewed such concerns for many.

In this report, discussion of each of these is further broken down into efforts geared toward

- *prevention*—actions intended to reduce the likelihood of shootings.¹⁰
- *preparedness*—planning how to cope with potential shootings.
- *response*—structured efforts employed to react to an actual shooting.

Policy measures that deal with recovery are also discussed within the context of education and public health initiatives. Recovery entails helping institutions, communities, and individuals cope with the aftermath of a shooting.¹¹ This report is not intended as an exhaustive review of specific federal programs in these areas.

Defining and Identifying Public Mass Shootings

This report attempts to refine the relatively broad concept of *mass shooting* (which could potentially involve a wide variety of actors targeting victims for any number of reasons) into a narrower formulation: *public mass shootings*. This has been done to focus discussion around a number of violent incidents that lie outside of specific crime issues such as terrorism, drug

⁷ Federal Bureau of Investigation, *Uniform Crime Reports, Crime in the United States, 2011*, Table 1, “Crime in the United States by Volume and Rate per 100,000 Inhabitants, 1992–2011,” <http://www.fbi.gov/about-us/cjis/ucr/crime-in-the-u.s/2011/crime-in-the-u.s.-2011/tables/table-1>.

⁸ According to the FBI these figures include “murder and nonnegligent manslaughter.” See *ibid*.

⁹ For more information on this see CRS Report RL32842, *Gun Control Legislation*, by William J. Krouse.

¹⁰ Some policies and programs discussed in this report may also help *mitigate* the impact of actual shootings. For example, while the presence of school resource officers may help prevent a school shooting, such an officer could feasibly mitigate the impact of a shooting by intervening after a gunman began his assault.

¹¹ To some degree these concepts—prevention, preparedness, response, and recovery—correspond with ideas that guide federal emergency management. In this report, these concepts are used only to help describe issues involved in devising policy related to public mass shootings. For more on federal emergency management, see CRS Report R42845, *Federal Emergency Management: A Brief Introduction*, coordinated by Bruce R. Lindsay.

trafficking, gang activity, and domestic violence that have federal policies, law enforcement structures, and laws tailored in many instances to specifically address them.

Arriving at a Definition

In order to delineate a workable understanding of *public mass shooting* for this report, CRS examined scholarly journal articles, monographs, and government reports.¹² These sources discussed a variety of terms such as mass murder, mass shooting, mass killings, massacres, and multiple homicide. Definitions of these terms varied with regard to establishing the number of victims or fatalities involved, the weapons used, the motives of the perpetrator, and the timeframes within which the casualties or injuries occurred.

This report defines public mass shootings as *incidents occurring in relatively public places, involving four or more deaths—not including the shooter(s)—and gunmen who select victims somewhat indiscriminately. The violence in these cases is not a means to an end such as robbery or terrorism.*¹³

Relatively public places. For this report, public mass shootings happen in *relatively* public circumstances. Such settings can include schools, workplaces, restaurants, parking lots, public transit, even private parties that include at least some guests who are not family members of the shooter.¹⁴

Tallying Fatalities. Any definition of mass shootings requires a somewhat arbitrary threshold demarcating the number of victims killed per incident. This report's threshold is based on a definition of mass murder offered by the FBI.¹⁵ An important caveat deserves mentioning. A compilation of incidents based on any such arbitrary threshold may fail to adequately describe the

¹² James Alan Fox and Jack Levin, *Extreme Killing: Understanding Serial and Mass Murder*, 2nd ed. (Los Angeles: Sage, 2012), p. 19. Hereafter: Fox and Levin, *Extreme Killing*. James L. Knoll, IV, "The 'Pseudocommando' Mass Murderer: Part I, The Psychology of Revenge and Obliteration," *Journal of the American Academy of Psychiatry and the Law*, vol. 38, no. 1 (2010) pp. 87-89; Federal Bureau of Investigation, *Serial Murder: Multi-Disciplinary Perspectives for Investigators*, 2008, p. 8; John E. Douglas, Ann W. Burgess, and Robert K. Ressler, *Crime Classification Manual: A Standard System for Investigating and Classifying Violent Crimes*, 2nd ed. (San Francisco: Jossey-Bass, 2006) p. 96; Grant Duwe, "A Circle of Distortion: The Social Construction of Mass Murder in the United States," *Western Criminology Review*, vol. 6, no. 1 (2005) p. 59. Paul E. Mullen, "The Autogenic (Self-Generated) Massacre," *Behavioral Sciences and the Law*, vol. 22, no. 3 (2004) pp. 311-314. Hereafter: Mullen, "The Autogenic." Grant Duwe, Tomislav Kovandzic, and Carlisle E. Moody, "The Impact of Right-to-Carry Concealed Firearm Laws on Mass Public Shootings," *Homicide Studies*, vol. 6, no. 4 (2002) p. 273; Michael D. Kelleher, *Flash Point: The American Mass Murderer*, (Westport, CT: Praeger, 1997) p. 2. Hereafter: Kelleher, *Flash Point*.

¹³ This report only includes incidents that occurred in the 50 states, Puerto Rico, and the District of Columbia.

¹⁴ For a general discussion of violence in the workplace, see Federal Bureau of Investigation, *Workplace Violence: Issues in Response*, (2004). Hereafter: Federal Bureau of Investigation, *Workplace Violence*.

¹⁵ The FBI has defined mass murder as "[a] number of murders (four or more) occurring during the same incident, with no distinctive time period between the murders. These events typically involved a single location, where the killer murdered a number of victims in an ongoing incident." This report allows for instances of mass murder to involve more than one specific location. For the FBI definition, see Federal Bureau of Investigation, *Serial Murder*, p. 8. For a different definition, see Fox and Levin, *Extreme Killing*, p. 19. While this report focuses a great deal on the timing involved in serial and mass murder to differentiate the two categories, Fox and Levin emphasize motivation. The 112th Congress passed legislation (P.L. 112-265) that formally authorizes the Attorney General to provide investigative assistance to states in instances of violent crimes in public venues, including attempted and actual mass killings. For the purposes of P.L. 112-265, the term "mass killings" means three or more killings in a single incident and relies on the definition of "place of public use" from 18 U.S.C. 2332f(e)(6).

universe of incidents to which educators, public health professionals, and law enforcement have to react and for which they have to prepare.¹⁶ One author has stated that gunmen “injure far more victims than they kill; however, they must certainly be considered mass murderers by obvious intentions of their actions.”¹⁷ In the critical early moments of a shooting, police, teachers, and rescue personnel do not necessarily know how many people are injured versus dead. Personnel and resources are initially mobilized in response to a shooting, regardless of the number of fatalities.

Indiscriminate Selection of Victims. For this report’s definition, a killer’s relationship to his or her victims is important. Driven by a desire for revenge and/or power, some killers may target family members or intimate friends.¹⁸ In the incidents described as public mass shootings for this report, the gunmen cannot solely kill such individuals. This particularly rules out cases of domestic violence—instances only involving family members either inside or outside the home—from consideration as public mass shootings. Thus, for this report, the gunmen in public mass shootings somewhat indiscriminately select their victims. For example, a student assailant involved in a public mass shooting plans on killing particular teachers, while simultaneously staging a wider assault on his school.

Violence Not a Means to an End. For this report, a public mass shooter’s agenda certainly may stem from his specific personal experiences and psychological conditions. However, as implied in the above definition, the shooters who perpetrated the incidents counted in this report did not have broad socio-political objectives, such as using violence to advocate the fall of a regime.¹⁹ Thus, gunmen acting in the name of a terrorist organization or a clearly framed philosophy of hate typically were not considered public mass shooters. Also, shootings largely motivated by criminal profit were not counted. Based on the purpose undergirding the assailant’s violence, the following examples do not fit the definition of public mass shooting used for this report.

- In December 2012, Dwayne Moore was convicted of *home invasion, armed robbery*, and four counts of first-degree murder in Massachusetts. He reportedly gunned down four victims, including a child, in a September 2010 drug-related incident in Boston, MA.²⁰
- A mass murder that has been widely reported as a *hate-motivated* incident occurred on the morning of August 5, 2012, when Wade Michael Page shot to death six people at the Sikh Temple of Wisconsin in Oak Creek—near Milwaukee, WI.²¹ According to the FBI, police responding to the scene returned fire, wounding Page. He then took his own life by shooting himself.²²

¹⁶ One expert has written: “A common definition of mass murder requires the intentional death of at least four individuals in a single incident. Another interpretation of the term reduces the number of slain victims to three for the crime to be considered mass murder. Both of these definitions are obviously arbitrary and focus exclusively on the number of victims killed.” Kelleher, *Flash Point*, p. 2.

¹⁷ Ibid.

¹⁸ See Fox and Levin, *Extreme Killing*, pp. 23-25 for a discussion.

¹⁹ For more on terrorism-related incidents in the United States see CRS Report R41416, *American Jihadist Terrorism: Combating a Complex Threat*, by Jerome P. Bjelopera and CRS Report R42536, *The Domestic Terrorist Threat: Background and Issues for Congress*, by Jerome P. Bjelopera.

²⁰ Brian Ballou et al., “Dwayne Moore Convicted of Four Counts of First-Degree Murder in Mattapan Slaying Trial,” *Boston Globe*, December 17, 2012, <http://www.boston.com/metrodesk/2012/12/17/dwayne-moore-found-guilty-mattapan-massacre/ETjeAnjXDGR98syntVylK/story.html>.

²¹ John Diedrich et al., “FBI: Seeking Second ‘Person of Interest’ in Oak Creek Sikh Temple Shooting,” *Milwaukee* (continued...)

- U.S. Army Major Nidal Hasan was charged in a shooting at Fort Hood, TX, on November 5, 2009. The mass murder, which has been described as a *terrorist incident*, killed 13 and injured more than 40 others.²³

Identifying Incidents

To identify incidents of public mass shootings, CRS reviewed descriptions of mass shooting events found in scholarly journal articles, monographs, lists created by government entities and advocacy organizations, and news accounts.²⁴ It is important to note that while every effort was made to be thorough in reviewing the sources used, the incidents identified by CRS should not be considered as constituting an exhaustive list of public mass shootings.²⁵

Readers are also cautioned against tying this report's definition of public mass shootings directly to specific federal policy responses. In other words, the policy responses discussed below are not restricted to preventing or reacting to public mass shootings as defined in this report. For instance, many of the policy measures discussed herein respond to shooting events or threats that

(...continued)

Journal Sentinel, August 6, 2012, <http://www.jsonline.com/news/crime/shooter-wade-page-was-army-vet-white-supremacist-856cn28-165123946.html>. Dinesh Ramde and Todd Richmond, "Motive Sought for Mass Shooting at Wis. Sikh Temple," *Associated Press*, August 6, 2012, <http://news.yahoo.com/motive-sought-6-slain-wis-sikh-temple-083039570.html>. A Sikh temple is also called a gurdwara.

²² William Branigin and Michael Laris, "Wade Michael Page Committed Suicide, FBI Says," *Washington Post*, August 8, 2012, http://www.washingtonpost.com/politics/wade-michael-pages-ex-girlfriend-arrested/2012/08/08/00c99f72-e10a-11e1-a19c-fcfa365396c8_story.html.

²³ See U.S. Congress, Senate Committee on Homeland Security and Governmental Affairs, *A Ticking Time Bomb: Counterterrorism Lessons from the U.S. Government's Failure to Prevent the Fort Hood Attack*, 112th Cong., 1st sess., February 2011, p. 53, http://hsgac.senate.gov/public/_files/Fort_Hood/FortHoodReport.pdf. "Fort Hood Shooting Suspect to Remain Confined," *Associated Press State and Local Wire*, in *msnbc.com*, November 21, 2009, <http://www.msnbc.msn.com/id/34084622>; "Fort Hood Shooting Suspect Out of Intensive Care," *CNN.com*, December 16, 2009, <http://www.cnn.com/2009/CRIME/12/16/texas.fort.hood.hasan/index.html?iref=allsearch>.

²⁴ Connecticut Office of Legislative Research, "Weapons Used in Mass Shootings," January 18, 2013, <http://www.cga.ct.gov/2013/rpt/2013-R-0057.htm>; Counterterrorism Bureau of the New York City Police Department, "Active Shooter: Recommendations and Analysis for Risk Mitigation," 2012 edition, <http://www.nyc.gov/html/nypd/downloads/pdf/counterterrorism/ActiveShooter2012Edition.pdf>; James Alan Fox and Jack Levin, "Table 19.1: Deadliest Mass Murders in the United States Since 1900," in *Extreme Killing*, p. 230; Citizens Crime Commission of New York City, "Mass Shooting Incidents in America (1984-2012)," <http://www.nycrimecommission.org/initiative1-shootings.php>; Brady Campaign to Prevent Gun Violence, "Mass Shootings in the United States Since 2005," December 14, 2012, <http://www.bradycampaign.org/xshare/pdf/major-shootings.pdf>; Mark Follman, Gavin Aronsen, and Deanna Pan, "US Mass Shootings, 1982-2012: Data from Mother Jones' Investigation," *Mother Jones*, December 28, 2012, <http://www.motherjones.com/politics/2012/12/mass-shootings-mother-jones-full-data>. Mayors Against Illegal Guns, "Mass Shootings Since January 20, 2009," http://libcloud.s3.amazonaws.com/9/f8/9/1098/1/mass_shootings_2009-13_-_jan_29_12pm.pdf; Michael Kelleher, "Chapter 11: A Survey of Mass Murderers" in *Flash Point*, pp. 173-181. Searches of U.S. newspapers and wire services using LexisNexis were conducted in many instances in order to confirm information or gather more details about incidents listed in the sources consulted.

²⁵ While other sources and methods (relying on the FBI's Supplementary Homicide Reports, for example) can be applied in defining this issue and counting the number of incidents, the approach used for this report was selected based on a careful evaluation of this report's objectives and CRS resources. Our definition encompasses a count of fatalities along with information about motivation for a shooting and where it occurs spatially. While it would be possible to use FBI data to generate counts of incidents involving the requisite number of fatalities for inclusion in an estimate of mass shootings, the additional research needed to assess the motivational and spatial criteria that must be met for inclusion would require a very large undertaking. We expect our estimates provide a good approximation of the frequency and scale of mass shootings, but note that more comprehensive approaches could be taken to improve the precision of the estimates.

could include fewer than four deaths or shooters with specific ideologies and targets. The shooting definition offered in this report is meant to help illustrate the nature and breadth of a threat that lacks an agreed-upon conceptualization among experts, capturing some of the most extreme shooting cases over the last three decades.

Describing Public Mass Shootings

For many years, mass shootings have been of interest and concern to a variety of experts—including psychologists, sociologists, criminologists, public health experts, policy makers, and students of popular culture—who have written much on the topic. Journalists have tracked such killings for a long time as well. For example, a case involving gunman Howard B. Unruh in September 1949 received national attention.²⁶ There were over 50 news articles in more than a dozen major newspapers in the United States in the month after the shooting occurred.

- In what was reported at the time as the biggest mass murder in U.S. history, Unruh killed 13 people in a 20-minute-long incident in Camden, NJ. He shot people he knew as well as strangers. His victims included three children.²⁷

All of this interest in such shootings has produced a wide variety of terms and concepts that address an assortment of issues. Categorizing types of murder—and mass shootings, more narrowly—can be tricky. In many cases, individual incidents involving assailants who kill one, two, or three people are described as single, double, or triple murder. However, when the number of victims rises or the case involves complicating circumstances such as the killer assailing individuals in different locations or a string of murders committed over a period of days, months, or years, efforts to define and understand murder can grow much more difficult.

Placing Them within a Broader Context

Most scholarly and expert sources suggest that mass shootings are rare violent crimes. One study has described them as “very low-frequency and high intensity event[s].”²⁸ The 78 public mass shootings between 1983 and 2012 that CRS has identified claimed 547 lives (see **Figure 1**).²⁹

²⁶ Richard Goldstein, “Howard Unruh, 88, Dies; Killed 13 of His Neighbors in Camden 1949,” *New York Times*, October 29, 2009. Unruh, who reportedly suffered from paranoid schizophrenia, never stood trial for the murders. He died after being confined for six decades in the Trenton Psychiatric Hospital. In 1950, reporter Meyer Berger received a Pulitzer Prize for his coverage of Unruh’s mass shooting.

²⁷ Ibid. See also “N.J. Vet Killed 13 in 1949 in Biggest U.S. Mass Murder,” *Boston Globe*, April 16, 1953. Meyer Berger, “Veteran Kills 12 in mad Rampage on Camden Street,” *New York Times*, September 8, 1949.

²⁸ J. Reid Meloy, et. al., “A Comparative Analysis of North American Adolescent and Adult Mass Murderers,” *Behavioral Sciences and the Law*, vol. 22, no. 3 (2004) p. 307.

²⁹ Not including shooters who died in the course of a shooting.

Figure 1. Public Mass Shootings in the United States 1983-2012

Deaths and Total Casualties



Source: CRS, based on analysis of mass shooting incidents identified by CRS.

Notes: * “Deaths” do not include shooters. “Total Casualties” include deaths and victims who suffered non-lethal injuries from gunshots.

A Subset of Multiple Murder

Public mass shootings, as defined by this report, can be viewed as part of the larger issue of “multiple murder.” A lexicon has emerged since the 1980s to describe instances of multiple murder.³⁰ Qualitatively broader than cases of single, double, or triple murder, instances of multiple murder can be divided into a number of categories including serial or mass killings.³¹ **Figure 2** lays out how this report frames the issue of public mass shootings. Starting at the top of **Figure 2**, *serial murders* involve multiple victims killed by the same offender or offenders in separate events over a period of days, months, or years.³² For this report, *mass murders* involve four or more people killed—not including the shooter(s)—in less than one day by the same

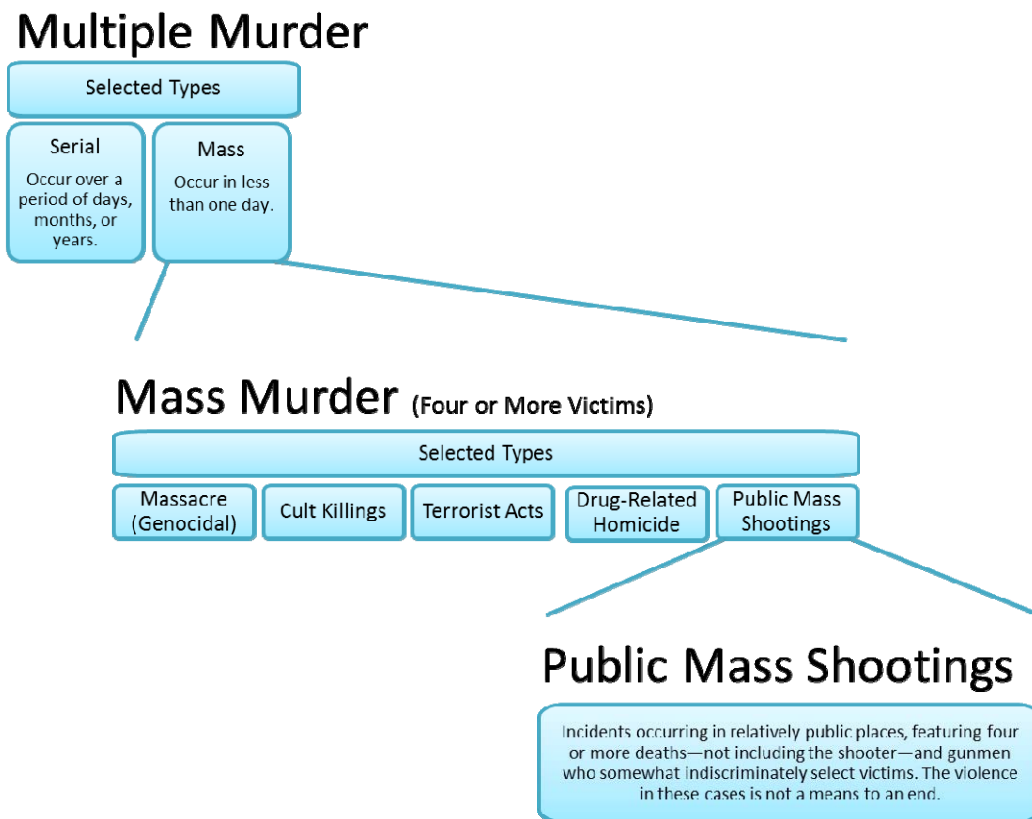
³⁰ There is no universally agreed to or legally codified number of victims per incident that distinguishes multiple murder from other types of murder.

³¹ “Qualitatively broader” is intended to suggest that there are qualitative factors surrounding incidents of multiple murder that help to distinguish them from single, double, or triple murders. This conceptualization of multiple murder does not necessarily require multiple murders to include four or more deaths. Characterizing multiple murders involves examining some of the circumstances surrounding a killer’s actions.

³² The FBI has offered what can be seen as a broad definition of serial murder: “The unlawful killing of two or more victims by the same offender(s), in separate events.” The Bureau also dismisses the key distinction between serial and spree killing. Spree killing can be defined as: “two or more murders committed by an offender or offenders, without a cooling-off period.” The lack of a “cooling off period” theoretically distinguishes spree killing from serial murder. However, a majority of experts convened by the FBI in 2005 to discuss serial killing determined that the concept of a cooling off period was too vague to be useful, thus minimizing spree killing as a distinct type of murder. For this report, crimes that some may consider spree killings also can fall under the category of “public mass shooting,” if the shootings occur during one day or less. See Federal Bureau of Investigation, *Serial Murder: Multi-Disciplinary Perspectives for Investigators*, 2008, p. 9. Hereafter: Federal Bureau of Investigation, *Serial Murder*. Serial killing is defined in federal law as: “a series of three or more killings, not less than one of which was committed within the United States, having common characteristics such as to suggest the reasonable possibility that the crimes were committed by the same actor or actors.” See 28 U.S.C. § 540B.

offender or offenders. Mass murder can then be divided into subcategories—that may or may not involve gunmen—such as massacres perpetrated by people interested in genocide, cult killings, terrorist plots, the slaying of people during the course of drug trafficking, and, as conceptualized in this report, public mass shootings.³³

Figure 2. Placing Public Mass Shootings into Context



Sources: Graphic constructed by CRS, adapted from concepts highlighted in: James Alan Fox and Jack Levin, *Extreme Killing: Understanding Serial and Mass Murder*, 2nd ed. (Los Angeles: Sage, 2012), p. 19; James L. Knoll, IV, "The 'Pseudocommando' Mass Murderer: Part I, The Psychology of Revenge and Obliteration," *Journal of the American Academy of Psychiatry and the Law*, vol. 38, no. 1 (2010) pp. 87-89; Federal Bureau of Investigation, *Serial Murder: Multi-Disciplinary Perspectives for Investigators*, 2008, p. 8; John E. Douglas, Ann W. Burgess, and Robert K. Ressler, *Crime Classification Manual: A Standard System for Investigating and Classifying Violent Crimes*, 2nd ed. (San Francisco: Jossey-Bass, 2006) p. 96; Grant Duwe, "A Circle of Distortion: The Social Construction of Mass Murder in the United States," *Western Criminology Review*, vol. 6, no. 1 (2005) p. 59. Paul E. Mullen, "The Autogenic (Self-Generated) Massacre," *Behavioral Sciences and the Law*, vol. 22, no. 3 (2004) pp. 311-314; Grant Duwe, Tomislav Kovandzic, and Carlisle E. Moody, "The Impact of Right-to-Carry Concealed Firearm Laws on Mass Public Shootings," *Homicide Studies*, vol. 6, no. 4 (2002) p. 273; Michael D. Kelleher, *Flash Point: The American Mass Murderer*, (Westport, CT: Praeger, 1997) p. 2.

Notes: For this graphic, "public mass shootings" involve four or more deaths from gunshot wounds, not including the perpetrator of the violence. "Murder" implies the willful killing of one human being by another.

³³ For a discussion of the variety of mass killings see Mullen, "The Autogenic" p. 313.

Public Mass Shootings—Settings

Among the 78 public mass shootings since 1983 that CRS has identified, 26 occurred at workplaces where the shooter was employed either at the time of the incident or prior to it. The next largest number of public mass shootings occurred at places of education (12).³⁴

- In 2000 in Wakefield, MA, Michael McDermott took three guns to Edgewater Technology Inc., where he was employed, and shot seven coworkers.³⁵
- In 2006 Charles Roberts entered a one-room Amish schoolhouse in Lancaster County, PA, where he shot and killed five students and injured five others.³⁶

As the above implies, the public mass shootings identified by CRS involve a high level of localization. A mass shooter usually targets individuals in one location or, as the examples below demonstrate, in a small handful of closely clustered geographic sites.

- In 1988 Michael Hayes shot at people randomly as he roamed his neighborhood in Winston Salem, NC, killing four and injuring five.³⁷
- In 2009 Michael McLendon shot his mother before driving to the nearby town of Samson, GA, where he shot five more people. He then drove to another neighboring town, Geneva, where he shot several more people before killing himself. In total McLendon killed 10 people and injured six.³⁸

Public Mass Shootings—Perpetrators

Many experts agree that a workable, detailed profile of mass shooters does not exist.³⁹ However, there are some observations that can be made regarding public mass shooters. For instance, among the public mass shooting incidents reviewed by CRS, the gunmen generally acted alone, were usually white and male, and often died during the shooting incident. The average age of the shooters in the incidents identified by CRS was 33.5 years.

Only on rare occasions was more than one perpetrator involved in a public mass shooting. CRS has identified three such incidents since 1983.

³⁴ Not all of the incidents CRS identified took place exclusively at one location. The numbers given here reflect incidents that occurred in part or in full at the type of location described.

³⁵ Brian MacQuarrie and Rick Klein, "Slaughter at the Office: Man Held in Deaths of 7 Colleagues in Wakefield," *Boston Globe*, December 27, 2000.

³⁶ Cindy Stauffer et al., "Horror in Schoolhouse: 5 Amish Girls Killed, 5 Critically Wounded in Shocking Massacre," *Lancaster New Era*, October 3, 2006.

³⁷ Paul Nowell, "Four Killed, Five Injured in Shooting Spree," Associated Press, July 18, 1988.

³⁸ Shaila Dewan, "Gunman Kills 10 in Alabama, Then Takes His Life," *New York Times*, March 10, 2009.

³⁹ In this instance, "workable" is intended to convey a profile with the discerning ability to proactively identify individuals planning to engage in a shooting. In the case of school shootings, the FBI has stated that, an effective profile or checklist that can predict who will become an assailant does not exist. See Mary Ellen O'Toole, *The School Shooter: A Threat Assessment Perspective*, (Federal Bureau of Investigation, 2000) p. 1. See also Federal Bureau of Investigation, *Workplace Violence*, pp. 21, 25, 26; Mullen, "The Autogenic," p. 322; Robert A. Fein et al., *Threat Assessment in Schools: A Guide to Managing Threatening Situations and to Creating Safe School Climates*, (Secret Service, Department of Education, May 2002) p. 17.

- In 1993, Juan Luna and James Degorski killed seven employees at a restaurant in Palatine, IL.⁴⁰
- In 1998, Andrew Golden and Mitchell Johnson killed five people and injured 10 at their middle school in Jonesboro, AR.⁴¹
- In 1999 Dylan Klebold and Eric Harris killed 13 and injured 23 at their high school in Littleton, CO, and then killed themselves.⁴²

Of the public mass shooting incidents identified by CRS for which information on the race of the perpetrator(s) was available, over half of the shooters were reportedly white.⁴³

Almost always, the shooters were male. Of the incidents compiled by CRS, only one involved a female assailant. In January 2006, Jennifer Sanmarco shot to death seven individuals—six were fatally wounded in a U.S. postal facility in Goleta, CA. One death occurred near Sanmarco's condominium, also in Goleta. She killed herself as well.⁴⁴

It was common for the gunmen involved in the shootings identified by CRS to kill themselves during their assaults. Forty-one of 81 shooters killed themselves. In 10 instances, law enforcement officers killed the gunmen involved.⁴⁵

The shooters identified by CRS ranged in age from 11 to 66 years old. All but 10 were age 20 or older. Most of them were in their 20s, 30s, or 40s (see **Figure 3**).

⁴⁰ Jeff Coen, Eric Ferkenhoff, and Flynn McRoberts, "Brown's Suspects Charged: 'They Are People without a Soul,' Police Chief Says," *Chicago Tribune*, May 19, 2002.

⁴¹ John Kifner et al., "From Wild Talk and Friendship to Five Deaths in a Schoolyard," *New York Times*, March 29, 1998.

⁴² Patricia Callahan, "Dream Turns to Nightmare," *Denver Post*, April 22, 1999, p. A1.

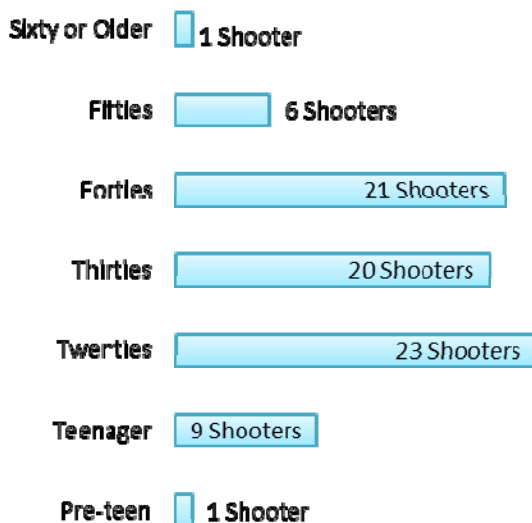
⁴³ While a range of demographic information on the perpetrators (including shooter gender and age) was noted in multiple sources reviewed by CRS, perpetrator race was often noted by just a single source, if at all. As such, CRS is not confident in presenting more nuanced data on the race of the shooters involved in public mass shootings identified for this report.

⁴⁴ Steve Chawkins and Jill Leovy, "7 Victims of Goleta Rampage," *Los Angeles Times*, February 2, 2006.

⁴⁵ Whether these gunmen intended to die at the hands of law enforcement (an act commonly described as "suicide by cop") is unclear. For more on this issue see Anthony J. Pinizzotto, Edward F. Davis, and Charles E. Miller III, "Suicide by Cop" *FBI Law Enforcement Bulletin*, vol. 74, no. 2 (February 2005), pp. 8-20.

Figure 3. Age of Perpetrators in Public Mass Shootings 1983-2012

Grouped in 10-Year Intervals



Source: CRS, based on analysis of mass shooting incidents identified by CRS.

Law Enforcement Implications

When considering law enforcement's role in coping with public mass shootings, policy makers and the public likely are most aware of how police forces react when they learn of an incident. Public mass shootings typically trigger a rapid police response, followed by an investigation and, potentially, prosecutions and sentencing. Also, while a shooting incident may spur an immediate law enforcement response, the *potential* for such a scenario impacts law enforcement prevention and preparedness measures. Police are not typically involved in recovery efforts.

From a law enforcement perspective, mass shootings tend to be single-jurisdiction issues involving a particular community. As such, while the federal government may not play a direct role in formulating specific state and local practices, it may influence these practices through the availability of grants. For example, the Department of Homeland Security (DHS) offers funding via its Homeland Security Grant Program to "fund a range of preparedness activities, including planning, organization, equipment purchase, training, exercises, and management and administration."⁴⁶ Although Department of Justice (DOJ) grants are not necessarily framed in terms of prevention, preparedness, or response, they can certainly address these issues regarding mass shootings.⁴⁷

⁴⁶ The State Homeland Security Program (part of the Homeland Security Grant Program) "supports the implementation of state Homeland Security Strategies to address the identified planning, organization, equipment, training, and exercise needs to prevent, protect against, mitigate, respond to, and recover from acts of terrorism and other catastrophic events." See <http://www.fema.gov/fy-2012-homeland-security-grant-program#0>.

⁴⁷ A number of existing grant programs may be used as vehicles to incentivize state and local law enforcement. For more information on the history and purpose areas of the Edward Byrne Memorial Justice Assistance Grant (JAG) Program, see CRS Report RS22416, *Edward Byrne Memorial Justice Assistance Grant (JAG) Program*, by Nathan James. For information on the Community Oriented Policing Services (COPS) program, see CRS Report RL33308, (continued...)

One foundational question is what, if anything, does the federal government want to influence in the states via grant funding related to law enforcement? Should the federal government enhance interagency information sharing and coordination on procedures to evaluate and deal with shooting threats?⁵⁰ Should it increase law-enforcement-related grant funding to bolster school resource officer training or the number of metal detectors in academic settings? In this area, the Obama Administration's January 16, 2013 report, *Now Is the Time: The President's Plan to Protect Our Children and Our Communities by Reducing Gun Violence (The President's Plan)*, included a commitment to using the Community Oriented Policing Services (COPS) program to incentivize police departments to hire more school resource officers. The plan also indicates that DOJ will develop a model—including best practices—for using school resource officers.⁵¹

Of course, such issues potentially involve a variety of specialists—not only police officials but also public health experts and educators,

Federal Framework for Emergency Management

U.S. emergency management is largely decentralized, potentially involving public, private, and nongovernmental agencies. Nonetheless, there exists a federal framework for managing domestic incidents. Within this framework, the National Incident Management System (NIMS) is an all-hazards, national approach to incident management.⁴⁸ It is built on

- continuous preparedness,
- flexible communications and information systems,
- standardized resource management,
- incident management and coordination (built, in part, on the Incident Command System), and
- ongoing updating of NIMS concepts and principles.

All federal departments and agencies are required to adopt NIMS.⁴⁹ In addition, state, local, and tribal organizations must adopt NIMS in order to be eligible for federal preparedness grants.

(...continued)

Community Oriented Policing Services (COPS): Background and Funding, by Nathan James. For information on the various juvenile justice grant programs, see CRS Report RL33947, *Juvenile Justice: Legislative History and Current Legislative Issues*, by Kristin M. Finklea.

⁴⁸ NIMS enables relevant entities to “prevent, protect against, respond to, recover from, and mitigate the effects of incidents, regardless of cause, size, location, or complexity, in order to reduce the loss of life and property and harm to the environment.” It is a flexible system, adaptable to the spectrum of potential incidents, and one that provides standardized framework to foster coordination and cohesion between relevant agencies. Federal Emergency Management Agency, “National Incident Management System,” December 2008, http://www.fema.gov/pdf/emergency/nims/NIMS_brochure.pdf. NIMS is administered by the Department of Homeland Security (DHS), and through the National Integration Center, the Secretary of DHS “publishes the standards, guidelines, and compliance protocols for determining whether a Federal, State, tribal, or local government has implemented NIMS.” See Federal Emergency Management Agency, “About National Incident Management System,” July 20, 2012, <http://www.fema.gov/about-national-incident-management-system>.

⁴⁹ This is required by Homeland Security Presidential Directive 5 (HSPD-5), issued by former President George W. Bush on February 28, 2003.

⁵⁰ Many such questions involve law enforcement as well as other experts with key roles to play in this area. As a case in point, policy makers may debate whether the federal government should encourage states to provide preventative mental health services to individuals at risk of committing violent crimes. Determining who could benefit from such services potentially involves police officers as well as medical professionals and teachers. Several juvenile justice grant programs have purpose areas that could be used to provide mental health services to at-risk youth. Congress may also consider incentivizing law enforcement training that includes a focus on mental health offender issues. The JAG program, for one, provides grant money for a variety of purpose areas, including law enforcement training broadly. Within programs such as this, funds could be utilized for specialized training.

⁵¹ See *The President's Plan*. While resource officers may be described as a preventive law enforcement measure, this report covers them as part of prevention efforts in the realm of education. See the discussion under the heading “School Resource Officers” in this report.

among others. Grants impacting preparedness may shape first responder training, and grants influencing response could affect the development of law enforcement protocols for responding to mass shootings. Some policy makers may wish to incentivize the establishment and training of tactical emergency medical services (EMS) teams to support law enforcement during instances of mass shootings or related events. These teams could provide medical threat assessments, deliver medical care, and promote law enforcement safety, among other things. Little research has evaluated the effectiveness of such tactical EMS teams in the civilian domain, and policy makers may wish to request additional research in this arena.⁵² Congress may debate which elements of law enforcement prevention, preparedness, and response—if any—the federal government could try to influence in the states and localities.⁵³

In addition to providing financial assistance and incentives for certain law enforcement activities, the federal government may provide assistance in the form of manpower. Policy makers may debate whether federal law enforcement has sufficient authority and resources to assist state and local entities—if requested and if appropriate—in preparing for and responding to mass shootings and related incidents. For example, *The President's Plan* calls for additional funding for the federal government to train law enforcement, school officials, and others to respond to scenarios involving shooters.

Prevention

While law enforcement's role in crime control traditionally has been viewed as largely *reactive*, there has been a trend toward enhancing *proactive* law enforcement efforts. Thus, in the past three decades, much of the policing world has incorporated investigative strategies bent on preventing crimes in addition to solving crimes that have already occurred.⁵⁴ However, the effectiveness of proactive law enforcement techniques in preventing public mass shootings is unclear. As modern policing has evolved, several prominent philosophies and techniques—including community policing and intelligence-led policing—have focused on law enforcement preventing rather than solely responding to crime.

Community Policing

As laid out by DOJ, “[c]ommunity policing is a philosophy that promotes organizational strategies, which support the systematic use of partnerships and problem-solving techniques, to proactively address the immediate conditions that give rise to public safety issues such as crime, social disorder, and fear of crime.”⁵⁵ Community policing can employ a range of techniques to

⁵² See Nelson Tang and Gabor D. Kelen, “Invited Commentary: Role of Tactical EMS in Support of Public Safety and the Public Health Response to a Hostile Mass Casualty Incident,” *Disaster Medicine and Public Health Preparedness*, vol. 1, suppl. 1, (2007), pp. s55-s56. See Michael J. Feldman, Brian Schwartz, and Laurie J. Morrison, “Effectiveness of Tactical Emergency Medical Support: A Systematic Review,” June 6, 2006.

⁵³ Beyond guiding or shaping local policing, federal grant programs can also reinforce existing state and local practices or subsidize actions that state and local governments had planned to pursue on their own, among other things.

⁵⁴ These investigative strategies include community policing, problem-oriented policing, intelligence-led policing, and predictive policing. See Lois M. Davis et al., *Long-Term Effects of Law Enforcement's Post-9/11 Focus on Counterterrorism and Homeland Security*, RAND, 2010, pp. 2-4, http://www.rand.org/pubs/monographs/2010/RAND_MG1031.pdf.

⁵⁵ Department of Justice, *Community Policing Defined*, <http://www.cops.usdoj.gov/default.asp?item=36>. See also Bureau of Justice Assistance, “Understanding Community Policing: A Framework for Action,” August 1994, <https://www.ncjrs.gov/pdffiles/commmp.pdf>.

control crime, and these techniques can be tailored to the specific needs of individual communities. The federal government has incentivized community policing efforts through DOJ's COPS office.⁵⁶

Research on community policing generally speaks to its impact on overall crime rates, and CRS has not identified any comprehensive research on how community policing may be used to specifically address mass shootings. Policy makers may question whether community policing efforts are useful in targeting a specific type of crime (mass shootings) in a specific setting (public places).

Intelligence-Led Policing

Based in part on community policing and problem solving efforts, intelligence-led policing initiatives, originally developed in Great Britain, have emerged throughout the nation.⁵⁹ After 9/11, intelligence operations were transformed at the federal level as well as at the state and local levels. More and more, intelligence-led policing is not a single methodology, but a framework that encompasses much of modern operational police activity.⁶⁰ Similar to community policing, intelligence-led policing relies upon information input (as the basis for intelligence analysis), two-way communications with the public, scientific data analysis (using the basic formula that information plus analysis equals intelligence), and problem solving.⁶¹

The impact of intelligence-led policing cannot yet be fully evaluated because "long term studies of police forces that have fully implemented and adopted intelligence-led policing have yet to be conducted."⁶² Further, like research on community policing efforts,

Intelligence-Led Policing and Fusion Centers

Gunmen involved in public mass shootings may not be targets easily preempted from wrongdoing by intelligence-led policing. However, there still may be roles that fusion centers⁵⁷ can play in countering this threat. (Such centers have been highlighted as tools to enhance intelligence-led policing.) Fusion centers may be able to help contextualize this issue. For instance, the Commonwealth Fusion Center based in Massachusetts launched the "Targeting Violent Crime Initiative," sponsored by DOJ, to examine firearms offenses in Massachusetts. This effort has focused on issues such as determining the source of firearms used in gun crimes in Massachusetts; understanding potential links between the illegal gun markets; and delving into gun crime trends throughout the state.⁵⁸ As such, policy makers may be interested in whether fusion centers have anything to offer in the way of intelligence-led policing to address mass shootings.

⁵⁶ For more information on the Community Oriented Policing Services (COPS) program within DOJ, see CRS Report R40709, *Community Oriented Policing Services (COPS): Current Legislative Issues*, by Nathan James and CRS Report RL33308, *Community Oriented Policing Services (COPS): Background and Funding*, by Nathan James.

⁵⁷ Fusion centers are a "collaborative effort of two or more Federal, state, local, or tribal government agencies that combines resources, expertise, or information with the goal of maximizing the ability of such agencies to detect, prevent, investigate, apprehend, and respond to criminal or terrorist activity." See P.L. 110-53, Aug. 3, 2007, §511, 121 STAT. 322. Amends Homeland Security Act of 2002 by adding §210A(j).

⁵⁸ David Lambert, Federal Bureau of Investigation, "Intelligence-Led Policing in a Fusion Center," *FBI Law Enforcement Bulletin*, vol. 79, no. 12 (December 2010), pp. 1-6.

⁵⁹ Bureau of Justice Assistance, "Intelligence-Led Policing: The New Intelligence Architecture," September 2005, <https://www.ncjrs.gov/pdffiles1/bja/210681.pdf>.

⁶⁰ Jerry H. Ratcliffe, *Intelligence-Led Policing*, (Portland, OR: Willan Publishing, 2008), p. 6.

⁶¹ Department of Justice, "Intelligence-Led Policing: The Integration of Community Policing and Law Enforcement Intelligence," *Law Enforcement Intelligence: A Guide for State, Local, and Tribal Law Enforcement Agencies*, http://www.cops.usdoj.gov/pdf/e09042536_Chapter_04.pdf.

⁶² Jerry Ratcliffe, "What is Intelligence-Led Policing," <http://jratcliffe.net/research/ilp.htm>.

available information on intelligence-led policing does not address whether intelligence-led policing may be an effective approach to use in addressing mass shootings.

Using intelligence-led policing to thwart mass shooters may be especially challenging for a number of reasons.

- Mass shooters most often act alone and share few of their plans with others.⁶³ Typically, they do not engage in ongoing conspiracies that can be infiltrated by undercover police officers or monitored by informants.⁶⁴
- There may be too few public mass shooting incidents to establish detailed geographic patterns (hot spots) for law enforcement to exploit.⁶⁵

Offender Profiling for Public Mass Shootings: Not a Preventive Tool

Researchers and policy makers have questioned whether law enforcement can develop a profile of a mass shooter to help identify at-risk individuals before a shooting incident occurs. No effective mass shooter profile exists for law enforcement to use to proactively identify potential suspects. One researcher has succinctly noted that “the predictors [for mass murder] are invariably far more common than the event we hope to predict, and mass murder is very rare. Although mass murderers often do exhibit bizarre behavior, most people who exhibit bizarre behavior do not commit mass murder.”⁶⁶ Aside from usually but not always being male, there are few other characteristics across mass murderers that would be reliable or valid for creating a general profile for individuals most likely to engage in a public mass shooting. This also holds true when examining individuals who carry out mass shootings in specific settings; for instance, “[t]here is no accurate or useful profile of ‘the school shooter.’”⁶⁷

⁶³ This is not meant to suggest that mass shooters are always silent regarding their plans. Rather, they may not typically involve others in orchestrating their schemes.

⁶⁴ Whereas criminal groups may engage in activities that could produce intelligence information for law enforcement to exploit, such as communicating to one another via email regarding their schemes, lone gunmen or mass shooters often do not. Minus any ideological underpinnings for their actions, public mass shooters may in some ways be likened to terrorist suspects who act alone, often described as “lone wolves.” One FBI official has said, “The lone wolf is arguably one of the biggest challenges to American law enforcement. How do you get into the mind of a terrorist? The FBI does not have the capability to know when a person gets up in middle America and decides: ‘I’m taking my protest poster to Washington or I’m taking my gun.’” See Gary Fields and Evan Perez, “FBI Seeks to Target Lone Extremists,” *Wall Street Journal*, June 15, 2009, <http://online.wsj.com/article/SB124501849215613523.html>. For more on lone wolves, see CRS Report R42536, *The Domestic Terrorist Threat: Background and Issues for Congress*, by Jerome P. Bjelopera.

⁶⁵ Hot spot analysis is one technique that may be involved in intelligence-led policing. For more information about mapping crime, see National Institute of Justice, “Mapping Crime: Understanding Hot Spots,” August 2005.

⁶⁶ Richard J. McNally, “Why Psychiatrists Can’t Predict Mass Murderers,” *Salon.com*, January 12, 2011.

⁶⁷ National Institute of Justice, “Preventing School Shootings: A Summary of a U.S. Secret Service Safe School Initiative Report,” *NIJ Journal*, 2002. The notion of profiling “may be an effective strategy for limiting the field of suspects after a crime has occurred,” but it is generally not considered effective for *proactively* identifying an individual who may be a greater risk for committing a targeted act of violence, including a public mass shooting. See Randy Borum, Robert Fein, Bryan Vossekuil, et al., “Threat Assessment: Defining an Approach for Evaluating Risk of Targeted Violence,” *Behavioral Sciences and the Law*, vol. 17 (1999), p. 328. Hereafter: Borum et al., “Threat Assessment.”

Also of note, criminal profiling is generally utilized *after* a crime has been committed, and not usually as a preventive tool.⁶⁸ In the course of investigating serial crimes by a repeat offender such as a serial murderer, it could be utilized as a proactive tool to narrow the pool of potential offenders before a subsequent crime is committed. However, because mass shooters generally do not have the opportunity to commit a second crime—they are most typically either killed or captured after the mass shooting—investigative analysis would be most commonly employed after the mass shooting to understand how it happened rather than as a tool to identify potential shooters before an incident occurs.

All of this does not mean that preventing public mass shootings is wholly beyond the scope of federal law enforcement. For instance, to enhance law enforcement efforts in the violent crime domain, DHS, DOJ, and the FBI have been working to “identify measures that could be taken to reduce the risk of mass casualty shootings.”⁶⁹

Preparedness and Prevention Combined—Threat Assessments

Alternatively, what has come to be known as “threat assessment” may be more appropriately suited to prepare for the threat of potential shooters and to prevent them from harming others. Federal law enforcement has been involved in providing threat assessment approaches to front-line professionals, such as educators, who may encounter potential shooters. Threat assessments are used after a potentially harmful individual has come to the attention of authorities. The assessment process evaluates the threat he or she poses. Certainly, threat assessments may be used to prevent a mass shooting. Law enforcement efforts to train front-line professionals in the assessment process can be seen as an effort geared toward preparing these individuals to cope with threats.

The National Threat Assessment Center (NTAC), which is part of the U.S. Secret Service, provides research on threat assessment as well as on targeted violence.⁷⁰ The threat assessment approach used by the U.S. Secret Service was developed as part of its broader intelligence activities designed to protect the President and other officials. Nonetheless, it “can be applied with some modification to evaluating risk for other forms of targeted violence.”⁷¹ It does not rely upon “profiles” of potential malicious actors (as profiles have not proven to be reliable predictors

⁶⁸The FBI and its behavioral analysts in the Behavioral Science Unit developed what is often referred to as criminal “profiling,” or criminal investigative analysis. It was advanced as an investigative technique to narrow the field of potential offenders based on analyses of the crimes committed. Today, much of the criminal investigative analysis at the FBI is conducted by agents and analysts in the Behavioral Analysis Units at the National Center for the Analysis of Violent Crime. Federal Bureau of Investigation, “Criminal Profiling Part 1 of 7,” <http://vault.fbi.gov/Criminal%20Profiling/Criminal%20Profiling%20Part%201%20of%207/view>. The National Center for the Analysis of Violent Crime is a component of the Critical Incident Response Group at the FBI. For more information, see http://www.fbi.gov/about-us/cirg/investigations-and-operations-support/investigations-operations-support#cirg_ncavc.

⁶⁹ Components of such risk reduction involve prevention, protection, response, education, and research/evaluation. Department of Homeland Security, “Statement by Secretary Napolitano on President Obama’s Proposal to Combat Gun Violence,” press release, January 16, 2013, <http://www.dhs.gov/news/2013/01/16/statement-secretary-napolitano-president-obama%E2%80%99s-proposal-combat-gun-violence>.

⁷⁰ See Secret Service, “National Threat Assessment Center,” <http://www.secretservice.gov/ntac.shtml>.

⁷¹ Borum et al., “Threat Assessment,” p. 327. In 1992, the Secret Service, along with the Federal Bureau of Prisons and National Institute of Justice, undertook a 5-year Exceptional Case Study Project (ECSP) to study individuals who have attacked or attempted to attack public officials and figures in the United States. For specific ECSP findings, see Robert A. Fein and Bryan Vossekuil, “Threat Assessment Investigations: A Guide for State and Local Law Enforcement Officials,” July 1998.

for actual threat), nor does it depend on stated threats as a starting point for evaluating risk (because not every person who makes a threat poses a true risk, and not all persons who pose risks make threats).⁷² Within this threat assessment framework, it has been suggested that information be collected relating to: (1) facts that bring the subject to the attention of authorities, (2) the subject of interest, (3) attack-related behaviors, (4) possible motives, and (5) potential targets.⁷³ Of note, law enforcement may not be the only authorities involved in evaluating information and conducting such a threat assessment, but the assessment framework may be one of several tools that law enforcement relies upon in an attempt to prevent targeted violence, including mass shootings. Policy makers may wonder whether threat assessment has proved to be a viable tool for law enforcement to use in preventing incidents of mass shootings. Further, they may question if the threat assessment framework could be modified to better serve law enforcement and other professionals who collaborate on efforts to prevent targeted violence.

If threat assessments can effectively identify potential mass shooters, policy makers may debate how law enforcement could use this information. One potential option could be to create a criminal watchlist, similar to the Terrorist Screening Database,⁷⁴ or terrorist watchlist, to be used in background checks for firearms, among other things.⁷⁵ Similar to questions regarding the threshold for placing a suspected individual on the terrorist watchlist, one of the relevant issues would involve establishing criteria for the addition of potential mass shooters to a violent criminal watchlist. There may also be questions about if or how law enforcement may engage with others such as mental health professionals and community leaders in decisions to place someone on such a watchlist. (For a discussion of how the federal government coordinates preparedness efforts for incidents involving mass casualties see “Preparedness” under the “Public Health Implications” section of this report).

As another means of preparing for mass shootings, some law enforcement agencies have participated in tailored trainings. DHS, for instance, sponsors preparedness courses for shootings as well as webinars, and workshops.⁷⁶ The California Highway Patrol has taken advantage of these opportunities and, between August 2012 and January 2013, “has led 18 active shooter trainings on campuses across Northern California.”⁷⁷ In these two-day classes, officers participate in simulated scenarios; they are trained to respond to a reported incident, bring a shooter under control, and ensure the safety of building occupants.

Response

Federal Response to a Local Crime

From a law enforcement perspective, public mass shootings are often highly localized incidents involving lone gunmen acting near where they live. Thus, these cases largely do not involve

⁷² Borum et al., “Threat Assessment,” p. 372.

⁷³ Ibid., p. 330.

⁷⁴ For more information on the Terrorist Screening Database, see <http://www.fbi.gov/about-us/nsb/tsc>.

⁷⁵ For more information on terrorist watchlist screenings and background checks for firearms, see CRS Report R42336, *Terrorist Watch List Screening and Brady Background Checks for Firearms*, by William J. Krouse.

⁷⁶ See Department of Homeland Security, “Active Shooter Preparedness,” <http://www.dhs.gov/activeshooter>.

⁷⁷ Kaci Poor, “Active Shooter Training Prepares Local Law Enforcement for Sandy Hook Situation,” *The Times-Standard*, January 25, 2013.

conspiracies or the extensive crossing of jurisdictions. As such, mass shootings generally may be considered a local concern. Nonetheless, federal law enforcement—most notably the FBI—has historically provided assistance, when requested, to state and local law enforcement in the investigation of crimes that do not automatically fall under the jurisdiction of federal law enforcement.⁷⁸

Some have expressed concerns that without official authority to respond to such incidents that fall primarily under a single state's jurisdiction, the federal response to these incidents could be slowed from questions of jurisdiction.⁷⁹ However, in practice, federal law enforcement has routinely assisted state and local law enforcement in a variety of capacities. The FBI's Office of Law Enforcement Coordination (OLEC), for one, is the liaison between the FBI and the greater law enforcement community. FBI assistance includes a variety of criminal justice information and research, background checks and security clearances, and disaster and hazardous material response teams. Of note, the 112th Congress passed legislation (P.L. 112-265) that formally authorizes the Attorney General to provide investigative assistance to states in instances of violent crimes in public venues, including attempted and actual mass killings. Some may question whether this authority will change federal law enforcement involvement in responding to and investigating instances of public mass shootings or whether it will simply formalize an already well-established practice.

Definitional Implications for Criminal Justice Process

As noted, the definition of a mass shooting is not always consistent across the scholarly, policy, and law enforcement realms. Within the law enforcement realm, a clear definition of mass shootings may be more critical during certain phases of the criminal justice process than others. Take, for instance, the question of who counts as a "victim" of a mass shooting. Is a victim

- Only someone who was killed at the scene of the crime?
- Someone who was shot and hospitalized in critical condition for an extended period of time?
- Someone who was caught in the cross-fire but not critically injured by bullets?
- Someone who died or was injured in attempting to escape the situation, but who did not die from a gunshot wound?

The individual circumstances involving victims are quite varied, but in certain steps of the criminal justice process, the need for a concrete definition may be more pressing.

The fact that law enforcement will respond to a public mass shooting may not depend on the ability to pinpoint the exact number of dead or injured victims. However, the details regarding victimization may more greatly impact how the incident is investigated and prosecuted after the conclusion of the mass shooting. Once an investigation begins, information about individuals considered "victims" may be of special interest to investigators and prosecutors. If the shooter

⁷⁸ One of the FBI's top ten priorities is to "support federal, state, local and international partners." See <http://www.fbi.gov/about-us/quick-facts>. Of course, other federal law enforcement agencies, such as the Bureau of Alcohol Tobacco, Firearms, and Explosives, can help local police with mass shooting investigations.

⁷⁹ Jerry Seper, "FBI Agents Back Bill Allowing Feds to Help Probe Mass Killings," *The Washington Times*, January 2, 2013.

survives the incident and is prosecuted, whether or not a victim dies as a result of the mass shooting will influence the charges brought against the shooter. These charges may include actual and attempted homicide, manslaughter, and assault, among others.⁸⁰ The charges can, in turn, influence the length of sentence a shooter may receive if convicted of the charges brought against him.

A gunman's motives influence how police investigate shootings. A shooter's motives may also drive the charges ultimately brought against him, if he survives the incident. While some cases may be instances of relatively indiscriminate killing, others involve assailants driven by particular hatreds that lead to the targeting of specific groups and can be considered hate crimes and investigated and prosecuted accordingly. Still others can involve ideologically-motivated killing, leading to terrorism-related investigations and charges.

In considering a shooter's motives and intentions, law enforcement may question whether it is the shooter's resolve to die along with his victims, either in an act of self-inflicted suicide or through "suicide-by-cop," what some have termed "suicide by mass murder."⁸¹ When law enforcement officers respond to a report of a shooter, they are faced with multiple concerns in attempting to disarm and arrest the shooter. Will they have to use lethal force on the suspect? Will the suspect take his own life? Will the suspect try to prolong his life and his rampage through the use of body armor and other defensive tactics?

Public Health Implications⁸²

From a public health policy perspective, public mass shootings are mass casualty incidents (MCI) that cause both injury and death.⁸³ Although public mass shootings are infrequent, the health sector⁸⁴ has considerable related experience to bring to bear on preparing for and responding to these events.

⁸⁰ Federal crimes of attempted and actual homicide and manslaughter are codified at 18 U.S.C. § 1111-1113.

⁸¹ Rachel Kalish and Michael Kimmel, "Suicide by Mass Murder: Masculinity, Aggrieved Entitlement, and Rampage School Shootings," *Health Sociology Review*, vol. 19, no. 4 (2010).

⁸² This section includes contributions from Sarah A. Lister, Specialist in Public Health and Epidemiology (public health, prevention, preparedness and response), and Elayne J. Heisler, Analyst in Health Services (emergency departments, trauma care).

⁸³ Casualties can include victims or responders who die from their injuries; victims or responders who survive with physical injuries (not limited to gunshot wounds); and victims, responders, bystanders, and community members who experience psychological repercussions. The most severe injuries are less common than minor injuries such as sprains and strains. See Department of Health and Human Services (HHS), Centers for Disease Control and Prevention (CDC), *Emergency Preparedness and Response: Injuries and Mass Casualty Events*, <http://www.bt.cdc.gov/masscasualties/injuriespro.asp> Traumatic events can have both short- and long-term consequences. See Centers for Disease Control and Prevention, *Emergency Preparedness and Response: Coping with a Traumatic Event*, <http://www.bt.cdc.gov/masscasualties/copingpro.asp>.

⁸⁴ According to DHS, in the context of critical national infrastructure, the health care and public health sector (referred to as "the health sector" in this report) consists of a variety of health care facilities and transportation services, products manufacture and distribution, financing and data management systems, governmental public health agencies, and non-governmental organizations. Department of Homeland Security, *Healthcare and Public Health Sector-Specific Plan: An Annex to the National Infrastructure Protection Plan*, 2010, Executive Summary, p. 1, <http://www.dhs.gov/xlibrary/assets/nipp-ssp-healthcare-and-public-health-2010.pdf>.

The health sector addresses mass shootings as it does any other health threat, through (1) prevention, (2) preparedness, (3) response, and (4) recovery over the long term. Prevention focuses on the perpetrators of mass shooting. The other three components of the health sector approach concentrate on the victims of such incidents.

Public health options to thwart mass shootings are likely limited. Of these four components, the effectiveness of preventive efforts may be most unclear. Fundamentally, this area likely lacks strong evidence regarding what might successfully stop potential shooters from becoming actual shooters. This evidence could come from evaluation of new or existing policies. Such efforts could help fill a gap in knowledge about what is effective.

In terms of preparedness, response, and recovery, proven approaches exist. However, policy makers may wish to consider how existing capacities (or policies to increase capacity) vary across geographic areas and populations. Also, the ability to rapidly evaluate the effectiveness of existing programs and/or deploy resources may hinge on the flexibility of funding structures.

Prevention

Public health interventions are often based on research with large-scale datasets and rigorous information collection regimens.⁸⁵ The effectiveness of this approach may be limited largely because public mass shootings are rare, *potential* perpetrators cannot be identified accurately, and no systematic means of intervening are known to be effective. Regardless, a public health-oriented discussion of prevention of mass shootings should consider the field's traditional approach to stemming any cause of injury or death, highlighting some of the ways that this approach may or may not address public mass shootings.

Public health professionals address prevention of injury and death via a three-step process focused on understanding and stemming health-related problems:

- First, systematic collection of data (*surveillance*)⁸⁶ may help define the scope of the problem, identify an outbreak of the problem, and detect trends related to the problem.
- Second, research may identify characteristics associated with higher rates of injury or death attributed to the problem (called *risk factors* and *protective factors*, respectively). Such research may be based on surveillance or other sources of information.
- Third, efforts to reduce risk factors and enhance protective factors may be developed to stem the problem. These are founded on research pursued in the previous step of this process. Called *preventive interventions* within the context of public health, such undertakings traditionally focus on victims. However, as mentioned above, in the case of public mass shootings, the focus of prevention is generally on the gunmen involved.⁸⁷

⁸⁵ For examples of public health surveillance systems, see Centers for Disease Control and Prevention, National Center for Health Statistics, *Surveys and Data Collection Systems*, <http://www.cdc.gov/nchs/surveys.htm>.

⁸⁶ This does not include what may be considered surveillance within law enforcement contexts, i.e., covertly gathered information about suspects.

⁸⁷ Centers for Disease Control and Prevention, Injury Center, *Violence Prevention, The Public Health Approach to* (continued...)

Surveillance May Not Be Necessary to Identify Public Mass Shootings

Mass shootings are rare, high-profile events, rather than broad trends that require systematic data collection to understand. The public health system does not conduct surveillance specifically for public mass shootings as defined in this report. Some broader information about shootings is collected (e.g., from death certificates⁸⁸); however, this information is largely about victims rather than assailants, limiting its usefulness for research into the prevention of mass shootings. For example, the Centers for Disease Control and Prevention's (CDC's) National Violent Death Reporting System (NVDRS) enables participating states to supplement death certificates with information from law enforcement agencies, crime laboratories, coroner or medical examiner reports, health providers, and other state and local agencies. The NVDRS is currently in operation in fewer than half the states.⁸⁹ *The President's Plan* proposes expanding the NVDRS to all 50 states at a cost of \$20 million.⁹⁰

Difficulty in Identifying Risk and Protective Factors

According to the parameters of this CRS analysis, the victims of public mass shootings are essentially random. Thus, health research into risk and protective factors tied to these incidents would likely focus on things that would either boost or lower the chances that one might become a gunman. One obstacle in identifying such factors is the relatively small data pool available for research (several dozen tragedies over the last thirty years in the United States).

Gun violence broadly, rather than public mass shootings, accounts for many more instances of death and injury per year and yields a far larger pot of observable information. This information may be used in research to identify risk and protective factors. Therefore, potential risk and protective factors may have more utility when public health professionals confront the much

(...continued)

Violence Prevention, <http://www.cdc.gov/ViolencePrevention/overview/publichealthapproach.html>. The approach is discussed in the context of school violence in U.S. Congress, House Committee on Education and the Workforce, Subcommittee on Early Childhood, Youth and Families, *School Violence: Protecting Our Children*, 106th Cong., 1st sess., March 1, 1999, H.Hrg. 106-9 (Washington: GPO, 1999), pp. 44-58. The CDC describes a four-step process; this CRS report combines the last two steps (intervention evaluation and implementation) into one step, resulting in the three-step process described in the text.

⁸⁸ Both the legal authority for maintaining registries of deaths and the responsibility for issuing death certificates reside with individual states, territories, and two cities (Washington, DC, and New York, NY). Information collected in death certificates is aggregated at the federal level by the National Center for Health Statistics (NCHS, within CDC) in the National Vital Statistics System (NVSS); see <http://www.cdc.gov/nchs/nvss.htm>. NCHS extracts information from NVSS to create the National Death Index (NDI), a data set that can be combined with other data sets for research purposes; see http://www.cdc.gov/nchs/data_access/ndi/about_ndi.htm. Information about non-fatal shootings is included in the CDC's National Electronic Injury Surveillance System – All Injury Program (NEISS-AIP), which collects data from a sample of U.S. hospital emergency departments; NEISS-AIP data can be used to generate national estimates of nonfatal injuries. See Centers for Disease Control and Prevention, *Injury Prevention & Control: Data & Statistics*, <http://www.cdc.gov/injury/wisqars/index.html>. Additionally, the National Conference of State Legislatures reports that 40 states have statutes establishing statewide trauma registries that collect data about trauma, including both fatal and non-fatal gunshot wounds; the data collected and the source of the data (e.g., emergency medical service or trauma centers) vary by state. See Hollie Hendrikson, *The Right Patient, the Right Place, the Right Time: A Look at Trauma and Emergency Medical Services Policy in the States*, National Conference of State Legislatures, Washington, DC, September 2012, <http://www.ncsl.org/documents/health/NCSLTraumaReport812.pdf>.

⁸⁹ Centers for Disease Control and Prevention, *National Violent Death Reporting System*, <http://www.cdc.gov/violenceprevention/nvdrs>.

⁹⁰ *The President's Plan*.

broader phenomenon of gun violence, not just public mass shootings. Consequently, potential risk factors such as mental illness, substance abuse, exposure to violence, and easy access to guns are all addressed to some extent in *The President's Plan*, which covers the wider issue of gun violence.⁹¹ *The President's Plan* also responds to the suggestion by some that health research related to gun violence has been hampered by a statutory prohibition on the use of certain funding to “advocate or promote gun control.”⁹² *The President's Plan* states that research into gun violence is not advocacy,⁹³ and a Presidential Memorandum directs the Health and Human Services (HHS) Secretary to “conduct or sponsor research into the causes of gun violence.”⁹⁴

The Effectiveness of Preventive Interventions Is Unclear

Prevention of public mass shootings in a public health context would in theory involve interventions targeted at potential perpetrators, not potential victims. These interventions would be founded on well-tested risk and protective factors, which—as noted above—do not currently exist. If relatively unproven factors were to be used in the development of preventive interventions, this would likely yield many misidentifications.

Because the number of public mass shootings in the United States may be too small to offer substantive analysis that could produce effective interventions, it may be most feasible to address gunmen involved in such incidents as a subset of violent offenders. Preventive interventions directed at potential violent offenders may target populations, at-risk subgroups, or high-risk individuals. These approaches may or may not prove effective within the broader context of gun violence, and what effect (if any) they would have on mass shootings is unclear as well. *The President's Plan* provides examples of each approach:

- Population-wide interventions include finalizing regulations for mental health parity in private health insurance and ensuring that Medicaid plans are in compliance with parity requirements.⁹⁵
- Interventions targeting at-risk subgroups include a clarification that doctors are permitted to talk about gun safety with patients who have access to guns and efforts to make mental health and conflict resolution services available specifically for students who have been exposed to violence.⁹⁶

⁹¹ *The President's Plan*.

⁹² CDC appropriations from FY1997 through FY2011 included a prohibition on the use of funds “to advocate or promote gun control.” This prohibition has been extended to all HHS agencies for FY2012 and FY2013. See CRS Report WSLG375, *Is Gun Violence Research Advocacy? Appropriations Restrictions on Using HHS Funds to “Advocate or Promote Gun Control,”* by Kathleen S. Swendiman, January 23, 2013. See also Jay Dickey and Mark Rosenberg, “‘Senseless’ is not studying gun violence,” *The Washington Post*, July 29, 2012, and Michael Luo, “Sway of N.R.A. Blocks Studies, Scientists Say,” *The New York Times*, January 25, 2011.

⁹³ *The President's Plan*.

⁹⁴ U.S. President (Obama), “Engaging in Public Health Research on the Causes and Prevention of Gun Violence,” *Public Papers of the Presidents of the United States* (Washington: GPO, 2013).

⁹⁵ *The President's Plan*. See CRS Report R41768, *Mental Health Parity and Mandated Coverage of Mental Health and Substance Use Disorder Services After the ACA*, by Amanda K. Sarata. Mental health parity generally refers to the concept that health insurance coverage for mental health services should be offered on par with covered medical and surgical benefits.

⁹⁶ *The President's Plan*.

- Interventions targeting high-risk individuals include a clarification that health professionals are permitted to report to law enforcement violent threats that patients may make.⁹⁷ Also, on January 15, 2013, the HHS Office of Civil Rights issued a letter to health care providers to clarify that federal health privacy laws do not prohibit them from disclosing “necessary information about a patient to law enforcement, family members of the patient, or other persons, when [they] believe the patient presents a serious danger to himself or other people.”⁹⁸ Interventions focused on high-risk individuals can also involve training law enforcement officers to work with mental health professionals to intervene with students in crisis.

Preparedness

The federal government has supported coordinated mass casualty incident (MCI) preparedness efforts in large cities since 1997⁹⁹ and in all 50 states, territories, and the District of Columbia since 2002,¹⁰⁰ through federal grants and contracts to public health agencies. These agencies are required to develop plans to integrate responding entities—including federal, state, and local law enforcement; emergency medical services (EMS); private sector health care facilities; and others. These federal grants and contracts support the rapid establishment of interdisciplinary communications (e.g., emergency operations centers) and periodic exercises that bring key responders together to practice before an actual incident, among other things. Although these federal grants and contracts were established in response to concerns about terrorism, they may also help local agencies prepare for MCIs such as public mass shootings. Some are concerned about whether these programs are sufficiently dispersed to enable rural areas to prepare for an MCI.¹⁰¹

Certain aspects of the health care delivery system, such as the capacity and proximity of critical facilities to a mass shooting, can affect survival from a public mass shooting. Three components of the health care delivery system contribute to MCI readiness: (1) emergency medical services (EMS), (2) hospital-based emergency departments (EDs), and (3) trauma care.

⁹⁷ *The President’s Plan*.

⁹⁸ Letter from Leon Rodriguez, Director, Health and Human Services, Office of Civil Rights, “Message to Our National Health Care Providers,” January 15, 2013, <http://www.hhs.gov/ocr>. The letter clarifies requirements of the Health Insurance Portability and Accountability Act (HIPAA) Privacy Rule, 45 CFR § 164.512(j).

⁹⁹ Metropolitan Medical Response System contracts required more than 120 cities to establish and exercise mass casualty management plans. National Research Council, *Preparing for Terrorism: Tools for Evaluating the Metropolitan Medical Response System Program*, Washington, D.C., The National Academies Press, 2002, http://www.nap.edu/catalog.php?record_id=10412. The program, originally managed by HHS, is now a component of the Federal Emergency Management Agency (FEMA) Homeland Security Grant Program (HSGP). It received dedicated appropriations from FY1997 through FY2011. For FY2012, its purposes are allowable, but no longer required, of grantees receiving HSGP funds. Federal Emergency Management Agency, FY2012 Homeland Security Grant Program, <http://www.fema.gov/fy-2012-homeland-security-grant-program>.

¹⁰⁰ Department of Health and Human Services, Public Health Emergency, “Hospital Preparedness Program,” <http://www.phe.gov/preparedness/planning/hpp/pages/default.aspx>.

¹⁰¹ Kristin Viswanathan, Theresa Wizemann, and Bruce M. Altevogt, “Improving Rural Mass Casualty Response in the United States,” in *Preparedness and Response to a Rural Mass Casualty Incident* (Washington, DC: National Academies Press, 2011), pp. 77-86.

Emergency medical services (EMS) include 911 call centers, medical care that occurs at the scene of an emergency, the transportation of victims to hospitals, and any treatment that occurs on the way. EMS systems vary by locality—some are operated by municipal or county governments, others by fire departments, and still others by private for-profit companies. This may mean that response times, quality, availability, and preparedness vary by locality. Federal responsibility for EMS is shared across the Department of Transportation, DHS, and HHS,¹⁰² which raises potential concerns about coordination and sustainability.¹⁰³ Also, an HHS grant program administered by the Health Resources and Services Administration (HRSA) supports an effort to ensure that emergency medical services are appropriate for children.¹⁰⁴

Hospital-based emergency departments (ED) vary by locality, and not all hospitals have an ED. Rural areas in particular may have both fewer hospitals overall and fewer hospitals that offer emergency care. In both urban and rural areas, some EDs may not function optimally on a day-to-day basis, which would affect their ability to respond to an MCI. EDs may be overcrowded, may “board” patients when inpatient beds are unavailable, and may divert ambulances because they are operating at capacity.¹⁰⁵ The federal government supports EDs through a variety of mechanisms including hospital preparedness grants, interagency coordination, and training of emergency health providers.¹⁰⁶ Through the Medicare and Medicaid programs, the federal government provides payments to hospitals that deliver care to uninsured patients in hospital EDs.¹⁰⁷ These payments (called disproportionate share payments) are an important source of a financial support for EDs.

Trauma centers are specialized hospitals with the resources and equipment needed to treat severely injured patients.¹⁰⁸ They provide specialized care that is beyond the capability of the typical ED. Trauma centers are classified into four levels, with lower numbers (I, II) providing

¹⁰² Institute of Medicine, *Future of Emergency Care: Emergency Medical Services at the Crossroads* (Washington, DC: The National Academies Press, 2007).

¹⁰³ The National Conference of State Legislatures suggests that state-level organization of EMS services also impedes coordination. See Hollie Hendrikson, *The Right Patient, the Right Place, the Right Time: A Look at Trauma and Emergency Medical Services Policy in the States*, National Conference of State Legislatures, Washington, DC, September 2012, p. 9, <http://www.ncsl.org/documents/health/NCSLTraumaReport812.pdf>.

¹⁰⁴ This program is described in CRS Report R41278, *Public Health, Workforce, Quality, and Related Provisions in PPACA: Summary and Timeline*, coordinated by C. Stephen Redhead and Erin D. Williams. The funding for this program is described in CRS Report R41390, *Discretionary Spending in the Patient Protection and Affordable Care Act (ACA)*, coordinated by C. Stephen Redhead.

¹⁰⁵ U.S. Government Accountability Office, *Hospital Emergency Departments: Crowding Continues to Occur, and Some Patients Wait Longer than Recommended Time Frames*, 09-347, April 30, 2009, <http://www.gao.gov/products/GAO-09-347>; Institute of Medicine, *Emergency Medical Services at the Crossroads* (Washington, DC: The National Academies Press, 2007); and Institute of Medicine, *Hospital-Based Emergency Care: At the Breaking Point* (2007).

¹⁰⁶ For more information about HHS programs to train emergency providers, see CRS Report R41278, *Public Health, Workforce, Quality, and Related Provisions in PPACA: Summary and Timeline*, coordinated by C. Stephen Redhead and Erin D. Williams. For more about the Hospital Preparedness Program see Department of Health and Human Services, Public Health Emergency, “Hospital Preparedness Program,” <http://www.phe.gov/preparedness/planning/hpp/pages/default.aspx>; and Department of Health and Human Services, Assistant Secretary for Preparedness and Response, *Healthcare Preparedness Capabilities: National Guidance for Healthcare System Preparedness*, January 2012, p. 24, <http://www.phe.gov/Preparedness/planning/hpp/reports/Documents/capabilities.pdf>.

¹⁰⁷ CRS Report R42865, *Medicaid Disproportionate Share Hospital Payments*; and CRS Report R41196, *Medicare Provisions in the Patient Protection and Affordable Care Act (PPACA): Summary and Timeline*, by Alison Mitchell.

¹⁰⁸ Centers for Disease Control and Prevention, “Access to Trauma Care: Getting the Right Care, at the Right Place, at the Right Time,” August 24, 2010, http://www.cdc.gov/traumacare/access_trauma.html. Hereafter: Centers for Disease Control and Prevention, “Access to Trauma Care.”

more specialized care. Trauma centers may play a role in responding to MCIs, but not all areas have the patient volume to support a trauma center. Distance to the nearest trauma center may be an issue in some MCIs. The federal government provides some funding for trauma centers through grants authorized under HHS, but not of all these programs have received funding.¹⁰⁹ In addition, the CDC is working to raise awareness of trauma centers and has produced research showing the importance of access to trauma care in surviving a severe injury.¹¹⁰

Response

The medical response to an MCI involves triage¹¹¹ and limited treatment of victims on-site, as well as the transfer of victims to appropriate health care facilities for definitive treatment. As described above, federal preparedness funding aims to ensure: (1) that the medical components of MCI response work as well as possible when needed, (2) that individual components are as capable as they can be in response, and (3) that medical responders can coordinate and communicate well with each other and with other response sectors such as law enforcement and public education. However, when an incident occurs, local authorities and health systems are largely on their own during the initial phases of a response. The federal government, through HHS (and, when needed, the Department of Defense), can support local efforts to respond to MCIs, making available mobile medical teams, mobile field hospitals, medical supply and pharmaceutical caches, and medical evacuation and transport.¹¹² In general, however, mass shootings resolve quickly, often before federal operational assistance can be delivered.

In the event of a public mass shooting or other MCI, as with any emergency medical situation, delaying treatment while determining a patient's insurance status or ability to pay for health care services may prove fatal. The Emergency Medical Treatment and Active Labor Act (EMTALA) protects against such a delay.¹¹³ EMTALA requires a hospital that receives Medicare payments (as the vast majority of hospitals do) to screen a patient for emergency medical conditions without regard for the patient's ability to pay. If the screening identifies an emergency medical condition, EMTALA requires the hospital to stabilize the patient. In instances where a patient's injuries are too severe to be treated at an ED, a patient may be sent to a trauma center. EMS or local EDs may determine whether a transfer to a trauma center is needed. Trauma centers are also subject to EMTALA (if the hospitals receive Medicare payments) and are required to accept transfers when an ED has determined that the trauma center possesses the specialized services that the patient needs but the ED lacks.

¹⁰⁹ For information about regional trauma programs, see CRS Report R41278, *Public Health, Workforce, Quality, and Related Provisions in PPACA: Summary and Timeline*, coordinated by C. Stephen Redhead and Erin D. Williams. For information about funding of regional trauma programs, see CRS Report R41390, *Discretionary Spending in the Patient Protection and Affordable Care Act (ACA)*, coordinated by C. Stephen Redhead.

¹¹⁰ Centers for Disease Control and Prevention, "Access to Trauma Care."

¹¹¹ This involves identifying "the severity and type of injury and determin[ing] which hospital or other facility would be the most appropriate to meet the needs of the patient." See Centers for Disease Control and Prevention, "Field Triage," <http://www.cdc.gov/fieldtriage/>.

¹¹² For information, see Department of Health and Human Services, Assistant Secretary for Preparedness and Response, "Medical Assistance," <http://www.phe.gov/Preparedness/support/medicalassistance/Pages/default.aspx>; and Archived CRS Report RL33095, *Hurricane Katrina: DOD Disaster Response*, by Steve Bowman, Amy Belasco, and Lawrence Kapp.

¹¹³ The Emergency Medical Treatment and Active Labor Act (EMTALA) was enacted as part of the Consolidated Omnibus Budget Reconciliation Act of 1985 (P.L. 99-272). For more information on EMTALA, see CRS Report RS22738, *EMTALA: Access to Emergency Medical Care*, by Edward C. Liu.

Recovery

Recovery of affected individuals and communities over the long term may require ongoing services to meet the physical and mental health care needs of both victims and responders. Ongoing services may involve inpatient and outpatient medical care; psychosocial interventions such as pastoral or peer counseling; and population-level interventions such as public announcements about common reactions to traumatic events (which can help normalize people's experiences and reduce anxiety around symptoms that are likely to be transient) or information about how to discuss an incident with children.¹¹⁴ The availability of such services in a timely and accessible manner may also be important for reducing long-term consequences such as posttraumatic stress disorder.¹¹⁵ Although federal resources generally focus on the immediate aftermath of an MCI, the federal government may fund public health interventions as well as programs that support the physician and behavioral health workforce and other infrastructure. The federal government also has a role in providing and financing health services that victims and responders may access.¹¹⁶

For an individual's long-term recovery from a public mass shooting, lack of insurance or inability to pay for health care services may limit the treatment options available (e.g., physical rehabilitation or counseling). Thus, financial support may play a key role in long-term recovery.¹¹⁷

Education Implications

Schools are unique institutions. They have a mission of great importance to our nation—they are responsible for keeping our children safe while educating them and helping prepare them to be

¹¹⁴ Centers for Disease Control and Prevention, *Emergency Preparedness and Response: Mass Casualty Event Preparedness and Response*, <http://www.bt.cdc.gov/masscasualties>.

¹¹⁵ See James Hawdon et al., "Social Solidarity and Wellbeing after Critical Incidents: Three Cases of Mass Shootings," *Journal of Critical Incident Analysis*, vol. 3, no. 1 (Fall 2012), pp. 2-25.

¹¹⁶ For example, the Substance Abuse and Mental Health Services Administration (SAMHSA) has programs that may provide access to mental health services for victims (see <http://www.samhsa.gov/>), and the Health Resources and Services Administration trains mental health providers and has programs to place providers in rural and other underserved areas (see <http://nhsc.hrsa.gov/> and <http://bhpr.hrsa.gov/grants/mentalbehavioral/index.html>). Under certain circumstances (e.g., if the infrastructure damage approached \$1 million), the Governor might request that the President declare a major disaster area under the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1974 (the Stafford Act). Under a Stafford declaration, FEMA would be authorized to fund (among other things) a Crisis Counseling Assistance and Training Program (CCP); see 42 U.S.C. §5183. Alternatively, the President might consider a mass shooting event to be a "uniquely federal responsibility" and declare an emergency on that basis. Programs such as the CCP could be an adjustment made to the declaration under the President's authority, providing supplemental resources to state, local, and/or private mental health organizations. Such a declaration could also arguably provide assistance to safety forces (e.g., overtime pay) and provide other essential assistance requested by the state. See CRS Report RL33579, *The Public Health and Medical Response to Disasters: Federal Authority and Funding*, by Sarah A. Lister; Archived CRS Report RL33738, *Gulf Coast Hurricanes: Addressing Survivors' Mental Health and Substance Abuse Treatment Needs*, by Ramya Sundararaman, Sarah A. Lister, Erin D. Williams; and CRS Report RL33053, *Federal Stafford Act Disaster Assistance: Presidential Declarations, Eligible Activities, and Funding*, by Francis X. McCarthy.

¹¹⁷ The coverage of mental health services under private health insurance plans, Medicare, and Medicaid may be particularly relevant for the long-term recovery of victims of an MCI. For more information about mental health coverage under private health insurance and Medicaid, see CRS Report R41249, *Mental Health Parity and the Patient Protection and Affordable Care Act of 2010*, by Amanda K. Sarata.

responsible and productive citizens. All levels of government are involved to some extent in this mission.¹¹⁸ As mentioned earlier in this report, twelve of the 78 public mass shootings identified by CRS occurred in academic settings. Eight of these happened at primary or secondary education facilities. One incident, the December 14, 2012, shooting deaths of 20 children and 6 adults¹¹⁹ at Sandy Hook Elementary School in Newtown, CT, has heightened congressional interest in school security.¹²⁰ Policy makers are examining whether school security can be further enhanced, and if so, how best to accomplish that goal.¹²¹

Four of the 12 public mass shootings in education settings involved high school or middle school students as assailants.¹²² The federal government has supported efforts to preempt students from engaging in gun violence at school. More broadly, it has promoted policies to curb violence in schools, such as anti-bullying programs, which may or may not stem public mass shootings by student perpetrators. This section of the report focuses on those federal programs and initiatives administered by the Department of Education that may be relevant in the event of a public mass shooting in a school setting.

The President's Plan was released following the Newtown tragedy—it includes several provisions specifically related to schools.¹²³ However, funding for these provisions may not be sufficient to provide meaningful assistance to all schools that could potentially benefit. Difficult decisions confront policy makers. They must consider how to make the greatest possible improvements in student safety while likely being faced with limited federal resources to devote to safety initiatives. Policy makers may have to decide whether funds should be spread across many activities so that each activity gets some additional funding, or whether funding should be concentrated in fewer programs believed to be most cost effective. This decision is made even more difficult because research on effectiveness is limited for many school security programs.

¹¹⁸ States and school districts have primary responsibility for the provision of elementary and secondary education in the United States. The vast majority of funding for schools is also provided by states and localities; the federal government contributes approximately 9% to the overall funding of elementary and secondary education. Nevertheless, the United States Department of Education (Department of Education) performs numerous functions, including promoting educational standards and accountability; gathering education data; disseminating research on important education issues; and administering federal education programs and policies. One of the most important priorities for the Department of Education in elementary and secondary education is improving academic outcomes for all students; particularly disadvantaged students, students with disabilities, English language learners, Indians, Native Hawaiians, and Alaska Natives.

¹¹⁹ The gunman also killed himself and his mother. She was not shot at the school.

¹²⁰ For public health resources specifically addressing the Newtown tragedy see <http://www.phe.gov/emergency/events/newtown/Pages/default.aspx>.

¹²¹ In December, 2012, a group of 9 violence prevention researchers and practitioners developed a position statement on the Newtown shootings that has been endorsed by a wide variety of organizations and individuals. See <http://www.ccbd.net/sites/default/files/OFFICIAL%20FOR%20DISSEMINATION-Connecticut%20School%20Shooting%20Position%20Statement%202012-19-2012-2%20pm%20ET.pdf>.

¹²² Of the eight remaining shootings: a) three involved non-students targeting elementary schools, b) one involved a gunman targeting people at the high school he formerly attended, c) four occurred on college campuses and involved either active or former students. CRS did not identify a public mass shooting involving a student attending elementary school who acted as an assailant in an incident at his or her own school.

¹²³ Schools continue to be among the safest places for children. Out of 1,579 homicides of youth ages 5-18 in the 2008-2009 year (most recent data available), approximately 1% (17), were school associated homicides. This percentage has remained consistently at less than 2% since the survey began in school year 1992-1993. These data do not indicate the weapon used. National Center for Education Statistics, Department of Education, and Bureau of Justice Statistics, Office of Justice Programs, Department of Justice, *Indicators of School Crime and Safety: 2011*, Washington, D.C. February, 2012.

This may lead to consideration of whether more funding should be provided for research into program effectiveness, and if so, whether it would restrict funding for existing school security programs.

Policy makers must also consider the importance of continuity of funds for local program success. It can be difficult for local school districts to plan, develop and implement programs if they cannot be certain of a reliable funding stream. In recent years much of the dedicated funding for school safety programs provided by the Department of Education has been cut.¹²⁴ Some programs were cut because they were perceived as too small to make a difference. Others were cut because they failed to demonstrate their effectiveness. For example, funding for the Safe and Drug Free Schools and Communities Act (SDFSCA) program, the federal government's primary program aimed at preventing drug abuse and violence in and around public schools, has declined from \$435 million in FY2009 to \$65 million in FY2012.¹²⁵

Department of Education guidance has divided the crisis management process for schools into four phases. Those four phases, in sequential order are: prevention, preparedness, response, and recovery.¹²⁶ Because emergency planning at institutions of higher education occurs in a significantly different environment and context, this report focuses on emergency planning at the elementary and secondary school level.¹²⁷

Prevention

Prevention (and mitigation) involves broadly structured efforts to help schools reduce the need to respond to crises including mass shootings. This stage of crisis management is critical for educators. If students do not feel safe at school, they will not be able to focus their energy on the most important task before them—learning. According to the Department of Education, this first stage of crisis management should include the following activities:

- connecting with community responders to identify potential hazards,

¹²⁴ One of the Safe and Drug Free Schools and Communities Act programs (SDFSCA) that is continuing to receive funding is the Safe Schools/Healthy Students (SS/HS) grant program. It is funded jointly by the Department of Education and SAMHSA. The program is administered by the Department of Education, SAMHSA, and DOJ. The SS/HS initiative is a discretionary grant program that provides schools and communities with federal funding to implement an enhanced, coordinated, comprehensive plan of activities, programs, and services that focus on healthy childhood development and the prevention of violence and alcohol and drug abuse. Grantees are required to establish partnerships with local law enforcement, public mental health, and juvenile justice agencies/entities. The program received \$17 million in Department of Education funding for FY2012. These grants are awarded to state education agencies (SEAs), high-need local educational agencies (LEAs) and their partners.

¹²⁵ As authorized, the SDFSCA is divided into two major programs: State Formula Grants and National Programs. The majority of State Formula Grant funding was distributed first by formula to states and then also by formula to LEAs. However, FY2009 is the last year that funding was provided for State Formula Grants. Presently, funding is only provided for National Programs. Funding for the State Grant Formula program was eliminated in part because it was believed that the amount of money reaching LEAs was too small to implement effective programming. For more information on the SDFSCA program see CRS Report RL34496, *Safe and Drug-Free Schools and Communities Act: Program Overview and Reauthorization Issues*, by Gail McCallion.

¹²⁶ The Department of Education has a variety of resources to help schools and communities develop an emergency management plan. See <http://www2.ed.gov/admins/lead/safety/emergencyplan/crisisplanning.pdf>. See also <http://rems.ed.gov/CreatingAndUpdatingSchoolEmergencyManagementPlans.aspx>.

¹²⁷ For a discussion of school safety issues at Institutions of Higher Education, see CRS Report RL33980, *School and Campus Safety Programs and Requirements in the Elementary and Secondary Education Act and Higher Education Act*, by Gail McCallion and Rebecca R. Skinner.

- reviewing the most recent school safety audit,
- determining who is responsible for overseeing violence prevention at the school,
- soliciting staff input on the crisis plan,
- reviewing school incident data,
- determining major crime and violence problems at the school and assessing how effectively they are currently being addressed, and
- conducting an assessment to determine how existing threats may impact the school's vulnerability to particular crises.¹²⁸

School Climate

Improving school climate is one strategy for mitigating and preventing a variety of crises, including mass shootings (if the perpetrators involved in these incidents are students). A CDC report states that a positive school climate is “characterized by caring and supportive interpersonal relationships; opportunities to participate in school activities and decision-making; and shared positive norms, goals, and values.”¹²⁹ Research has indicated that one of the most important elements in a positive school climate is for students to have a feeling of school connectedness. School connectedness is defined as “the belief by students that adults and peers in the school care about their learning as well as about them as individuals.”¹³⁰

The Department of Education's Office of Special Education Programs funds a Technical Assistance Center on Positive Behavioral Interventions and Supports. The Center provides capacity-building information and technical assistance to schools, districts, and states who are implementing a school climate protocol called *School-wide Positive Behavioral Interventions and Supports* (SWPBIS). SWPBIS is a three-tiered prevention-based approach to improving school-wide disciplinary practices. According to the Center, SWPBIS is used in more than 9,000 schools across 40 states.¹³¹ SWPBIS has been linked to reductions in student suspensions and office discipline referrals.¹³²

¹²⁸ A Secret Service study indicated that conducting threat assessments may help schools be better prepared to address potential problems. The study was based on information regarding 37 school shootings involving 41 attackers. It concluded that there is no accurate or useful ‘profile’ of a school shooter. In contrast, it indicated that threat assessment may be useful if it is: “a fact-based investigative and analytical approach that focuses on what a particular student is doing and saying, and not on whether the student ‘looks like’ those who have attacked schools in the past. Threat assessment emphasizes the importance of behavior and communications for identifying, evaluating and reducing the risk posed by a student who may be thinking about or planning for a school-based attack.” Bryan Vossekuil et al., *The Final Report and Findings of the Safe School Initiative: Implications for the Prevention of School Attacks in the United States*. Department of Education and Secret Service, Washington D.C. 2004. p. 41. For more on threat assessments, see “Preparedness and Prevention Combined—Threat Assessments” in this report.

¹²⁹ Centers for Disease Control and Prevention, *School Connectedness: Strategies for Increasing Protection Factors Among Youth*. Atlanta, GA, Department of Health and Human Services, 2009, p. 7.

¹³⁰ *Ibid.*, p. 3.

¹³¹ *The President's Plan* requests \$50 million to help 8,000 additional schools implement strategies to improve school climate. In addition to assistance provided through the Technical Assistance Center, the Department of Education is currently providing funding to 11 Safe and Supportive Schools grantees (\$47.5 million in FY2012). SEAs, high-need LEAs and their partners can apply for this grant. Funding is used to develop and implement programs that measure and improve conditions for learning based on local needs.

¹³² Catherine Bradshaw, et al., “Examining the Effects of Schoolwide Positive Behavioral Interventions and Supports (continued...) ”

Bullying prevention is also an important aspect of improving school climate. The Federal government recognizes the importance of this issue and has become increasingly involved in bullying prevention initiatives in recent years.¹³³

Research indicates that both victims of bullying and those who engage in bullying behavior can experience both short and long-term effects resulting in psychological difficulties and social relationship problems. A GAO literature review of seven meta-analyses on the impact of bullying on victims found that bullying could result in psychological, physical, academic, and behavioral issues.¹³⁴ In addition, a Secret Service study on school safety and school attacks found that “Many attackers felt bullied, persecuted or injured by others prior to the attack.”¹³⁵

School Resource Officers

The SDFSCA defines school resource officers as career law enforcement officers assigned by a local law enforcement agency to work with schools and community based organizations to:

(A) educate students in crime and illegal drug use prevention and safety; (B) develop or expand community justice initiatives for students; and (C) train students in conflict resolution, restorative justice, and crime and illegal drug use awareness.¹³⁶

The President’s Plan would provide an incentive for DOJ’s Community Oriented Policing Services (COPS) grants to be used to hire more school resource officers in the current year,¹³⁷ and would seek \$150 million in funding for a new *Comprehensive Safety Grants* program. This new

(...continued)

on Student Outcomes,” *Journal of Positive Behavior Interventions*, vol. 12, no. 3 (July 2010).

¹³³ Representatives from the U.S. Departments of Agriculture, Defense, Education, Health and Human Services, the Interior, Justice, the Federal Trade Commission and the White House Initiative on Asian Americans and Pacific Islanders have come together to form a Federal Partners in Bullying Prevention Steering Committee. The Federal Partners work to coordinate policy, research, and communications on bullying topics. The Federal Partners have created a website, <http://www.stopbullying.gov>, which provides extensive resources on bullying, including information on how schools can address bullying. In addition, with leadership the Department of Education, the Federal Partners have sponsored three antibullying summits attended by education practitioners, policy makers, researchers, and federal officials.

¹³⁴ Government Accountability Office, *School Bullying: Extent of Legal Protections for Vulnerable groups Needs to Be More Fully Assessed*, GA0-12-349, May 2012, pp. 8-10, <http://www.gao.gov/assets/600/591202.pdf>.

¹³⁵ Bryan Vossekuil, et al., *The Final Report and Findings of the Safe School Initiative: Implications for the Prevention of School Attacks in the United States*, Department of Education and Secret Service, Washington D.C. 2004, p. 12.

¹³⁶ 20 USC 7161. Another version of the federal conceptualization of the role of a school resource officer is “a career law enforcement officer, with sworn authority, deployed in community-oriented policing, and assigned by the employing police department or agency to work in collaboration with schools and community-based organizations” for a variety of purpose areas. See 42 U.S.C. § 3796dd-8. Purpose areas are: “(A) to address crime and disorder problems, gangs, and drug activities affecting or occurring in or around an elementary or secondary school; (B) to develop or expand crime prevention efforts for students; (C) to educate likely school-age victims in crime prevention and safety; (D) to develop or expand community justice initiatives for students; (E) to train students in conflict resolution, restorative justice, and crime awareness; (F) to assist in the identification of physical changes in the environment that may reduce crime in or around the school; and (G) to assist in developing school policy that addresses crime and to recommend procedural changes.” As such, the broad notion of a school resource officer may not be uniform across states and localities.

¹³⁷ This proposal can be implemented through executive action, it will not require congressional action. For more information on the COPS program see CRS Report R40709, *Community Oriented Policing Services (COPS): Current Legislative Issues*, by Nathan James.

grant program would provide school districts and law enforcement agencies with funding to hire new school resource officers and school psychologists. This new funding stream could also be used to purchase school safety equipment, develop or expand school safety proposals, and to train crisis intervention teams of law enforcement officers to respond and assist students in a crisis.

School resource officers are popular with the public. A recent Pew research study found that 64% of those surveyed supported having armed security guards or police in more schools.¹³⁸ However, some researchers and civil rights organizations have expressed concern about increasing the presence of school resource officers in schools, arguing that the presence of law enforcement can have a negative impact on the learning environment, and may lead to more school suspensions and referrals to the juvenile justice system.¹³⁹ On December 12, 2012, the Senate Judiciary Subcommittee on the Constitution, Civil Rights and Human Rights, held a hearing titled “Ending the School-to-Prison Pipeline.” In his opening statement Chairman Richard Durbin stated that:

For many young people, our schools are increasingly a gateway to the criminal justice system. This phenomenon is a consequence of a culture of zero tolerance that is widespread in our schools and is depriving many children of their fundamental right to an education.¹⁴⁰

Preparedness and Emergency Planning

Preparedness involves marshaling the necessary resources to ensure that they are available in the event of a crisis, including shooting incidents. This involves

- confirming that the school’s current emergency plan is consistent with the National Incident Management System,
- acquiring the necessary equipment and first aid resources to address a potential crisis,
- establishing procedures to account for the location of all students,
- developing procedures to communicate with staff, families and the media,
- ensuring all school staff are familiar with the school’s layout, safety features, utility shutoffs, etc., and
- conducting practice drills for students and staff.¹⁴¹

One of the proposals included in *The President’s Plan* would provide \$30 million in one-time grants to school districts to help them develop and implement Emergency Management plans. In addition, a current SDFSCA program—Readiness and Emergency Management for schools

¹³⁸ The Pew survey was based on phone interviews with a national sample of 1,502 adults during January 9-13, 2013. The Pew Research Center for the People and the Press, *Gun Rights Proponents More Politically Active: In Gun Control Debate, Several Options Draw Majority Support*, January 14, 2013.

¹³⁹ Data indicate that suspensions for all students have been increasing over time, however, there has been a disproportionate increase for non-Whites, particularly African American students. “The Black/White gap has grown from 3 percentage points in the 1970s to over 10 percentage points in the 2000s. Blacks are now over three times more likely than Whites to be suspended.” Daniel Losen and Russell Skiba, *Suspended Education: Urban Middle Schools in Crisis*, The Civil Rights Project, Los Angeles, CA, September 13, 2010, p. 3.

¹⁴⁰ <http://durbin.senate.gov/public/index.cfm/pressreleases?ID=7dcae2b-b40e-4199-bf20-557b4b1bc650>.

¹⁴¹ <http://www2.ed.gov/admins/lead/safety/emergencyplan/crisisplanning.pdf>.

(REMS) provides competitive grants to LEAs to strengthen and improve their emergency response and crisis plans. No grants were awarded in FY2012.¹⁴²

The Department of Education has developed resources and training materials that are available online to help schools develop emergency plans and respond to crises.¹⁴³ However, these resources are not limited to addressing a school shooting crisis; they are intended to be applicable to a range of potential crises that could impact a school (e.g., natural disaster, pandemics, terrorism).

Indicators of School Crime and Safety data show that many schools have been increasing measures intended to improve school safety. In school year 1999-2000, 54.1% of surveyed students (ages 12-18) reported that their school had security guards and/or assigned police officers; this percentage had increased to 68.1% by school year 2009-2010. Other school security measures that have increased between school year 1999-2000 and school year 2009-2010 include the use of security cameras (from 19.4% to 61.1%); locking or monitoring doors (from 74.6% to 91.7%); and requiring faculty and staff to wear badges or IDs (from 25.4% to 62.9%).¹⁴⁴ *The President's Plan* would set up an interagency group to release a model set of emergency management plans for schools, houses of worship, and institutions of higher education. It would also require the Department of Education to collect and disseminate best practices for addressing school discipline.

Maintaining crisis response capacity is required of schools by 92% of states.¹⁴⁵ Press accounts of school shootings have provided anecdotal evidence indicating that school emergency planning (lock-down procedures and practice drills, etc.) may have minimized deaths and injuries in incidents of mass shootings. However, federal legislation does not regulate the content or quality of these plans, and the comprehensiveness and implementation of these plans vary considerably across school districts.

¹⁴² LEAs that receive a REMS grant are required to form partnerships and collaborate with community organizations, local law enforcement agencies, heads of local government, and offices of public safety, health, and mental health as they review and revise these plans. Plans are required to be coordinated with state or local homeland security plans and must support the implementation of NIMS (for more on NIMS please see the text box titled "Federal Framework for Emergency Management" at the beginning of the "Law Enforcement Implications" section of this report.) REMS grants may be used for training school safety teams and students, conducting facility audits, informing families about emergency response policies, implementing an Incident Command System, conducting drills and tabletop simulation exercises, preparing and distributing copies of crisis plans, and, to a limited extent, for purchasing school safety equipment. Grantees under this program may receive support in managing and implementing their projects and sustaining their efforts over time from the Readiness and Emergency Management for Schools Technical Assistance Center.

¹⁴³ The Department of Education's website includes information on all stages of crisis management: prevention/mitigation, preparedness, response, and recovery. See <http://www2.ed.gov/admins/lead/safety/emergencyplan/index.html>. The Department of Education emphasizes the importance of schools ensuring that their emergency plans and potential responses are coordinated and aligned with first responders and with NIMS.

¹⁴⁴ These data are based on responses from school principals or persons most knowledgeable about crime and safety issues at the school. National Center for Education Statistics, Department of Education, and Bureau of Justice Statistics, Office of Justice Programs, Department of Justice, *Indicators of School Crime and Safety: 2011*, Washington, D.C. February, 2012.

¹⁴⁵ See "Executive Summary" *Journal of School Health*, vol. 78, no. 2 (February 2008), p. 110. The federal SDFSCA State Formula Grant program required LEAs receiving funding under the program to have a comprehensive plan, including "a crisis management plan for responding to violent or traumatic incidents on school grounds ... " However, FY2009 was the last year that funding was provided for State Formula Grants, and as a consequence this federal requirement has lapsed.

Response

An organized and coordinated response to a crisis is based in large part on the prevention and preparedness activities that schools have adopted and implemented. According to the Department of Education, during a crisis (which can include mass shootings), schools should undertake the following activities:

- identifying the type of crisis that is occurring,
- activating the incident management system,
- identifying the appropriate response to the crisis (e.g., evacuation, shelter in place, lockdown, etc.),
- implementing the plans and procedures established in the preparation phase,
- ensuring that important information is being communicated to staff, students and parents, and
- ensuring that emergency first aid is being provided to the injured.¹⁴⁶

Many school shootings last only minutes—as a consequence, teachers and school staff become the immediate responders out of necessity in many crises, sometimes heroically sacrificing their own lives to protect the children in their care. Community first responders, including law enforcement and emergency medical personnel, are also key to ending a crisis as quickly as possible. Among their many tasks, they must immediately subdue the shooter, if he is still alive; and they must coordinate all the emergency services that are required by survivors of the shooting.

Recovery

Recovery efforts are focused on returning students to the learning environment as soon as possible. These efforts include

- restoring school facilities,
- identifying the supports and services needed by students, staff, and families to help them recover from the crisis,
- connecting individuals to services, including mental health and counseling services, and
- allowing sufficient time for recovery and deciding how to commemorate the event.¹⁴⁷

The primary Department of Education program available to schools to assist recovery efforts following a crisis is Project SERV (School Emergency Response to Violence). This program provides education-related services to schools that have been disrupted by a violent or traumatic crisis. Local educational agencies and institutions of higher education (IHEs) are eligible to apply

¹⁴⁶ See <http://www2.ed.gov/admins/lead/safety/crisisplanning.pdf>.

¹⁴⁷ See <http://www2.ed.gov/admins/lead/safety/emergencyplan/crisisplanning.pdf>.

for these grants.¹⁴⁸ Project SERV funds may be used for a wide variety of activities, including mental health assessments, referrals, and services for victims and witnesses of violence; enhanced school security; technical assistance in developing a response to the crisis; and training for teachers and staff in implementing the response.¹⁴⁹

School counselors can also play an important role in facilitating a school community's recovery following a crisis. School counselors can provide an avenue for students to be heard by a caring adult, and can provide needed services or make referrals for services to community providers.¹⁵⁰

The President's Plan includes several provisions that would increase student access to mental health services. It seeks \$150 million in funding for a new *Comprehensive Safety Grants* program. One of the authorized uses of this program would be to hire school counselors. In addition, the proposal seeks \$50 million to train 5,000 additional mental health professionals to serve youth in schools and communities, and \$25 million to provide mental health services for trauma, conflict resolution, and other school-based violence prevention strategies. The proposal would also provide \$55 million for a new Project AWARE which would train teachers and other adults to recognize and help youth with mental illness and work with a variety of community agencies and organizations to ensure youth who need help are connected to service providers.

Concluding Comments

When addressing public mass shootings, many of the policymaking challenges may boil down to two interrelated concerns: (1) a need to determine the effectiveness of existing programs—particularly preventive efforts—and (2) figuring out where to disburse limited resources.

¹⁴⁸ Project SERV provides grants of up to \$50,000 for short term needs (up to six months); and grants of up to \$250,000 for extended services (for a period of up to 18 months). LEAs and IHEs may apply for both Immediate Services funding and Extended Services funding; however, a separate application must be submitted for each.

¹⁴⁹ Appropriations for this program are requested on a no-year basis, to remain available for obligation at the federal level until expended. Thus, funds can be carried over from year to year in the event that there are no school-related crises in a given year.

¹⁵⁰ The Elementary and Secondary School Counseling program received funding of \$52 million in FY2012. It provides competitive grants to LEAs to establish or expand elementary and secondary school counseling programs. Grantees that receive funding under this program must meet several requirements, including having a program that is comprehensive in addressing the counseling and educational needs of all students; increases the range, availability, quality, and quantity of counseling services; expands services through qualified staff; involves public and private entities in collaborative efforts to enhance the program and promote integrated services; and provides appropriate staff training. The President did not request any FY2013 funding for this program, instead proposing to fund a broader Successful, Safe, and Healthy Students program. In addition to the Elementary and Secondary School Counseling program there are two other mental health programs authorized by the Elementary and Secondary Education Act; however they are no longer receiving funding. The Grants for the Integration of Schools and Mental Health Systems program authorizes the Secretary to award competitive grants or enter into contracts or cooperative agreements with SEAs, LEAs, or Indian tribes for the purpose of increasing student access to quality mental health care by developing innovative programs to link local school systems with the local mental health system. The program last received funding of \$6 million in FY2010. The second program is the Promotion of School Readiness through Early Childhood Emotional and Social Development (Foundations for Learning). The Secretary, in consultation with the Secretary of Health and Human Services, is permitted to award Foundations for Learning Grants to LEAs, local councils, community-based organizations, and other public or nonprofit private entities to assist eligible children with school readiness. The program last received funding of \$1 million in FY2010.

The law enforcement and public health fields have lengthy histories of applying preventive approaches to their work. However, the utility of widely employed preventive measures in these areas to fight public mass shootings is far from clear. For example, it appears that intelligence-led policing fails to address this threat. Likewise, preventive public health approaches reliant on research drawn from large data sets, covering broad populations, and examining general trends may not adequately address relatively rare—though devastating—public mass shootings. Given this, policy makers may be interested in supporting the development of useful preventive schemes in the law enforcement and public health arenas.

In the area of education, preventive efforts may be more effective. Fostering a positive school climate can be seen as a key element in preventing shootings. Additionally, the use of school resource officers as a preventive measure is popular among Americans. Yet, there are those who question the impact of such officers on the learning environment.

Policy makers confront the task of disbursing resources among a wide assortment of programs to tackle public mass shootings. Which efforts are more important than others? For example, should prevention trump response in most cases? Should programs that have multiple uses be favored over others that may be seen as more focused (or vice versa)? For example, which should receive more support related to dealing with mass shootings: EMS or efforts to cultivate positive school climate? Which untested programs or approaches should be evaluated thoroughly? Who should evaluate them? How long should funding exist to tackle the threat of mass shootings?

All of this hints at an overarching difficulty confronting experts interested in crafting policy to address mass shootings. Essentially, baseline metrics gauging the effectiveness of policies to thwart public mass shootings are often unclear or unavailable. This lack of clarity starts with identifying the number of shootings, themselves, since no broadly agreed-to definition exists. Several questions flow from this issue. How many people have such incidents victimized? How much does prevention of, preparedness for, and response to such incidents cost the federal government? What measurements can be used to determine the effectiveness of such efforts? In other words, and most importantly, how will we measure our successes or determine our failures in fighting this problem?

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FBI UNIFORM CRIME REPORTS

The FBI Uniform Crime Reports for the years 1995 through 2012 are voluminous public documents that can be accessed at:

www.fbi.gov/about-us/cjis/usc/usc-publications

Murder Victims

Types of Weapons Used, 1991-2011

Page 1

Weapons	1991	1992	1993	1994
Total	21,676	22,716	23,180	22,084
Total firearms	14,373	15,489	16,136	15,463
Handguns	11,497	12,580	13,212	12,775
Rifles	745	706	757	724
Shotguns	1,124	1,111	1,057	953
Other guns	30	42	37	19
Firearms, not stated	977	1,050	1,073	992
Knives or cutting instruments	3,430	3,296	2,967	2,802
Blunt objects (clubs, hammers, etc.)	1,099	1,040	1,022	912
Personal weapons (hands, fists, feet, etc.) ¹	1,202	1,131	1,151	1,165
Poison	12	13	9	10
Explosives	16	19	23	10
Fire	195	203	217	196
Narcotics	22	24	22	22
Drowning	40	29	23	25
Strangulation	327	314	331	287
Asphyxiation	113	115	111	113
Other weapons or weapons not stated	847	1,043	1,168	1,079
	1991	1992	1993	1994
Murders to Firearms	66.31%	68.19%	69.61%	70.02%
Murders to Handguns	53.04%	55.38%	57.00%	57.85%
Murders to Rifles	3.44%	3.11%	3.27%	3.28%
Murders to Shotguns	5.19%	4.89%	4.56%	4.32%
MF to Handguns	79.99%	81.22%	81.88%	82.62%
MF to Rifles	5.18%	4.56%	4.69%	4.68%
MF to Shotguns	7.82%	7.17%	6.55%	6.16%

Murder Victims

Types of Weapons Used, 1991-2011

Page 2

Weapons	1995	1996	1997	1998	1999	2000
Total	20,232	16,967	15,837	14,276	13,011	13,230
Total firearms	13,790	11,453	10,729	9,257	8,480	8,661
Handguns	11,282	9,266	8,441	7,430	6,658	6,778
Rifles	654	561	638	548	400	411
Shotguns	929	685	643	633	531	485
Other guns	29	20	35	16	92	53
Firearms, not stated	896	921	972	630	799	934
Knives or cutting instruments	2,557	2,324	2,055	1,899	1,712	1,782
Blunt objects (clubs, hammers, etc.)	918	792	724	755	756	617
Personal weapons (hands, fists, feet, etc.) ¹	1,201	1,037	1,010	964	885	927
Poison	14	8	6	6	11	8
Explosives	192	15	8	10	-	9
Fire	166	170	140	132	133	134
Narcotics	22	33	37	35	26	20
Drowning	30	24	34	28	28	15
Strangulation	237	248	224	213	190	166
Asphyxiation	137	92	88	101	106	92
Other weapons or weapons not stated	968	771	782	876	684	799
	1995	1996	1997	1998	1999	2000
Murders to Firearms	68.16%	67.50%	67.75%	64.84%	65.18%	65.46%
Murders to Handguns	55.76%	54.61%	53.30%	52.05%	51.17%	51.23%
Murders to Rifles	3.23%	3.31%	4.03%	3.84%	3.07%	3.11%
Murders to Shotguns	4.59%	4.04%	4.06%	4.43%	4.08%	3.67%
MF to Handguns	81.81%	80.90%	78.67%	80.26%	78.51%	78.26%
MF to Rifles	4.74%	4.90%	5.95%	5.92%	4.72%	4.75%
MF to Shotguns	6.74%	5.98%	5.99%	6.84%	6.26%	5.60%

Murder Victims

Types of Weapons Used, 1991-2011

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Weapons	2001	2002	2003	2004	2005
Total	14,061	14,263	14,465	14,210	14,965
Total firearms	8,890	9,528	9,659	9,385	10,158
Handguns	6,931	7,294	7,745	7,286	7,565
Rifles	386	488	392	403	445
Shotguns	511	486	454	507	522
Other guns	59	75	76	117	138
Firearms, not stated	1,003	1,185	992	1,072	1,488
Knives or cutting Instruments	1,831	1,776	1,828	1,866	1,920
Blunt objects (clubs, hammers, etc.)	680	681	650	667	608
Personal weapons (hands, fists, feet, etc.) ¹	961	954	962	943	905
Poison	12	23	9	13	9
Explosives	4	11	4	1	2
Fire	109	103	170	118	125
Narcotics	37	48	44	80	46
Drowning	23	20	17	16	20
Strangulation	153	145	184	156	118
Asphyxiation	116	100	131	109	96
Other weapons or weapons not stated	1,245	874	807	856	958
	2001	2002	2003	2004	2005
Murders to Firearms	63.22%	66.80%	66.77%	66.05%	67.88%
Murders to Handguns	49.29%	51.14%	53.54%	51.27%	50.55%
Murders to Rifles	2.75%	3.42%	2.71%	2.84%	2.97%
Murders to Shotguns	3.63%	3.41%	3.14%	3.57%	3.49%
MF to Handguns	77.96%	76.55%	80.18%	77.63%	74.47%
MF to Rifles	4.34%	5.12%	4.06%	4.29%	4.38%
MF to Shotguns	5.75%	5.10%	4.70%	5.40%	5.14%

Murder Victims

Types of Weapons Used, 1991-2011

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Weapons	2006	2007	2008	2009	2010	2011
Total	15,087	14,916	14,224	13,752	13,164	12,664
Total firearms	10,225	10,129	9,528	9,199	8,874	8,583
Handguns	7,836	7,398	6,800	6,501	6,115	6,220
Rifles	438	453	380	351	367	323
Shotguns	490	457	442	423	366	356
Other guns	107	116	81	96	93	97
Firearms, not stated	1,354	1,705	1,825	1,828	1,933	1,587
Knives or cutting Instruments	1,830	1,817	1,888	1,836	1,732	1,694
Blunt objects (clubs, hammers, etc.)	618	647	603	623	549	496
Personal weapons (hands, fists, feet, etc.) ¹	841	869	875	817	769	728
Polson	12	10	9	7	11	5
Explosives	1	1	11	2	4	12
Fire	117	131	85	98	78	75
Narcotics	48	52	34	52	45	29
Drowning	12	12	16	8	10	15
Strangulation	137	134	89	122	122	85
Asphyxiation	106	109	87	84	98	89
Other weapons or weapons not stated	1,140	1,005	999	904	872	853
	2006	2007	2008	2009	2010	2011
Murders to Firearms	67.77%	67.91%	66.99%	66.89%	67.41%	67.77%
Murders to Handguns	51.94%	49.60%	47.81%	47.27%	46.45%	49.12%
Murders to Rifles	2.90%	3.04%	2.67%	2.55%	2.79%	2.55%
Murders to Shotguns	3.25%	3.06%	3.11%	3.08%	2.78%	2.81%
MF to Handguns	76.64%	73.04%	71.37%	70.67%	68.91%	72.47%
MF to Rifles	4.28%	4.47%	3.99%	3.82%	4.14%	3.76%
MF to Shotguns	4.79%	4.51%	4.64%	4.60%	4.12%	4.15%

Murder Victims

Types of Weapons Used, 1991-2011

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1991-2011

TOTALS

338,980	Total
227,989	Total firearms
177,610	Handguns
10,570	Rifles
13,165	Shotguns
1,428	Other guns
25,216	Firearms, not stated
	Knives or cutting instruments
44,842	
	Blunt objects (clubs, hammers, etc.)
15,457	
	Personal weapons (hands, fists, feet, etc.) ¹
20,297	
217	Poison
355	Explosives
2,895	Fire
778	Narcotics
445	Drowning
3,982	Strangulation
2,193	Asphyxiation
	Other weapons or weapons not stated
19,530	

1991-2011

67.26%	Murders to Firearms
52.40%	Murders to Handguns
3.12%	Murders to Rifles
3.88%	Murders to Shotguns
77.90%	MF to Handguns
4.64%	MF to Rifles
5.77%	MF to Shotguns

Murder Victims by State
Types of Weapons Used, 1995 - 2010 (1 of 2)

		<u>Total Murders</u>	<u>Total Firearms</u>	<u>Handguns</u>	<u>Rifles</u>	<u>Shotguns</u>	<u>Firearms u/k</u>	<u>Knives</u>	<u>Other Weapons</u>	<u>Hands/feet</u>
1995	CT	150	102	96	2	0	4	19	17	12
	NY	1522	1012	916	22	47	27	241	156	113
1996	CT	158	109	87	3	3	16	17	18	14
	NY	305	168	125	12	19	12	72	42	23
1997	CT	124	80	70	5	0	5	18	20	6
	NY	710	408	346	15	39	8	138	108	56
1998	CT	135	79	62	5	3	9	29	17	10
	NY	898	521	473	12	31	5	156	120	101
1999	CT	107	74	66	2	4	2	16	12	5
	NY	864	487	449	10	26	2	166	125	86
2000	CT	95	62	49	4	1	8	16	9	8
	NY	926	563	522	13	25	3	164	124	75
2001	CT	105	72	53	1	3	15	16	11	6
	NY	927	532	489	16	21	6	193	104	98
2002	CT	75	45	32	1	4	8	17	6	7
	NY	860	506	463	20	16	7	181	89	84
2003	CT	78	31	23	0	1	7	14	27	6
	NY	878	545	490	13	10	32	150	105	78
2004	CT	86	47	39	0	2	6	16	18	5
	NY	864	500	419	10	25	46	173	123	68
2005	CT	91	47	27	0	2	18	14	20	10
	NY	868	500	428	10	10	52	188	107	73
2006	CT	100	65	57	0	2	6	18	12	5
	NY	921	400	308	14	8	70	141	351	29
2007	CT	95	57	37	0	4	16	14	20	4
	NY	800	500	113	12	9	366	142	124	34
2008	CT	112	71	46	1	0	24	27	11	3
	NY	835	475	107	12	20	336	184	147	29
2009	CT	107	70	51	0	2	17	17	14	6
	NY	779	481	117	8	13	343	166	109	23
2010	CT	117	65	34	0	4	27	20	21	11
	NY	860	517	135	6	12	364	173	148	22
2011	CT									
	NY									
	CT TTLS	1,735	1,076	829	24	35	188	288	253	118
	NY TTLS	13,817	8,115	5,900	205	331	1,679	2,628	2,082	992
		<u>Total Murders</u>	<u>Total Firearms</u>	<u>Handguns</u>	<u>Rifles</u>	<u>Shotguns</u>	<u>Firearms u/k</u>	<u>Knives</u>	<u>Other Weapons</u>	<u>Hands/feet</u>

Murder Victims by State
Types of Weapons Used, 1995 - 2010 (2 of 2)

<u>M/F</u>	<u>M/H</u>	<u>M/R</u>	<u>M/S</u>	<u>MF/H</u>	<u>MF/R</u>	<u>MF/S</u>		
68%	64%	1%	0%	94%	2%	0%	CT	1995
66%	60%	1%	3%	91%	2%	5%	NY	
69%	55%	2%	2%	80%	3%	3%	CT	1996
55%	41%	4%	6%	74%	7%	11%	NY	
65%	56%	4%	0%	88%	6%	0%	CT	1997
57%	49%	2%	5%	85%	4%	10%	NY	
59%	46%	4%	2%	78%	6%	4%	CT	1998
58%	53%	1%	3%	91%	2%	6%	NY	
69%	62%	2%	4%	89%	3%	5%	CT	1999
56%	52%	1%	3%	92%	2%	5%	NY	
65%	52%	4%	1%	79%	6%	2%	CT	2000
61%	56%	1%	3%	93%	2%	4%	NY	
69%	50%	1%	3%	74%	1%	4%	CT	2001
57%	53%	2%	2%	92%	3%	4%	NY	
60%	43%	1%	5%	71%	2%	9%	CT	2002
59%	54%	2%	2%	92%	4%	3%	NY	
40%	29%	0%	1%	74%	0%	3%	CT	2003
62%	56%	1%	1%	90%	2%	2%	NY	
55%	45%	0%	2%	83%	0%	4%	CT	2004
58%	48%	1%	3%	84%	2%	5%	NY	
52%	30%	0%	2%	57%	0%	4%	CT	2005
58%	49%	1%	1%	86%	2%	2%	NY	
65%	57%	0%	2%	88%	0%	3%	CT	2006
43%	33%	2%	1%	77%	4%	2%	NY	
60%	39%	0%	4%	65%	0%	7%	CT	2007
63%	14%	2%	1%	23%	2%	2%	NY	
63%	41%	1%	0%	65%	1%	0%	CT	2008
57%	13%	1%	2%	23%	3%	4%	NY	
65%	48%	0%	2%	73%	0%	3%	CT	2009
62%	15%	1%	2%	24%	2%	3%	NY	
56%	29%	0%	3%	52%	0%	6%	CT	2010
60%	16%	1%	1%	26%	1%	2%	NY	
							CT	2011
							NY	
62%	48%	1%	2%	77%	2%	3%	CT TTLS	
59%	43%	1%	2%	73%	3%	4%	NY TTLS	
<u>M/F</u>	<u>M/H</u>	<u>M/R</u>	<u>M/S</u>	<u>MF/H</u>	<u>MF/R</u>	<u>MF/S</u>		

An Updated Assessment of the Federal Assault Weapons Ban: Impacts on Gun Markets and Gun Violence, 1994-2003

**Report to the National Institute of Justice,
United States Department of Justice**

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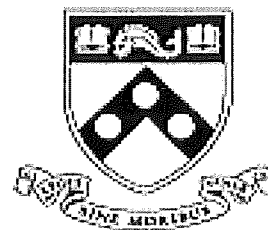


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PREFACE

Gun violence continues to be one of America's most serious crime problems. In 2000, over 10,000 persons were murdered with firearms and almost 49,000 more were shot in the course of over 340,000 assaults and robberies with guns (see the Federal Bureau of Investigation's annual *Uniform Crime Reports* and Simon et al., 2002). The total costs of gun violence in the United States – including medical, criminal justice, and other government and private costs – are on the order of at least \$6 to \$12 billion per year and, by more controversial estimates, could be as high as \$80 billion per year (Cook and Ludwig, 2000).

However, there has been good news in recent years. Police statistics and national victimization surveys show that since the early 1990s, gun crime has plummeted to some of the lowest levels in decades (see the *Uniform Crime Reports* and Rennison, 2001). Have gun controls contributed to this decline, and, if so, which ones?

During the last decade, the federal government has undertaken a number of initiatives to suppress gun crime. These include, among others, the establishment of a national background check system for gun buyers (through the Brady Act), reforms of the licensing system for firearms dealers, a ban on juvenile handgun possession, and Project Safe Neighborhoods, a collaborative effort between U.S. Attorneys and local authorities to attack local gun crime problems and enhance punishment for gun offenders.

Perhaps the most controversial of these federal initiatives was the ban on semiautomatic assault weapons and large capacity ammunition magazines enacted as Title XI, Subtitle A of the *Violent Crime Control and Law Enforcement Act of 1994*. This law prohibits a relatively small group of weapons considered by ban advocates to be particularly dangerous and attractive for criminal purposes. In this report, we investigate the ban's impacts on gun crime through the late 1990s and beyond. This study updates a prior report on the short-term effects of the ban (1994-1996) that members of this research team prepared for the U.S. Department of Justice and the U.S. Congress (Roth and Koper, 1997; 1999).

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The author wishes to thank several people and organizations that assisted this effort in numerous ways. Daniel Woods assisted with data analysis. Jeffrey Roth, who directed our first study of the assault weapons ban, provided advice and editorial input. Additional research assistance was provided by the following former employees of the Urban Institute: Gretchen Moore, David Huffer, Erica Dinger, Darin Reedy, Kate Bunting, Katie Gorie, and Michele Waul. The following persons and organizations provided databases, information, or other resources utilized for this report: Glenn Pierce (Northeastern University), Pamela Shaw and Edward Koch (Baltimore Police Department), Robert Shem (Alaska State Police), Bill McGill and Mallory O'Brien (currently or formerly of the Firearm Injury Center, Medical College of Wisconsin), Rick Ruddell (California State University, Chico), Scott Doyle (Kentucky State Police), Terrence Austin and Joe Vince (currently or formerly of the Bureau of Alcohol, Tobacco, Firearms, and Explosives), Carlos Alvarez and Alan Lynn (Metro-Dade Police Department), Charles Branas (Firearm and Injury Center, University of Pennsylvania), Caroline Harlow (Bureau of Justice Statistics), and Rebecca Knox (Brady Center to Prevent Handgun Violence). Robert Burrows (Bureau of Alcohol, Tobacco, Firearms, and Explosives) and Wain Roberts (Wain Roberts Firearms) shared technical expertise on firearms. Anonymous reviewers for the National Institute of Justice provided thorough and helpful comments on earlier versions of this report, as did Terrence Austin and Robert Burrows of the Bureau of Alcohol, Tobacco, Firearms, and Explosives. Finally, I thank Lois Mock, our National Institute of Justice grant monitor, for her advice and encouragement throughout all of the research that my colleagues and I have conducted on the assault weapons ban.

1. IMPACTS OF THE FEDERAL ASSAULT WEAPONS BAN, 1994-2003: KEY FINDINGS AND CONCLUSIONS

This overview presents key findings and conclusions from a study sponsored by the National Institute of Justice to investigate the effects of the federal assault weapons ban. This study updates prior reports to the National Institute of Justice and the U.S. Congress on the assault weapons legislation.

The Ban Attempts to Limit the Use of Guns with Military Style Features and Large Ammunition Capacities

- Title XI, Subtitle A of the Violent Crime Control and Law Enforcement Act of 1994 imposed a 10-year ban on the “manufacture, transfer, and possession” of certain semiautomatic firearms designated as assault weapons (AWs). The ban is directed at semiautomatic firearms having features that appear useful in military and criminal applications but unnecessary in shooting sports or self-defense (examples include flash hiders, folding rifle stocks, and threaded barrels for attaching silencers). The law bans 18 models and variations by name, as well as revolving cylinder shotguns. It also has a “features test” provision banning other semiautomatics having two or more military-style features. In sum, the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) has identified 118 models and variations that are prohibited by the law. A number of the banned guns are foreign semiautomatic rifles that have been banned from importation into the U.S. since 1989.
- The ban also prohibits most ammunition feeding devices holding more than 10 rounds of ammunition (referred to as large capacity magazines, or LCMs). An LCM is arguably the most functionally important feature of most AWs, many of which have magazines holding 30 or more rounds. The LCM ban’s reach is broader than that of the AW ban because many non-banned semiautomatics accept LCMs. Approximately 18% of civilian-owned firearms and 21% of civilian-owned handguns were equipped with LCMs as of 1994.
- The ban exempts AWs and LCMs manufactured before September 13, 1994. At that time, there were upwards of 1.5 million privately owned AWs in the U.S. and nearly 25 million guns equipped with LCMs. Gun industry sources estimated that there were 25 million pre-ban LCMs available in the U.S. as of 1995. An additional 4.7 million pre-ban LCMs were imported into the country from 1995 through 2000, with the largest number in 1999.
- Arguably, the AW-LCM ban is intended to reduce gunshot victimizations by limiting the national stock of semiautomatic firearms with large ammunition capacities – which enable shooters to discharge many shots rapidly – and other features conducive to criminal uses. The AW provision targets a relatively small number of weapons based on features that have little to do with the weapons’

operation, and removing those features is sufficient to make the weapons legal. The LCM provision limits the ammunition capacity of non-banned firearms.

The Banned Guns and Magazines Were Used in Up to A Quarter of Gun Crimes Prior to the Ban

- AWs were used in only a small fraction of gun crimes prior to the ban: about 2% according to most studies and no more than 8%. Most of the AWs used in crime are assault pistols rather than assault rifles.
- LCMs are used in crime much more often than AWs and accounted for 14% to 26% of guns used in crime prior to the ban.
- AWs and other guns equipped with LCMs tend to account for a higher share of guns used in murders of police and mass public shootings, though such incidents are very rare.

The Ban's Success in Reducing Criminal Use of the Banned Guns and Magazines Has Been Mixed

- Following implementation of the ban, the share of gun crimes involving AWs declined by 17% to 72% across the localities examined for this study (Baltimore, Miami, Milwaukee, Boston, St. Louis, and Anchorage), based on data covering all or portions of the 1995-2003 post-ban period. This is consistent with patterns found in national data on guns recovered by police and reported to ATF.
- The decline in the use of AWs has been due primarily to a reduction in the use of assault pistols (APs), which are used in crime more commonly than assault rifles (ARs). There has not been a clear decline in the use of ARs, though assessments are complicated by the rarity of crimes with these weapons and by substitution of post-ban rifles that are very similar to the banned AR models.
- However, the decline in AW use was offset throughout at least the late 1990s by steady or rising use of other guns equipped with LCMs in jurisdictions studied (Baltimore, Milwaukee, Louisville, and Anchorage). The failure to reduce LCM use has likely been due to the immense stock of exempted pre-ban magazines, which has been enhanced by recent imports.

It is Premature to Make Definitive Assessments of the Ban's Impact on Gun Crime

- Because the ban has not yet reduced the use of LCMs in crime, we cannot clearly credit the ban with any of the nation's recent drop in gun violence. However, the ban's exemption of millions of pre-ban AWs and LCMs ensured that the effects

of the law would occur only gradually. Those effects are still unfolding and may not be fully felt for several years into the future, particularly if foreign, pre-ban LCMs continue to be imported into the U.S. in large numbers.

The Ban's Reauthorization or Expiration Could Affect Gunshot Victimitizations, But Predictions are Tenuous

- Should it be renewed, the ban's effects on gun violence are likely to be small at best and perhaps too small for reliable measurement. AWs were rarely used in gun crimes even before the ban. LCMs are involved in a more substantial share of gun crimes, but it is not clear how often the outcomes of gun attacks depend on the ability of offenders to fire more than ten shots (the current magazine capacity limit) without reloading.
- Nonetheless, reducing criminal use of AWs and especially LCMs could have non-trivial effects on gunshot victimizations. The few available studies suggest that attacks with semiautomatics – including AWs and other semiautomatics equipped with LCMs – result in more shots fired, more persons hit, and more wounds inflicted per victim than do attacks with other firearms. Further, a study of handgun attacks in one city found that 3% of the gunfire incidents resulted in more than 10 shots fired, and those attacks produced almost 5% of the gunshot victims.
- Restricting the flow of LCMs into the country from abroad may be necessary to achieve desired effects from the ban, particularly in the near future. Whether mandating further design changes in the outward features of semiautomatic weapons (such as removing all military-style features) will produce measurable benefits beyond those of restricting ammunition capacity is unknown. Past experience also suggests that Congressional discussion of broadening the AW ban to new models or features would raise prices and production of the weapons under discussion.
- If the ban is lifted, gun and magazine manufacturers may reintroduce AW models and LCMs, perhaps in substantial numbers. In addition, pre-ban AWs may lose value and novelty, prompting some of their owners to sell them in undocumented secondhand markets where they can more easily reach high-risk users, such as criminals, terrorists, and other potential mass murderers. Any resulting increase in crimes with AWs and LCMs might increase gunshot victimizations for the reasons noted above, though this effect could be difficult to measure.

2. PROVISIONS OF THE ASSAULT WEAPONS BAN

2.1. Assault Weapons

Enacted on September 13, 1994, Title XI, Subtitle A of the *Violent Crime Control and Law Enforcement Act of 1994* imposes a 10-year ban on the “manufacture, transfer, and possession” of certain semiautomatic firearms designated as assault weapons (AWs).¹ The AW ban is not a prohibition on all semiautomatics. Rather, it is directed at semiautomatics having features that appear useful in military and criminal applications but unnecessary in shooting sports or self-defense. Examples of such features include pistol grips on rifles, flash hiders, folding rifle stocks, threaded barrels for attaching silencers, and the ability to accept ammunition magazines holding large numbers of bullets.² Indeed, several of the banned guns (e.g., the AR-15 and Avtomat Kalashnikov models) are civilian copies of military weapons and accept ammunition magazines made for those military weapons.

As summarized in Table 2-1, the law specifically prohibits nine narrowly defined groups of pistols, rifles, and shotguns. A number of the weapons are foreign rifles that the federal government has banned from importation into the U.S. since 1989. Exact copies of the named AWs are also banned, regardless of their manufacturer. In addition, the ban contains a generic “features test” provision that generally prohibits other semiautomatic firearms having two or more military-style features, as described in Table 2-2. In sum, the federal Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) has identified 118 model and caliber variations that meet the AW criteria established by the ban.³

Figures 2-1 and 2-2 illustrate a few prominent AWs and their features. Figure 2-1 displays the Intratec TEC-9 assault pistol, the AW most frequently used in crime (e.g., see Roth and Koper 1997, Chapter 2). Figure 2-2 depicts the AK-47 assault rifle, a weapon of Soviet design. There are many variations of the AK-47 produced around the world, not all of which have the full complement of features illustrated in Figure 2-2.

¹ A semiautomatic weapon fires one bullet for each squeeze of the trigger. After each shot, the gun automatically loads the next bullet and cocks itself for the next shot, thereby permitting a somewhat faster rate of fire relative to non-automatic firearms. Semiautomatics are not to be confused with fully automatic weapons (i.e., machine guns), which fire continuously as long as the trigger is held down. Fully automatic weapons have been illegal to own in the United States without a federal permit since 1934.

² Ban advocates stress the importance of pistol grips on rifles and heat shrouds or forward handgrips on pistols, which in combination with large ammunition magazines enable shooters to discharge high numbers of bullets rapidly (in a “spray fire” fashion) while maintaining control of the firearm (Violence Policy Center, 2003). Ban opponents, on the other hand, argue that AW features also serve legitimate purposes for lawful gun users (e.g., see Kopel, 1995).

³ This is based on AWs identified by ATF’s Firearms Technology Branch as of December 1997.

Table 2-1. Firearms Banned by the Federal Assault Weapons Ban

Firearm	Description	1993 Blue Book Price	Pre-Ban Federal Legal Status	Examples of Legal Substitutes
Avtomat Kalashnikov (AK) (by Norinco, Mitchell, Poly Technologies)	Chinese, Russian, other foreign and domestic: .223 or 7.62x39mm caliber, semiauto. rifle; 5, 10, or 30 shot magazine, may be supplied with bayonet	\$550 (generic import); add 10-15% for folding stock models	Imports banned in 1989.	Norinco NHM 90/91 ¹
Uzi, Galil	Israeli: 9mm, .41, or .45 caliber semiauto. carbine, mini-carbine, or pistol. Magazine capacity of 16, 20, or 25, depending on model and type (10 or 20 on pistols).	\$550-\$1050 (Uzi) \$875-\$1150 (Galil)	Imports banned in 1989	Uzi Sporter ²
Beretta AR-70	Italian: .222 or .223 caliber semiauto. paramilitary design rifle; 5, 8, or 30 shot magazine.	\$1050	Imports banned in 1989.	
Colt AR-15	Domestic: primarily .223 caliber paramilitary rifle or carbine; 5 shot magazines, often comes with two 5-shot detachable magazines. Exact copies by DPMS, Eagle, Olympic, and others.	\$825-\$1325	Legal (civilian version of military M-16)	Colt Sporter, Match H-Bar, Target models
Fabrique National FN/FAL, FN/LAR, FNC	Belgian design: .308 caliber semiauto. rifle or .223 combat carbine with 30 shot magazine. Rifle comes with flash hider, 4 position fire selector on automatic models. Discontinued in 1988.	\$1100-\$2500	Imports banned in 1989.	L1A1 Sporter (FN, Century) ²
Steyr AUG	Austrian: .223/5.56mm caliber semiauto. paramilitary design rifle.	\$2500	Imports banned in 1989	
SWD M-10, 11, 11/9, 12	Domestic: 9mm, .380, or .45 caliber paramilitary design semiauto. pistol; 32 shot magazine. Also available in semiauto. carbine and fully automatic variations.	\$215 (M-11/9)	Legal	Cobray PM11, 12
TEC-9, DC9, 22	Domestic: 9mm caliber semiauto. paramilitary design pistol, 10 or 32 shot magazine.; .22 caliber semiauto. paramilitary design pistol, 30 shot magazine.	\$145-\$295	Legal	TEC-AB
Revolving Cylinder Shotguns	Domestic: 12 gauge, 12 shot rotary magazine; paramilitary configuration	\$525 (Street Sweeper)	Legal	

¹ Imports were halted in 1994 under the federal embargo on the importation of firearms from China.² Imports banned by federal executive order, April 1998.

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Table 2-2. Features Test of the Federal Assault Weapons Ban

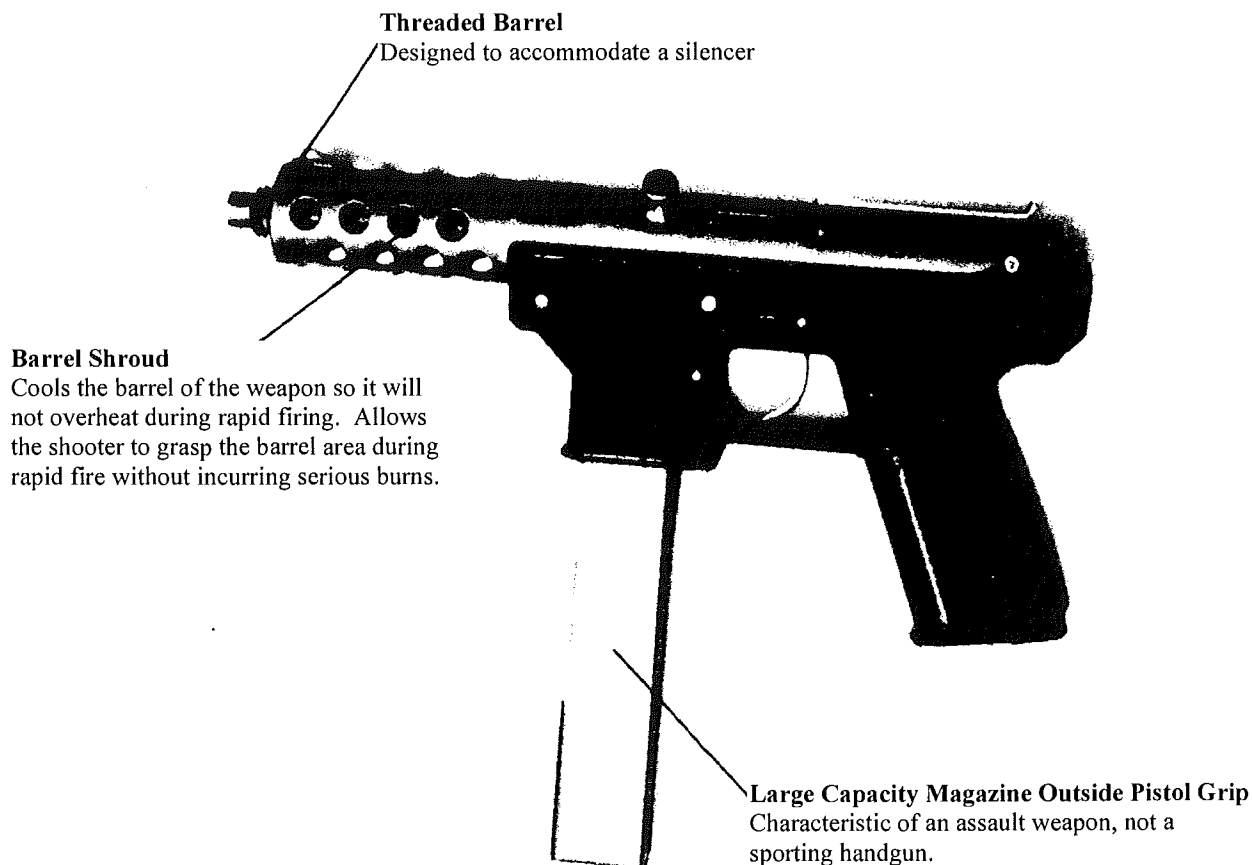
Weapon Category	Military-Style Features (Two or more qualify a firearm as an assault weapon)
Semiautomatic pistols accepting detachable magazines:	<ol style="list-style-type: none"> 1) ammunition magazine that attaches outside the pistol grip 2) threaded barrel capable of accepting a barrel extender, flash hider, forward handgrip, or silencer 3) heat shroud attached to or encircling the barrel 4) weight of more than 50 ounces unloaded 5) semiautomatic version of a fully automatic weapon
Semiautomatic rifles accepting detachable magazines:	<ol style="list-style-type: none"> 1) folding or telescoping stock 2) pistol grip that protrudes beneath the firing action 3) bayonet mount 4) flash hider or threaded barrel designed to accommodate one 5) grenade launcher
Semiautomatic shotguns:	<ol style="list-style-type: none"> 1) folding or telescoping stock 2) pistol grip that protrudes beneath the firing action 3) fixed magazine capacity over 5 rounds 4) ability to accept a detachable ammunition magazine

2.2. Large Capacity Magazines

In addition, the ban prohibits most ammunition feeding devices holding more than 10 rounds of ammunition (referred to hereafter as large capacity magazines, or LCMs).⁴ Most notably, this limits the capacity of detachable ammunition magazines for semiautomatic firearms. Though often overlooked in media coverage of the law, this provision impacted a larger share of the gun market than did the ban on AWs. Approximately 40 percent of the semiautomatic handgun models and a majority of the semiautomatic rifle models being manufactured and advertised prior to the ban were sold with LCMs or had a variation that was sold with an LCM (calculated from Murtz et al., 1994). Still others could accept LCMs made for other firearms and/or by other manufacturers. A national survey of gun owners found that 18% of all civilian-owned firearms and 21% of civilian-owned handguns were equipped with magazines having 10 or more rounds as of 1994 (Cook and Ludwig, 1996, p. 17). The AW provision did not affect most LCM-compatible guns, but the LCM provision limited the capacities of their magazines to 10 rounds.

⁴ Technically, the ban prohibits any magazine, belt, drum, feed strip, or similar device that has the capacity to accept more than 10 rounds of ammunition, or which can be readily converted or restored to accept more than 10 rounds of ammunition. The ban exempts attached tubular devices capable of operating only with .22 caliber rimfire (i.e., low velocity) ammunition.

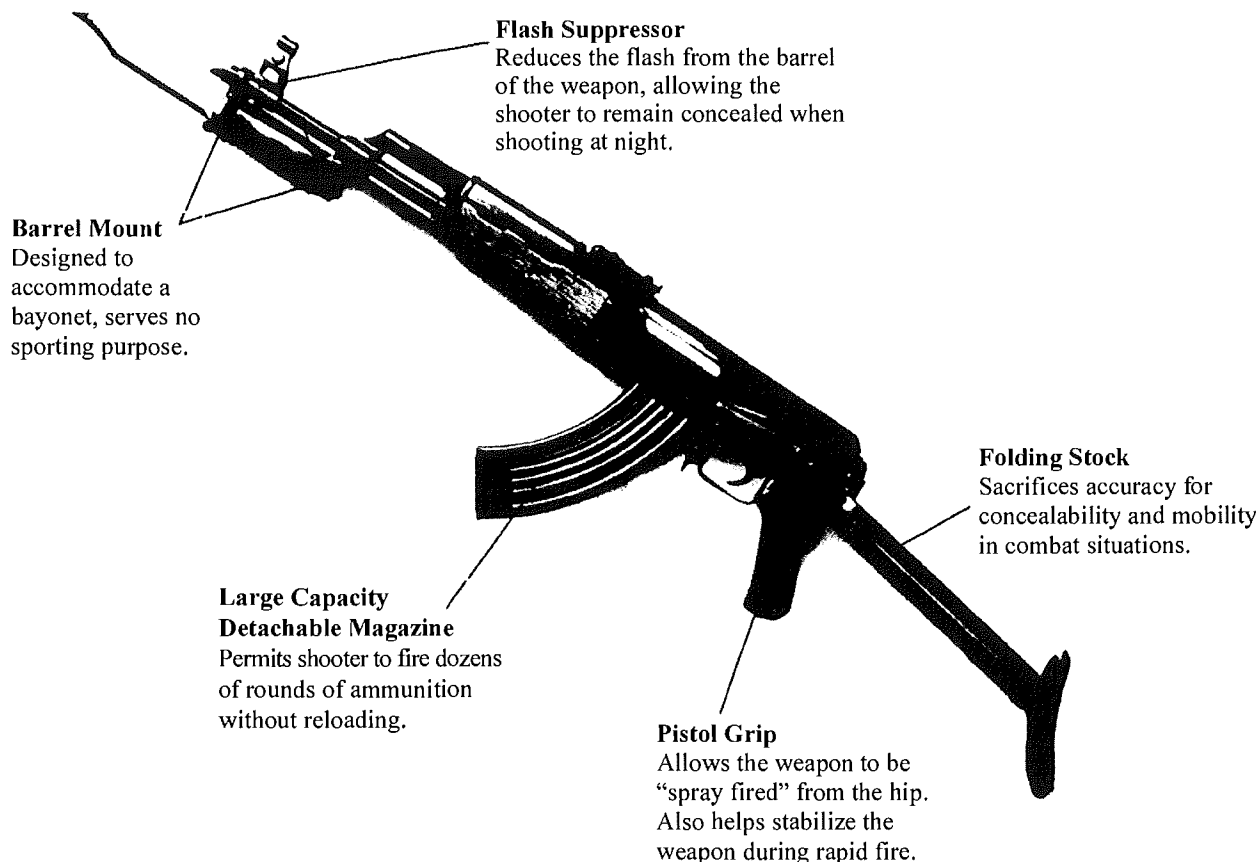
**Figure 2-1. Features of Assault Weapons:
The Intratec TEC-9 Assault Pistol**



Adapted from exhibit of the Center to Prevent Handgun Violence.

As discussed in later chapters, an LCM is perhaps the most functionally important feature of many AWs. This point is underscored by the AW ban's exemptions for semiautomatic rifles that cannot accept a detachable magazine that holds more than five rounds of ammunition and semiautomatic shotguns that cannot hold more than five rounds in a fixed or detachable magazine. As noted by the U.S. House of Representatives, most prohibited AWs came equipped with magazines holding 30 rounds and could accept magazines holding as many as 50 or 100 rounds (U.S. Department of the Treasury, 1998, p. 14). Also, a 1998 federal executive order (discussed below) banned further importation of foreign semiautomatic rifles capable of accepting LCMs made for military rifles. Accordingly, the magazine ban plays an important role in the logic and interpretations of the analyses presented here.

**Figure 2-2. Features of Assault Weapons:
The AK-47 Assault Rifle**



Adapted from exhibit of the Center to Prevent Handgun Violence.

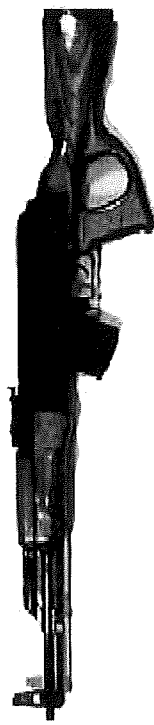
2.3. Foreign Rifles Accepting Large Capacity Military Magazines

In April of 1998, the Clinton administration broadened the range of the AW ban by prohibiting importation of an additional 58 foreign semiautomatic rifles that were still legal under the 1994 law but that can accept LCMs made for military assault rifles like the AK-47 (U.S. Department of the Treasury, 1998).⁵ Figure 2-3 illustrates a few such rifles (hereafter, LCMM rifles) patterned after the banned AK-47 pictured in Figure 2-2. The LCMM rifles in Figure 2-3 do not possess the military-style features incorporated into the AK-47 (such as pistol grips, flash suppressors, and bayonet mounts), but they accept LCMs made for AK-47s.⁶

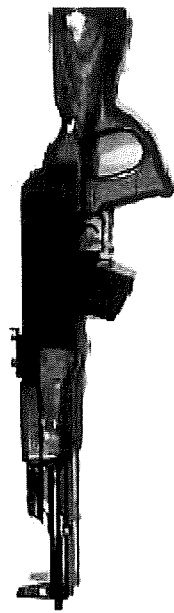
⁵ In the civilian context, AWs are semiautomatic firearms. Many semiautomatic AWs are patterned after military firearms, but the military versions are capable of semiautomatic and fully automatic fire.

⁶ Importation of some LCMM rifles, including a number of guns patterned after the AK-47, was halted in 1994 due to trade sanctions against China (U.S. Department of the Treasury, 1998).

Figure 2-3. Foreign Semiautomatic Rifles Capable of Accepting Large Capacity Military Magazines: AK47 Copies Banned by Executive Order in 1998



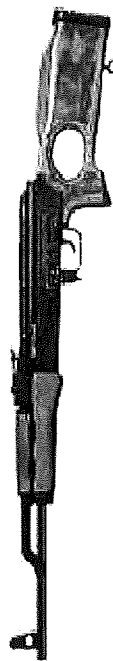
MISR



ARM



MAK90



WUM 1

Taken from U.S. Department of the Treasury (1998)

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2.4. Ban Exemptions

2.4.1. *Guns and Magazines Manufactured Prior to the Ban*

The ban contains important exemptions. AWs and LCMs manufactured before the effective date of the ban are “grandfathered” and thus legal to own and transfer. Around 1990, there were an estimated 1 million privately owned AWs in the U.S. (about 0.5% of the estimated civilian gun stock) (Cox Newspapers, 1989, p. 1; American Medical Association Council on Scientific Affairs, 1992), though those counts probably did not correspond exactly to the weapons prohibited by the 1994 ban. The leading domestic AW producers manufactured approximately half a million AWs from 1989 through 1993, representing roughly 2.5% of all guns manufactured in the U.S. during that time (see Chapter 5).

We are not aware of any precise estimates of the pre-ban stock of LCMs, but gun owners in the U.S. possessed an estimated 25 million guns that were equipped with LCMs or 10-round magazines in 1994 (Cook and Ludwig, 1996, p. 17), and gun industry sources estimated that, including aftermarket items for repairing and extending magazines, there were at least 25 million LCMs available in the United States as of 1995 (Gun Tests, 1995, p. 30). As discussed in Chapter 7, moreover, an additional 4.8 million pre-ban LCMs were imported into the U.S. from 1994 through 2000 under the grandfathering exemption.

2.4.2. *Semiautomatics With Fewer or No Military Features*

Although the law bans “copies or duplicates” of the named gun makes and models, federal authorities have emphasized exact copies. Relatively cosmetic changes, such as removing a flash hider or bayonet mount, are sufficient to transform a banned weapon into a legal substitute, and a number of manufacturers now produce modified, legal versions of some of the banned guns (examples are listed in Table 2-1). In general, the AW ban does not apply to semiautomatics possessing no more than one military-style feature listed under the ban’s features test provision.⁷ For instance, prior to going out of business, Intratec, makers of the banned TEC-9 featured in Figure 2-1, manufactured an AB-10 (“after ban”) model that does not have a threaded barrel or a barrel shroud but is identical to the TEC-9 in other respects, including the ability to accept an ammunition magazine outside the pistol grip (Figure 2-4). As shown in the illustration, the AB-10 accepts grandfathered, 32-round magazines made for the TEC-9, but post-ban magazines produced for the AB-10 must be limited to 10 rounds.

⁷ Note, however, that firearms imported into the country must still meet the “sporting purposes test” established under the federal Gun Control Act of 1968. In 1989, ATF determined that foreign semiautomatic rifles having any one of a number of named military features (including those listed in the features test of the 1994 AW ban) fail the sporting purposes test and cannot be imported into the country. In 1998, the ability to accept an LCM made for a military rifle was added to the list of disqualifying features. Consequently, it is possible for foreign rifles to pass the features test of the federal AW ban but not meet the sporting purposes test for imports (U.S. Department of the Treasury, 1998).

Another example is the Colt Match Target H-Bar rifle (Figure 2-5), which is a legalized version of the banned AR-15 (see Table 2-1). AR-15 type rifles are civilian weapons patterned after the U.S. military's M-16 rifle and were the assault rifles most commonly used in crime before the ban (Roth and Koper, 1997, Chapter 2). The post-ban version shown in Figure 2-5 (one of several legalized variations on the AR-15) is essentially identical to pre-ban versions of the AR-15 but does not have accessories like a flash hider, threaded barrel, or bayonet lug. The one remaining military feature on the post-ban gun is the pistol grip. This and other post-ban AR-15 type rifles can accept LCMs made for the banned AR15, as well as those made for the U.S. military's M-16. However, post-ban magazines manufactured for these guns must hold fewer than 11 rounds.

The LCMM rifles discussed above constituted another group of legalized AW-type weapons until 1998, when their importation was prohibited by executive order. Finally, the ban includes an appendix that exempts by name several hundred models of rifles and shotguns commonly used in hunting and recreation, 86 of which are semiautomatics. While the exempted semiautomatics generally lack the military-style features common to AWs, many take detachable magazines, and some have the ability to accept LCMs.⁸

2.5. Summary

In the broadest sense, the AW-LCM ban is intended to limit crimes with semiautomatic firearms having large ammunition capacities – which enable shooters to discharge high numbers of shots rapidly – and other features conducive to criminal applications. The gun ban provision targets a relatively small number of weapons based on outward features or accessories that have little to do with the weapons' operation. Removing some or all of these features is sufficient to make the weapons legal. In other respects (e.g., type of firing mechanism, ammunition fired, and the ability to accept a detachable magazine), AWs do not differ from other legal semiautomatic weapons. The LCM provision of the law limits the ammunition capacity of non-banned firearms.

⁸ Legislators inserted a number of amendments during the drafting process to broaden the consensus behind the bill (Lennett 1995). Among changes that occurred during drafting were: dropping a requirement to register post-ban sales of the grandfathered guns, dropping a ban on "substantial substitutes" as well as "exact copies" of the banned weapons, shortening the list of named makes and models covered by the ban, adding the appendix list of exempted weapons, and mandating the first impact study of the ban that is discussed below.

Figure 2-4. Post-Ban, Modified Versions of Assault Weapons:
The Intratec AB ("After Ban") Model (See Featured Firearm)

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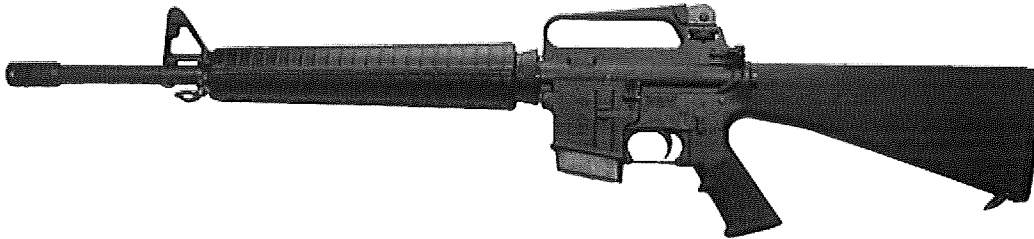
"Cat" -45
45 A.C.P.
Magazine 6+1

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**Figure 2-5. Post-Ban, Modified Versions of Assault Weapons:
The Colt Match Target HBAR Model**



3. CRIMINAL USE OF ASSAULT WEAPONS AND LARGE CAPACITY MAGAZINES BEFORE THE BAN

During the 1980s and early 1990s, AWs and other semiautomatic firearms equipped with LCMs were involved in a number of highly publicized mass murder incidents that raised public concern about the accessibility of high powered, military-style weaponry and other guns capable of discharging high numbers of bullets in a short period of time (Cox Newspapers, 1989; Kleck, 1997, pp.124-126,144; Lenett, 1995). In one of the worst mass murders ever committed in the U.S., for example, James Huberty killed 21 persons and wounded 19 others in a San Ysidro, California MacDonald's restaurant on July 18, 1984 using an Uzi carbine, a shotgun, and another semiautomatic handgun. On September 14, 1989, Joseph Wesbecker, armed with an AK-47 rifle, two MAC-11 handguns, and a number of other firearms, killed 7 persons and wounded 15 others at his former workplace in Louisville, Kentucky before taking his own life. Another particularly notorious incident that precipitated much of the recent debate over AWs occurred on January 17, 1989 when Patrick Purdy used a civilian version of the AK-47 military rifle to open fire on a schoolyard in Stockton, California, killing 5 children and wounding 29 persons.

There were additional high profile incidents in which offenders using semiautomatic handguns with LCMs killed and wounded large numbers of persons. Armed with two handguns having LCMs (and reportedly a supply of extra LCMs), a rifle, and a shotgun, George Hennard killed 22 people and wounded another 23 in Killeen, Texas in October 1991. In a December 1993 incident, a gunman named Colin Ferguson, armed with a handgun and LCMs, opened fire on commuters on a Long Island train, killing 5 and wounding 17.

Indeed, AWs or other semiautomatics with LCMs were involved in 6, or 40%, of 15 mass shooting incidents occurring between 1984 and 1993 in which six or more persons were killed or a total of 12 or more were wounded (Kleck, 1997, pp.124-126, 144). Early studies of AWs, though sometimes based on limited and potentially unrepresentative data, also suggested that AWs recovered by police were often associated with drug trafficking and organized crime (Cox Newspapers, 1989; also see Roth and Koper, 1997, Chapter 5), fueling a perception that AWs were guns of choice among drug dealers and other particularly violent groups. All of this intensified concern over AWs and other semiautomatics with large ammunition capacities and helped spur the passage of AW bans in California, New Jersey, Connecticut, and Hawaii between 1989 and 1993, as well as the 1989 federal import ban on selected semiautomatic rifles. Maryland also passed AW legislation in 1994, just a few months prior to the passage of the 1994 federal AW ban.⁹

Looking at the nation's gun crime problem more broadly, however, AWs and LCMs were used in only a minority of gun crimes prior to the 1994 federal ban, and AWs were used in a particularly small percentage of gun crimes.

⁹ A number of localities around the nation also passed AW bans during this period.

3.1. Criminal Use of Assault Weapons

Numerous studies have examined the use of AWs in crime prior to the federal ban. The definition of AWs varied across the studies and did not always correspond exactly to that of the 1994 law (in part because a number of the studies were done prior to 1994). In general, however, the studies appeared to focus on various semiautomatics with detachable magazines and military-style features. According to these accounts, AWs typically accounted for up to 8% of guns used in crime, depending on the specific AW definition and data source used (e.g., see Beck et al., 1993; Hargarten et al., 1996; Hutson et al., 1994; 1995; McGonigal et al., 1993; New York State Division of Criminal Justice Services, 1994; Roth and Koper, 1997, Chapters 2, 5, 6; Zawitz, 1995). A compilation of 38 sources indicated that AWs accounted for 2% of crime guns on average (Kleck, 1997, pp.112, 141-143).¹⁰

Similarly, the most common AWs prohibited by the 1994 federal ban accounted for between 1% and 6% of guns used in crime according to most of several national and local data sources examined for this and our prior study (see Chapter 6 and Roth and Koper, 1997, Chapters 5, 6):

- Baltimore (all guns recovered by police, 1992-1993): 2%
- Miami (all guns recovered by police, 1990-1993): 3%
- Milwaukee (guns recovered in murder investigations, 1991-1993): 6%
- Boston (all guns recovered by police, 1991-1993): 2%
- St. Louis (all guns recovered by police, 1991-1993): 1%
- Anchorage, Alaska (guns used in serious crimes, 1987-1993): 4%
- National (guns recovered by police and reported to ATF, 1992-1993): 5%¹¹
- National (gun thefts reported to police, 1992-Aug. 1994): 2%
- National (guns used in murders of police, 1992-1994): 7-9%¹²
- National (guns used in mass murders of 4 or more persons, 1992-1994): 4-13%¹³

Although each of the sources cited above has limitations, the estimates consistently show that AWs are used in a small fraction of gun crimes. Even the highest

¹⁰ The source in question contains a total of 48 estimates, but our focus is on those that examined all AWs (including pistols, rifles, and shotguns) as opposed to just assault rifles.

¹¹ For reasons discussed in Chapter 6, the national ATF estimate likely overestimates the use of AWs in crime. Nonetheless, the ATF estimate lies within the range of other presented estimates.

¹² The minimum estimate is based on AW cases as a percentage of all gun murders of police. The maximum estimate is based on AW cases as a percentage of cases for which at least the gun manufacturer was known. Note that AWs accounted for as many as 16% of gun murders of police in 1994 (Roth and Koper, 1997, Chapter 6; also see Adler et al., 1995).

¹³ These statistics are based on a sample of 28 cases found through newspaper reports (Roth and Koper, 1997, Appendix A). One case involved an AW, accounting for 3.6% of all cases and 12.5% of cases in which at least the type of gun (including whether the gun was a handgun, rifle, or shotgun and whether the gun was a semiautomatic) was known. Also see the earlier discussion of AWs and mass shootings at the beginning of this chapter.

estimates, which correspond to particularly rare events such as mass murders and police murders, are no higher than 13%. Note also that the majority of AWs used in crime are assault pistols (APs) rather than assault rifles (ARs). Among AWs reported by police to ATF during 1992 and 1993, for example, APs outnumbered ARs by a ratio of 3 to 1 (see Chapter 6).

The relative rarity of AW use in crime can be attributed to a number of factors. Many AWs are long guns, which are used in crime much less often than handguns. Moreover, a number of the banned AWs are foreign weapons that were banned from importation into the U.S. in 1989. Also, AWs are more expensive (see Table 2-1) and more difficult to conceal than the types of handguns that are used most frequently in crime.

3.1.1. A Note on Survey Studies and Assault Weapons

The studies and statistics discussed above were based primarily on police information. Some survey studies have given a different impression, suggesting substantial levels of AW ownership among criminals and otherwise high-risk juvenile and adult populations, particularly urban gang members (Knox et al., 1994; Sheley and Wright, 1993a). A general problem with these studies, however, is that respondents themselves had to define terms like “military-style” and “assault rifle.” Consequently, the figures from these studies may lack comparability with those from studies with police data. Further, the figures reported in some studies prompt concerns about exaggeration of AW ownership (perhaps linked to publicity over the AW issue during the early 1990s when a number of these studies were conducted), particularly among juvenile offenders, who have reported ownership levels as high as 35% just for ARs (Sheley and Wright, 1993a).¹⁴

Even so, most survey evidence on the actual use of AWs suggests that offenders rarely use AWs in crime. In a 1991 national survey of adult state prisoners, for example, 8% of the inmates reported possessing a “military-type” firearm at some point in the past (Beck et al., 1993, p. 19). Yet only 2% of offenders who used a firearm during their conviction offense reported using an AW for that offense (calculated from pp. 18, 33), a figure consistent with the police statistics cited above. Similarly, while 10% of adult inmates and 20% of juvenile inmates in a Virginia survey reported having owned an AR, none of the adult inmates and only 1% of the juvenile inmates reported having carried them at crime scenes (reported in Zawitz, 1995, p. 6). In contrast, 4% to 20% of inmates surveyed in eight jails across rural and urban areas of Illinois and Iowa reported having used an AR in committing crimes (Knox et al., 1994, p. 17). Nevertheless, even assuming the accuracy and honesty of the respondents’ reports, it is not clear what

¹⁴ As one example of possible exaggeration of AW ownership, a survey of incarcerated juveniles in New Mexico found that 6% reported having used a “military-style rifle” against others and 2.6% reported that someone else used such a rifle against them. However, less than 1% of guns recovered in a sample of juvenile firearms cases were “military” style guns (New Mexico Criminal Justice Statistical Analysis Center, 1998, pp. 17-19; also see Ruddell and Mays, 2003).

weapons they were counting as ARs, what percentage of their crimes were committed with ARs, or what share of all gun crimes in their respective jurisdictions were linked to their AR uses. Hence, while some surveys suggest that ownership and, to a lesser extent, use of AWs may be fairly common among certain subsets of offenders, the overwhelming weight of evidence from gun recovery and survey studies indicates that AWs are used in a small percentage of gun crimes overall.

3.1.2. Are Assault Weapons More Attractive to Criminal Users Than Other Gun Users?

Although AWs are used in a small percentage of gun crimes, some have argued that AWs are more likely to be used in crime than other guns, i.e., that AWs are more attractive to criminal than lawful gun users due to the weapons' military-style features and their particularly large ammunition magazines. Such arguments are based on data implying that AWs are more common among crime guns than among the general stock of civilian firearms. According to some estimates generated prior to the federal ban, AWs accounted for less than one percent of firearms owned by civilians but up to 11% of guns used in crime, based on firearms reported by police to ATF between 1986 and 1993 (e.g., see Cox Newspapers, 1989; Lennett, 1995). However, these estimates were problematic in a number of respects. As discussed in Chapter 6, ATF statistics are not necessarily representative of the types of guns most commonly recovered by police, and ATF statistics from the late 1980s and early 1990s in particular tended to overstate the prevalence of AWs among crime guns. Further, estimating the percentage of civilian weapons that are AWs is difficult because gun production data are not reported by model, and one must also make assumptions about the rate of attrition among the stock of civilian firearms.

Our own more recent assessment indicates that AWs accounted for about 2.5% of guns produced from 1989 through 1993 (see Chapter 5). Relative to previous estimates, this may signify that AWs accounted for a growing share of civilian firearms in the years just before the ban, though the previous estimates likely did not correspond to the exact list of weapons banned in 1994 and thus may not be entirely comparable to our estimate. At any rate, the 2.5% figure is comparable to most of the AW crime gun estimates listed above; hence, it is not clear that AWs are used disproportionately in most crimes, though AWs still seem to account for a somewhat disproportionate share of guns used in murders and other serious crimes.

Perhaps the best evidence of a criminal preference for AWs comes from a study of young adult handgun buyers in California that found buyers with minor criminal histories (i.e., arrests or misdemeanor convictions that did not disqualify them from purchasing firearms) were more than twice as likely to purchase APs than were buyers with no criminal history (4.6% to 2%, respectively) (Wintemute et al., 1998a). Those with more serious criminal histories were even more likely to purchase APs: 6.6% of those who had been charged with a gun offense bought APs, as did 10% of those who had been charged with two or more serious violent offenses. AP purchasers were also more likely to be arrested subsequent to their purchases than were other gun purchasers.

Among gun buyers with prior charges for violence, for instance, AP buyers were more than twice as likely as other handgun buyers to be charged with any new offense and three times as likely to be charged with a new violent or gun offense. To our knowledge, there have been no comparable studies contrasting AR buyers with other rifle buyers.

3.2. Criminal Use of Large Capacity Magazines

Relative to the AW issue, criminal use of LCMs has received relatively little attention. Yet the overall use of guns with LCMs, which is based on the combined use of AWs and non-banned guns with LCMs, is much greater than the use of AWs alone. Based on data examined for this and a few prior studies, guns with LCMs were used in roughly 14% to 26% of most gun crimes prior to the ban (see Chapter 8; Adler et al., 1995; Koper, 2001; New York Division of Criminal Justice Services, 1994).

- Baltimore (all guns recovered by police, 1993): 14%
- Milwaukee (guns recovered in murder investigations, 1991-1993): 21%
- Anchorage, Alaska (handguns used in serious crimes, 1992-1993): 26%
- New York City (guns recovered in murder investigations, 1993): 16-25%¹⁵
- Washington, DC (guns recovered from juveniles, 1991-1993): 16%¹⁶
- National (guns used in murders of police, 1994): 31%-41%¹⁷

Although based on a small number of studies, this range is generally consistent with national survey estimates indicating approximately 18% of all civilian-owned guns and 21% of civilian-owned handguns were equipped with LCMs as of 1994 (Cook and Ludwig, 1996, p. 17). The exception is that LCMs may have been used disproportionately in murders of police, though such incidents are very rare.

As with AWs and crime guns in general, most crime guns equipped with LCMs are handguns. Two handgun models manufactured with LCMs prior to the ban (the Glock 17 and Ruger P89) were among the 10 crime gun models most frequently recovered by law enforcement and reported to ATF during 1994 (ATF, 1995).

¹⁵ The minimum estimate is based on cases in which discharged firearms were recovered, while the maximum estimate is based on cases in which recovered firearms were positively linked to the case with ballistics evidence (New York Division of Criminal Justice Services, 1994).

¹⁶ Note that Washington, DC prohibits semiautomatic firearms accepting magazines with more than 12 rounds (and handguns in general).

¹⁷ The estimates are based on the sum of cases involving AWs or other guns sold with LCMs (Adler et al., 1995, p.4). The minimum estimate is based on AW-LCM cases as a percentage of all gun murders of police. The maximum estimate is based on AW-LCM cases as a percentage of cases in which the gun model was known.

3.3. Summary

In sum, AWs and LCMs were used in up to a quarter of gun crimes prior to the 1994 AW-LCM ban. By most estimates, AWs were used in less than 6% of gun crimes even before the ban. Some may have perceived their use to be more widespread, however, due to the use of AWs in particularly rare and highly publicized crimes such as mass shootings (and, to a lesser extent, murders of police), survey reports suggesting high levels of AW ownership among some groups of offenders, and evidence that some AWs are more attractive to criminal than lawful gun buyers.

In contrast, guns equipped with LCMs – of which AWs are a subset – are used in roughly 14% to 26% of gun crimes. Accordingly, the LCM ban has greater potential for affecting gun crime. However, it is not clear how often the ability to fire more than 10 shots without reloading (the current magazine capacity limit) affects the outcomes of gun attacks (see Chapter 9). All of this suggests that the ban's impact on gun violence is likely to be small.

4. OVERVIEW OF STUDY DESIGN, HYPOTHESES, AND PRIOR FINDINGS

Section 110104 of the AW-LCM ban directed the Attorney General of the United States to study the ban's impact and report the results to Congress within 30 months of the ban's enactment, a provision which was presumably motivated by a sunset provision in the legislation (section 110105) that will lift the ban in September 2004 unless Congress renews the ban. In accordance with the study requirement, the National Institute of Justice (NIJ) awarded a grant to the Urban Institute to study the ban's short-term (i.e., 1994-1996) effects. The results of that study are available in a number of reports, briefs, and articles written by members of this research team (Koper and Roth, 2001a; 2001b; 2002a; Roth and Koper, 1997; 1999).¹⁸ In order to understand the ban's longer-term effects, NIJ provided additional funding to extend the AW research. In 2002, we delivered an interim report to NIJ based on data extending through at least the late 1990s (Koper and Roth, 2002b). This report is based largely on the 2002 interim report, but with various new and updated analyses extending as far as 2003. It is thus a compilation of analyses conducted between 1998 and 2003. The study periods vary somewhat across the analyses, depending on data availability and the time at which the data were collected.

4.1. Logical Framework for Research on the Ban

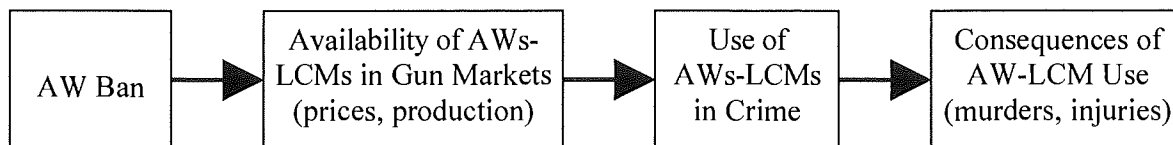
An important rationale for the AW-LCM ban is that AWs and other guns equipped with LCMs are particularly dangerous weapons because they facilitate the rapid firing of high numbers of shots, thereby potentially increasing injuries and deaths from gun violence. Although AWs and LCMs were used in only a modest share of gun crimes before the ban, it is conceivable that a decrease in their use might reduce fatal and non-fatal gunshot victimizations, even if it does not reduce the overall rate of gun crime. (In Chapter 9, we consider in more detail whether forcing offenders to substitute other guns and smaller magazines can reduce gun deaths and injuries.)

It is not clear how quickly such effects might occur, however, because the ban exempted the millions of AWs and LCMs that were manufactured prior to the ban's effective date in September 1994. This was particularly a concern for our first study, which was based on data extending through mid-1996, a period potentially too short to observe any meaningful effects. Consequently, investigation of the ban's effects on gun markets – and, most importantly, how they have affected criminal use of AWs and LCMs – has played a central role in this research. The general logic of our studies, illustrated in Figure 4-1, has been to first assess the law's impact on the availability of AWs and LCMs, examining price and production (or importation) indices in legal markets and relating them to trends in criminal use of AWs and LCMs. In turn, we can relate these market patterns to trends in the types of gun crimes most likely to be affected by changes in the use of AWs and LCMs. However, we cannot make definitive assessments of the

¹⁸ The report to Congress was the Roth and Koper (1997) report.

ban's impact on gun violence until it is clear that the ban has indeed reduced criminal use of AWs and LCMs.

Figure 4-1. Logic Model for Research on the Assault Weapons Ban



4.2. Hypothesized Market Effects

4.2.1. *A General Description of Gun Markets*

Firearms are distributed in markets commonly referred to as primary and secondary markets. Illicit gun transactions occur in both markets. Primary markets include wholesale and retail transactions by federally-licensed gun dealers, referred to as federal firearm licensees. Licensed dealers are required to, among things, follow federal and state background procedures to verify the eligibility of purchasers, observe any legally required waiting period prior to making transfers, and maintain records of gun acquisitions and dispositions (though records are not required for sales of ammunition magazines).

Despite these restrictions, survey data suggest that as many as 21% of adult gun offenders obtained guns from licensed dealers in the years prior to the ban (Harlow, 2001, p. 6; also see Wright and Rossi, 1986, pp. 183,185). In more recent years, this figure has declined to 14% (Harlow, 2001, p. 6), due likely to the Brady Act, which established a national background check system for purchases from licensed dealers, and reforms of the federal firearms licensing system that have greatly reduced the number of licensed gun dealers (see ATF, 2000; Koper, 2002). Some would-be gun offenders may be legally eligible buyers at the time of their acquisitions, while others may seek out corrupt dealers or use other fraudulent or criminal means to acquire guns from retail dealers (such as recruiting a legally entitled buyer to act as a "straw purchaser" who buys a gun on behalf of a prohibited buyer).

Secondary markets encompass second-hand gun transactions made by non-licensed individuals.¹⁹ Secondary market participants are prohibited from knowingly transferring guns to ineligible purchasers (e.g., convicted felons and drug abusers). However, secondary transfers are not subject to the federal record-keeping and background check requirements placed on licensed dealers, thus making the secondary

¹⁹ Persons who make only occasional sales of firearms are not required to obtain a federal firearms license (ATF, 2000, p. 11).

market almost entirely unregulated and, accordingly, a better source of guns for criminal users.²⁰ In the secondary market, ineligible buyers may obtain guns from a wide variety of legitimate or illegitimate gun owners: relatives, friends, fences, drug dealers, drug addicts, persons selling at gun shows, or other strangers (e.g., see Wright and Rossi, 1986; Sheley and Wright, 1993a). Of course, ineligible purchasers may also steal guns from licensed gun dealers and private gun owners.

Secondary market prices are generally lower than primary market prices (because the products are used), though the former may vary substantially across a range of gun models, places, circumstances, and actors. For example, street prices of AWs and other guns can be 3 to 6 times higher than legal retail prices in jurisdictions with strict gun controls and lower levels of gun ownership (Cook et al., 1995, p. 72). Nonetheless, experts note that primary and secondary market prices correspond to one another, in that relatively expensive guns in the primary market are also relatively expensive in the secondary market. Moreover, in any given locality, trends in secondary market prices can be expected to track those in the primary market because a rise in primary market prices for new weapons will increase demand for used weapons and therefore increase secondary market prices (Cook et al., 1995, p. 71).

4.2.2. *The AW-LCM Ban and Gun Markets*

In the long term, we can expect prices of the banned guns and magazines to gradually rise as supplies dwindle. As prices rise, more would-be criminal users of AWs and LCMs will be unable or unwilling to pay the higher prices. Others will be discouraged by the increasing non-monetary costs (i.e., search time) of obtaining the weapons. In addition, rising legal market prices will undermine the incentive for some persons to sell AWs and LCMs to prohibited buyers for higher premiums, thereby bidding some of the weapons away from the channels through which they would otherwise reach criminal users. Finally, some would-be AW and LCM users may become less willing to risk confiscation of their AWs and LCMs as the value of the weapons increases. Therefore, we expect that over time diminishing stocks and rising prices will lead to a reduction in criminal use of AWs and LCMs.²¹

²⁰ Some states require that secondary market participants notify authorities about their transactions. Even in these states, however, it is not clear how well these laws are enforced.

²¹ We would expect these reductions to be apparent shortly after the price increases (an expectation that, as discussed below, was confirmed in our earlier study) because a sizeable share of guns used in crime are used within one to three years of purchase. Based on analyses of guns recovered by police in 17 cities, ATF (1997, p. 8) estimates that guns less than 3 years old (as measured by the date of first retail sale) comprise between 22% and 43% of guns seized from persons under age 18, between 30% and 54% of guns seized from persons ages 18 to 24, and between 25% and 46% of guns seized from persons over 24. In addition, guns that are one year old or less comprise the largest share of relatively new crime guns (i.e., crime guns less than three years old) (Pierce et al., 1998, p. 11). Similar data are not available for secondary market transactions, but such data would shorten the estimated time from acquisition to criminal use.

However, the expected timing of the market processes is uncertain. We can anticipate that AW and LCM prices will remain relatively stable for as long as the supply of grandfathered weapons is adequate to meet demand. If, in anticipation of the ban, gun manufacturers overestimated the demand for AWs and LCMs and produced too many of them, prices might even fall before eventually rising. Market responses can be complicated further by the continuing production of legal AW substitute models by some gun manufacturers. If potential AW buyers are content with an adequate supply of legal AW-type weapons having fewer military features, it will take longer for the grandfathered AW supply to constrict and for prices to rise. Similarly, predicting LCM price trends is complicated by the overhang of military surplus magazines that can fit civilian weapons (e.g., military M-16 rifle magazines that can be used with AR-15 type rifles) and by the market in reconditioned magazines. The “aftermarket” in gun accessories and magazine extenders that can be used to convert legal guns and magazines into banned ones introduces further complexity to the issue.

4.3. Prior Research on the Ban’s Effects

To summarize the findings of our prior study, Congressional debate over the ban triggered pre-ban speculative price increases of upwards of 50% for AWs during 1994, as gun distributors, dealers, and collectors anticipated that the weapons would become valuable collectors’ items. Analysis of national and local data on guns recovered by police showed reductions in criminal use of AWs during 1995 and 1996, suggesting that rising prices made the weapons less accessible to criminal users in the short-term aftermath of the ban.

However, the speculative increase in AW prices also prompted a pre-ban boost in AW production; in 1994, AW manufacturers produced more than twice their average volume for the 1989-1993 period. The oversupply of grandfathered AWs, the availability of the AW-type legal substitute models mentioned earlier, and the steady supply of other non-banned semiautomatics appeared to have saturated the legal market, causing advertised prices of AWs to fall to nearly pre-speculation levels by late 1995 or early 1996. This combination of excess supply and reduced prices implied that criminal use of AWs might rise again for some period around 1996, as the large stock of AWs would begin flowing from dealers’ and speculators’ gun cases to the secondary markets where ineligible purchasers may obtain guns more easily.

We were not able to gather much specific data about market trends for LCMs. However, available data did reveal speculative, pre-ban price increases for LCMs that were comparable to those for AWs (prices for some LCMs continued to climb into 1996), leading us to speculate – incorrectly, as this study will show (see Chapter 8) – that there was some reduction in LCM use after the ban.²²

²² To our knowledge, there have been two other studies of changes in AW and LCM use during the post-ban period. One study reported a drop in police recoveries of AWs in Baltimore during the first half of 1995 (Weil and Knox, 1995), while the other found no decline in recoveries of AWs or LCMs in Milwaukee homicide cases as of 1996 (Hargarten et al., 2000). Updated analyses for both of these cities

Determining whether the reduction in AW use (and perhaps LCM use) following the ban had an impact on gun violence was more difficult. The gun murder rate dropped more in 1995 (the first year following the ban) than would have been expected based on preexisting trends, but the short post-ban follow-up period available for the analysis precluded a definitive assessment as to whether the reduction was statistically meaningful (see especially Koper and Roth, 2001a). The reduction was also larger than would be expected from the AW-LCM ban, suggesting that other factors were at work in accelerating the decline. Using a number of national and local data sources, we also examined trends in measures of victims per gun murder incident and wounds per gunshot victim, based on the hypothesis that these measures might be more sensitive to variations in the use of AWs and LCMs. These analyses revealed no ban effects, thus failing to show confirming evidence of the mechanism through which the ban was hypothesized to affect the gun murder rate. However, newly available data presented in subsequent chapters suggest these assessments may have been premature, because any benefits from the decline in AW use were likely offset by steady or rising use of other guns equipped with LCMs, a trend that was not apparent at the time of our earlier study.

We cautioned that the short-term patterns observed in the first study might not provide a reliable guide to longer-term trends and that additional follow-up was warranted. Two key issues to be addressed were whether there had been a rebound in AW use since the 1995-1996 period and, if so, whether that rebound had yet given way to a long-term reduction in AW use. Another key issue was to seek more definitive evidence on short and long-term trends in the availability and criminal use of LCMs. These issues are critical to assessing the effectiveness of the AW-LCM ban, but they also have broader implications for other important policy concerns, namely, the establishment of reasonable timeframes for sunset and evaluation provisions in legislation. In other words, how long is long enough in evaluating policy and setting policy expiration dates?

are presented in Chapters 6 and 8.

5. MARKET INDICATORS FOR ASSAULT WEAPONS: PRICES AND PRODUCTION

This chapter assesses the ban's impact on the availability of AWs in primary and secondary markets, as measured by trends in AW prices and post-ban production of legal AW substitute models. Understanding these trends is important because they influence the flow of grandfathered weapons to criminals and the availability of non-banned weapons that are close substitutes for banned ones. In the next chapter, we assess the impact of these trends on criminal use of AWs, as approximated by statistics on gun seizures by police. (Subsequent chapters present similar analyses for LCMs.)

Following our previous methods, we compare trends for AWs to trends for various non-banned firearms. The AW analyses generally focus on the most common AWs formerly produced in the U.S., including Intratec and SWD-type APs and AR-15-type ARs produced by Colt and others. In addition, we selected a small number of domestic pistol and rifle models made by Calico and Feather Industries that fail the features test provision of the AW legislation and that were relatively common among crime guns reported by law enforcement agencies to ATF prior to the ban (see Roth and Koper, 1997, Chapter 5). Together, this group of weapons represented over 80% of AWs used in crime and reported to ATF from 1993 through 1996, and the availability of these guns was not affected by legislation or regulations predating the AW-LCM ban.²³ We also examine substitution of legalized, post-ban versions of these weapons, including the Intratec AB-10 and Sport-22, FMJ's PM models (substitutes for the SWD group), Colt Sporters, Calico Liberty models, and others. We generally did not conduct comparative analyses of named foreign AWs (the Uzi, Galil, and AK weapons) because the 1989 federal import ban had already limited their availability, and their legal status was essentially unchanged by the 1994 ban.

The exact gun models and time periods covered vary across the analyses (based on data availability and the time at which data were collected). The details of each analysis are described in the following sections.

5.1. Price Trends for Assault Weapons and Other Firearms

To approximate trends in the prices at which AWs could be purchased throughout the 1990s, we collected annual price data for several APs, ARs, and non-banned comparison firearms from the *Blue Book of Gun Values* (Fjestad, 1990-1999). The *Blue Book* provides national average prices for an extensive list of new and used firearms based on information collected at gun shows and input provided by networks of dealers

²³ The Intratec group includes weapons made by AA Arms. The SWD group contains related models made by Military Armaments Corporation/Ingram and RPB Industries. The AR-15 group contains models made by Colt and copies made by Bushmaster, Olympic Arms, Eagle Arms, SGW Enterprises, Essential Arms, DPMS, and Sendra.

and collectors. The *Blue Book* is utilized widely in the gun industry, though prices in any given locality may differ notably from the averages appearing in the *Blue Book*.

To assess time trends in gun prices, we conducted hedonic price analyses (Berndt, 1990) in which the gun prices were regressed upon a series of year and model indicators. The coefficients for the year indicators show annual changes in the prices of the guns relative to 1994 (the year the ban went into effect), controlling for time-stable differences in the prices of various gun models. Since manufacturers' suggested retail prices (MSRP) were not available for banned AWs during post-ban years, we utilized prices for AWs in 100% condition for all years.²⁴ For non-banned firearms, we used MSRP.²⁵ For all models, we divided the gun prices by annual values of the gross domestic product price deflator provided in the December 2001 and 2000 issues of *Economic Indicators* and logged these adjusted prices.

Each model presented below is based on data pooled across a number of firearm models and years, so that observation P_{jt} represents the price of gun model j during year t . We weighted each observation, P_{jt} , based on cumulative estimates of the production of model j from 1985 or 1986 (depending on data availability) through year t using data provided by gun manufacturers to ATF and published by the Violence Policy Center (1999).^{26, 27}

²⁴ Project staff also collected prices of weapons in 80% condition. However, the levels and annual changes of the 80% prices were very highly correlated (0.86 to 0.99) with those of the 100% condition prices. Therefore, we limited the analysis to the 100% prices.

²⁵ We utilized prices for the base model of each AW and comparison firearm (in contrast to model variations with special features or accessories).

²⁶ The regression models are based on equal numbers of observations for each gun model. Hence, unweighted regressions would give equal weight to each gun model. This does not seem appropriate, however, because some guns are produced in much larger numbers than are other guns. Weighting the regression models by production estimates should therefore give us a better sense of what one could "typically" expect to pay for a generic gun in each study category (e.g., a generic assault pistol).

²⁷ Several of the selected weapons began production in 1985 or later. In other cases, available production data extended back to only the mid-1980s. Published production figures for handguns are broken down by type (semiautomatic, revolver) and caliber and thus provide perfect or very good approximations of production for the handgun models examined in this study. Rifle production data, however, are not disaggregated by gun type, caliber, or model. For the ARs under study, the production counts should be reasonable approximations of AR production because most of the rifles made by the companies in question prior to the ban were ARs. The rifles used in the comparison (i.e., non-banned) rifle analysis are made by companies (Sturm Ruger, Remington, and Marlin) that produce numerous semiautomatic and non-semiautomatic rifle models. However, the overall rifle production counts for these companies should provide some indication of differences in the availability of the comparison rifles relative to one another. Because production data were available through only 1997 at the time this particular analysis was conducted (Violence Policy Center, 1999), we used cumulative production through 1997 to weight the 1998 and 1999 observations for the comparison handgun and comparison rifle models. This was not a consideration for AWs since their production ceased in 1994 (note that the AW production figures for 1994 may include some post-ban legal substitute models manufactured after September 13, 1994). Nonetheless, weighting had very little effect on the inferences from either of the comparison gun models.

5.1.1. Assault Pistol Prices

The analysis of AP prices focuses on the Intratec TEC-9/DC-9, TEC-22, SWD M-11/9, and Calico M950 models. Regression results are shown in Table 5-1, while Figure 5-1 graphically depicts the annual trend in prices for the period 1990 through 1999. None of the yearly coefficients in Table 5-1 is statistically significant, thus indicating that average annual AP prices did not change during the 1990s after adjusting for inflation. Although the model is based on a modest number of observations ($n=40$) that may limit its statistical power (i.e., its ability to detect real effects), the size of the yearly coefficients confirm that prices changed very little from year to year. The largest yearly coefficient is for 1990, and it indicates that AP prices were only 4% higher in 1990 than in 1994.²⁸

This stands in contrast to our earlier finding (Roth and Koper, 1997, Chapter 4) that prices for SWD APs may have risen by as much as 47% around the time of the ban. However, the earlier analyses were based on semi-annual or quarterly analyses advertised by gun distributors and were intended to capture short-term fluctuations in price that assumed greater importance in the context of the first AW study, which could examine only short-term ban outcomes. *Blue Book* editions released close in time to the ban (e.g., 1995) also cautioned that prices for some AWs were volatile at that time. This study emphasizes longer-term price trends, which appear to have been more stable.²⁹

²⁸ To interpret the coefficient of each indicator variable in terms of a percentage change in the dependent variable, we exponentiate the coefficient, subtract 1 from the exponentiated value, and multiply the difference by 100.

²⁹ Although the earlier analysis of AP prices focused on the greatest variations observed in semi-annual prices, the results also provide indications that longer-term trends were more stable. Prices in 1993, for example, averaged roughly 73% of the peak prices reached at the time the ban was implemented (i.e., late 1994), while prices in early 1994 and late 1995 averaged about 83% and 79% of the peak prices, respectively. Hence, price variation was much more modest after removing the peak periods around the time of the ban's implementation (i.e., late 1994 and early 1995). The wider range of APs used in the current study may also be responsible for some of the differences between the results of this analysis and the prior study.

Table 5-1. Regression of Assault Pistol and Comparison Handgun Prices on Annual Time Indicators, 1990-1999, Controlling for Gun Model

	Assault Pistols (n=40)		Comparison Handguns (n=38)	
	Estimate	T Value	Estimate	T Value
Constant	1.56	26.94***	-0.21	-6.81***
1990	0.04	1.07	0.12	2.07**
1991	0.01	0.30	0.09	1.79*
1992	-0.01	-0.32	0.05	1.30
1993	-0.03	-1.09	0.02	0.48
1995	0.01	0.22	-0.02	-0.48
1996	-0.01	-0.45	-0.09	-2.69***
1997	-0.03	-1.13	-0.11	-3.26***
1998	0.00	-0.10	-0.07	-1.99*
1999	-0.02	-0.58	-0.14	-4.02***
Tec-9	-0.67	-11.95***		
Tec-22	-0.89	-15.59***		
SWD	-0.64	-11.49***		
Davis P32			0.09	3.63***
Davis P380			0.20	8.20***
Lorcin L380			0.29	11.35***
F value	27.79		16.24	
(p value)	<.01		<.01	
Adj. R-square	0.89		0.83	

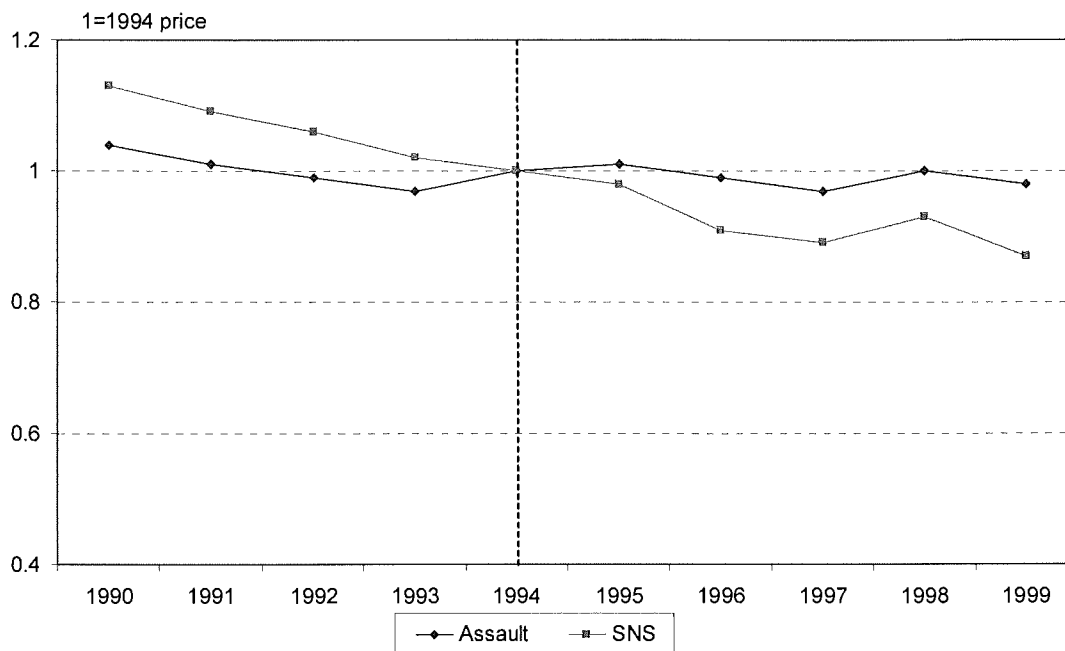
Time indicators are interpreted relative to 1994. Assault pistol model indicators are interpreted relative to Calico 9mm. Comparison handgun models are interpreted relative to Lorcin .25 caliber.

* Statistically significant at $p \leq .10$.

** Statistically significant at $p \leq .05$.

*** Statistically significant at $p \leq .01$.

Figure 5-1. Annual Price Trends for Assault Pistols and SNS Handguns, 1990-1999



Assault pistol prices based on TEC9, TEC22, SWD M11/9, and Calico M950. SNS prices based on Davis P32 and P380 and Lorcin L25 and L380.

5.1.2. Comparison Handgun Prices

For comparison, Table 5-1 and Figure 5-1 illustrate price trends for a number of non-banned, cheaply priced, and readily concealable semiautomatic handgun models: the Davis P32 and P380 and the Lorcin L25 and L380. Such guns are often referred to as Saturday night specials (SNS). By a number of accounts, SNS-type guns, and Davis and Lorcin models in particular, are among the guns most frequently used in crime (ATF, 1995; 1997; Kennedy et al., 1996; Wintemute, 1994). Although the differences between APs and SNS handguns (particularly the fact that most SNS handguns do not have LCMs) suggest they are likely to be used by gun consumers with different levels of firearms experience and sophistication, the SNS guns are arguably a good comparison group for APs because both groups of guns are particularly sensitive to criminal demand. Like AP buyers, SNS buyers are more likely than other gun buyers to have criminal histories and to be charged with new offenses, particularly violent or firearm offenses, subsequent to their purchases (Wintemute et al., 1998b).

Prices of SNS handguns dropped notably throughout the 1990s. Prices for SNS handguns were 13% higher in 1990 than in 1994. Prices then dropped another 13% from 1994 to 1999. This suggests that although AP prices remained generally stable throughout the 1990s, they increased relative to prices of other guns commonly used in crime. We say more about this below.

5.1.3. Assault Rifle Prices

To assess trends in prices of ARs, we examined prices for several Colt and Olympic rifle models in the AR-15 class, as well as Calico models M900 and M951 and Feather models AT9 and AT22.³⁰ Because rifle production data are not disaggregated by weapon type (semiautomatic, bolt action, etc.), caliber, or model, the regressions could only be weighted using overall rifle production counts for each company. For this reason, we calculated the average price of the ARs made by each company for each year and modeled the trends in these average prices over time, weighting by each company's total rifle production.³¹

Results shown in Table 5-2 and Figure 5-2 demonstrate that AR prices rose significantly during 1994 and 1995 before falling back to pre-ban levels in 1996 and remaining there through 1999. Prices rose 16% from 1993 to 1994 and then increased another 13% in 1995 (representing an increase of nearly one third over the 1993 level). Yet by 1996, prices had fallen to levels virtually identical to those before 1994. These patterns are consistent with those we found earlier for the 1992-1996 period (Roth and Koper, 1997, Chapter 4), though the annual price fluctuations shown here were not as dramatic as the quarterly changes shown in the earlier study.

Note, however, that these patterns were not uniform across all of the AR categories. The results of the model were driven largely by the patterns for Colt rifles, which are much more numerous than the other brands. Olympic rifles increased in price throughout the time period, while prices for most Calico and Feather rifles tended to fall throughout the 1990s without necessarily exhibiting spikes around the time of the ban.

³⁰ Specifically, we tracked prices for the Match Target Lightweight (R6530), Target Government Model (R6551), Competition H-Bar (R6700), and Match Target H-Bar (R6601) models by Colt and the Ultramatch, Service Match, Multimatch M1-1, AR15, and CAR15 models by Olympic Arms. Each of these models has a modified, post-ban version. We utilized prices for the pre-ban configurations during post-ban years.

³¹ Prices for the different models made by a given manufacturer tended to follow comparable trends, thus strengthening the argument for averaging prices.

Table 5-2. Regression of Assault Rifle and Comparison Semiautomatic Rifle Prices on Annual Time Indicators, 1991-1999, Controlling for Gun Make

	Assault Rifles (n=36)		Comparison Rifles (n=27)	
	Estimate	T value	Estimate	T value
Constant	1.31	21.15***	1.40	76.75***
1991	-0.12	-1.98*	-0.01	-0.21
1992	-0.13	-2.26**	0.01	0.30
1993	-0.15	-2.78**	0	-0.13
1995	0.12	2.47**	0.03	1.08
1996	-0.11	-2.27**	0.04	1.69
1997	-0.11	-2.23**	0.03	1.46
1998	-0.12	-2.47**	0.02	0.91
1999	-0.14	-2.71**	0.03	1.21
Colt (AR-15 type)	1.07	19.93***		
Olympic (AR-15 type)	1.14	16.08***		
Calico	0.43	5.53***		
Ruger			0.26	20.07***
Remington			0.29	21.69***
F statistic	50.52		63.62	
(p value)	<.01		<.01	
Adj. R-square	0.94		0.96	

Time indicators interpreted relative to 1994. Assault rifle makes interpreted relative to Feather.

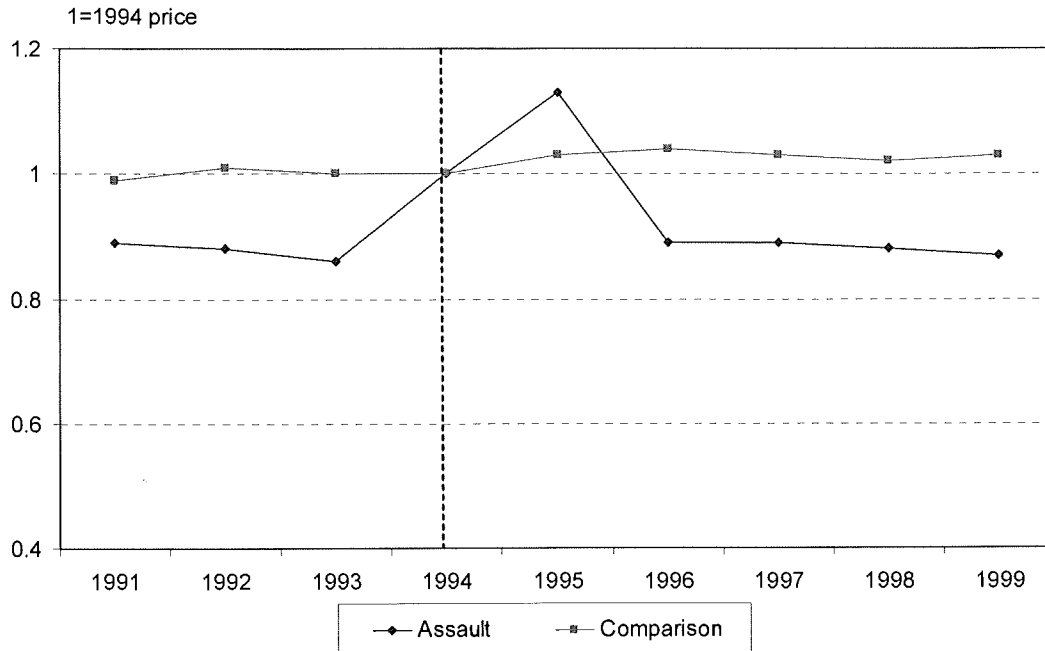
Comparison rifle makes interpreted relative to Marlin.

* Statistically significant at $p \leq .10$.

** Statistically significant at $p \leq .05$.

*** Statistically significant at $p \leq .01$.

Figure 5-2. Annual Price Trends for Assault Rifles and Comparison Semiautomatic Rifles, 1991-1999



Assault rifle prices based on Colt and Olympic AR-type, Calico, and Feather models. Comparison rifle prices based on selected Remington, Marlin, and Sturm Ruger models.

5.1.4. Comparison Semiautomatic Rifles.

The analysis of comparison rifle prices includes the Remington 7400, Marlin Model 9, and Sturm Ruger Mini-14 and Mini-30 models (the Ruger model prices were averaged for each year). The AW legislation exempted each of these semiautomatic rifles by name, though the exemption does not apply to Mini-14 models with folding stocks (a feature included in the ban's features test). The Ruger models are of particular interest since they are among only four exempted guns that can accept LCMs made for military rifles (U.S. Department of the Treasury, 1998, p. 23), though Ruger produced LCMs only for the Mini-14 model and substituted a 5-round magazine for this gun in 1989 (Fjestad, 2002, pp. 1361-1362). The Marlin model was also manufactured with an LCM prior to 1990 (Fjestad, 2002, p. 917). The Remington model is manufactured with a detachable 4-round magazine.

Prices for these guns remained steady throughout the decade (see Table 5-2 and Figure 5-2). The largest change was a 4% increase (non-significant) in prices in 1996 relative to prices in 1994. Therefore, the rifle price spikes in 1994 and 1995 were specific to assault rifles. However, the steady annual price trends may mask short-term fluctuations that we found

previously (Roth and Koper, 1997, Chapter 4) for some non-banned semiautomatic rifles (including the Ruger Mini-14) during 1994 and early 1995.³²

5.2. Production Trends for Assault Weapons and Other Firearms

To more fully assess the ban's effects on gun markets, examination of pre and post-ban trends in production of AWs and legal AW substitutes is a useful complement to studying price trends. Our earlier work revealed a spike in AW production during 1994 as the ban was being debated. Post-ban production of legal AW substitutes should reveal additional information about the reaction of gun markets to the ban. If production of these models has fallen off dramatically, it may suggest that the market for AWs has been temporarily saturated and/or that consumers of AWs favor the original AW models that have more military-style features. Stable or rising production levels, on the other hand, may indicate substantial consumer demand for AW substitutes, which would suggest that consumers consider the legal substitute models to be as desirable as the banned models.

5.2.1. Production of Assault Pistols and Other Handguns

Figure 5-3 presents production trends for a number of domestic AP manufacturers from 1985 through 2001 (the most recent year available for data on individual manufacturers).³³ After rising in the early 1990s and surging notably to a peak in 1994, production by these companies dropped off dramatically, falling 80% from 1993-1994 to 1996-1997 and falling another 35% by 1999-2000 (Table 5-3).³⁴ Makers of Intratec and SWD-type APs continued manufacturing modified versions of their APs for at least a few years following the ban, but at much lower volumes than that at which they produced APs just prior to the ban. Companies like AA Arms and Calico produced very few or no AP-type pistols from 1995 onward, and Intratec – producers of the APs most frequently used in crime – went out of business after 1999.

However, the pattern of rising and then falling production was not entirely unique to APs. Table 5-3 shows that production of all handguns and production of SNS-type pistols both declined sharply in the mid to late 1990s following a peak in 1993. Nonetheless, the trends –

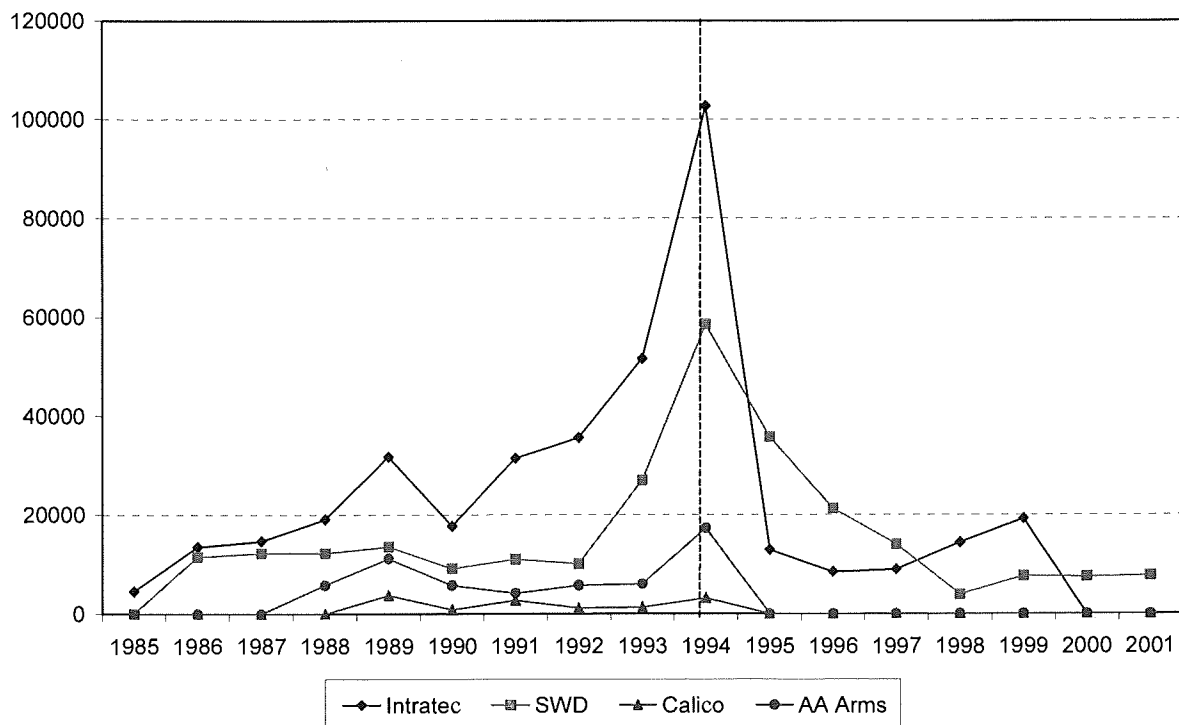
³² We attributed those short-term fluctuations to pre-ban uncertainty regarding which semiautomatic rifles would be prohibited by the ban. Also note that the prior findings were based on a different set of comparison semiautomatic rifles that included a number of foreign rifles. We concentrated on domestically produced rifles for this updated analysis in order to make more explicit links between rifle price and production trends (data for the latter are available only for domestic firearms).

³³ Production figures for individual manufacturers through 2000 have been compiled by the Violence Policy Center (2002). Year 2001 data are available from ATF via the Internet (see www.atf.treas.gov). National gun production totals through 1998 are also available from ATF (2000, p. A-3).

³⁴ The assault pistol production figures used here and in the price analysis include 9mm and .22 caliber pistols made by Intratec, 9mm pistols manufactured by AA Arms, all non-.22 caliber pistols manufactured by S.W. Daniels, Wayne Daniels, and Military Armaments Corporation (which together constitute the SWD group), and .22 and 9mm pistols manufactured by Calico. Intratec produces a few non-AW models in .22 and 9mm calibers, so the Intratec figures will overstate production of assault pistols and their legal substitutes to some degree. The comparison, SNS production figures are based on all handguns produced by Lorcin Engineering and Davis Industries.

both peak and decline – were more dramatic for APs than for other handguns. Production of APs rose 69% from 1990-1991 to 1993-1994, while SNS production and overall handgun production each increased 47%. From 1993-1994 to 1996-1997, production of AP-type handguns, SNS models, and all handguns declined 80%, 66%, and 47%, respectively. Further, production of AP-type handguns continued to decline at a faster rate than that of other handguns through the end of the decade.³⁵

Figure 5-3. Assault Pistol Production, 1985-2001



³⁵ Lorcin, a prominent SNS brand that we examined for the price and production analyses, went out of business after 1998. Unlike the situation in the AP market (where, to our knowledge, former AP makers have not been replaced on any large scale), the SNS market appears to have compensated somewhat to offset the loss of Lorcin. The SNS change from 1996-1997 to 1999-2000 is based on examination of a larger group of SNS-type makers, including Lorcin, Davis, Bryco, Phoenix Arms, and Hi-Point. Production among this group declined by 22% from 1996-1997 to 1999-2000, a decline greater than that for total handgun production but less than that for AP-type production.

Table 5-3. Production Trends for Assault Weapons and Other Firearms, 1990-2000*

Firearm Category	% Change 1990/91 to 1993/94	% Change 1993/94 to 1996/97	% Change 1996/97 to 1999/2000
Total Handguns	47%	-47%	-10%
Assault Pistols (or Post-Ban Models)	69%	-80%	-35%
SNS Handguns	47%	-66%	-22%
Total Rifles	22%	8%	18%
Assault Rifles (or Post-Ban Models)	81%	-51%	156%
Comparison Rifles	15%	13%	-16%

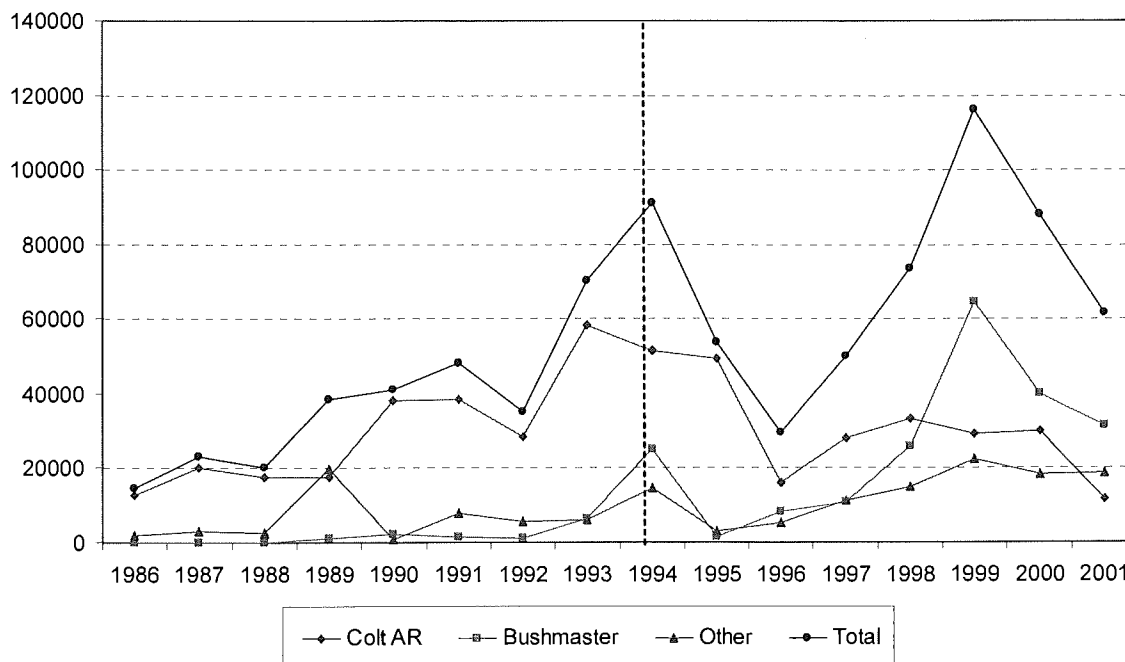
* Total handgun and rifle figures include all production by U.S. manufacturers. Assault pistols include Intratec group, SWD group, and Calico models. SNS figures are based on Lorcin Engineering and Davis Industries for changes up through 1996-1997. Because Lorcin went out of business after 1998, the SNS change from 1996-1997 to 1999-2000 is based on a larger group of SNS makers including Lorcin, Davis, Bryco, Phoenix Arms, and Hi-Point. Assault rifles include AR-15 type models by Colt and others. Comparison rifles include Sturm Ruger, Remington, and Marlin.

5.2.2. *Production of Assault Rifles and Other Rifles*

As shown in Figure 5-4, production of AR-15 type rifles surged during the early 1990s, reaching a peak in 1994.³⁶ AR production during the early 1990s rose almost 4 times faster than total rifle production and over 5 times faster than production of the comparison rifles examined in the price analysis (Table 5-3). Yet, by 1996 and 1997, production of legalized AR-type rifles had fallen by 51%, as production of other rifles continued increasing. AR production trends reversed again during the late 1990s, however, rising over 150%.³⁷ Total rifle production increased much more modestly during this time (18%), while production of the comparison rifles declined.

³⁶ Note again that the AR and legalized AR production figures are approximations based on all rifles produced by the companies in question (rifle production data are not available by type, caliber, or model), but it appears that most rifles made by these companies during the study period were AR-type rifles. Also, the figures for the comparison rifle companies (Ruger, Marlin, and Remington) are based on all rifles produced by these companies (the price analysis focused on selected semiautomatic models).

³⁷ There was also a notable shift in market shares among AR makers, as Bushmaster overtook Colt as the leading producer of AR-15 type rifles (Figure 5-4).

Figure 5-4. Assault Rifle Production, 1986-2001 (AR-15 Type)

Other: Olympic, Eagle/Armalite, DPMS, Essential Arms, Sendra.

5.3. Summary and Interpretations

Below, we offer some interpretations of the patterns found in the price and production analyses, keeping in mind that these analyses were largely descriptive, so causal inferences must be made cautiously. As documented in our earlier study, Congressional debate over the AW-LCM ban triggered speculative price increases for AWs in the months leading up to the ban's enactment. This study's examination of longer-term, annual price trends suggests that this speculative effect was very brief (and perhaps quite variable across jurisdictions) for APs but persisted through 1995 for ARs. This implies that speculators and sophisticated gun collectors (who we suspect played a large role in driving price trends) have more interest in ARs, which tend to be higher in quality and price than APs.

Responding to the speculative price growth, AW manufacturers boosted their production of AWs in 1994. Although total handgun and rifle production were increasing during the early 1990s, the rise in AW production was steeper, and there was a production peak unique to AWs in 1994 (production of other handguns peaked in 1993). It seems that this boost in the supply of grandfathered AWs was sufficient to satisfy speculative demand, thereby restoring national average AP prices to pre-ban levels within a year of the ban and doing the same for AR prices by 1996. AW prices remained stable through the late 1990s, and production of legalized AW-type weapons dropped off

substantially, at least through 1998. This suggests that the supply of grandfathered AWs was sufficient to meet demand through the late 1990s.

However, prices of APs rose relative to other handguns commonly used in crime during the 1990s. Handgun prices and production declined in general during the late 1990s, implying a decrease in demand for APs and other handguns that probably stemmed from the nation's declining crime rates.³⁸ But the AW ban's restriction of the AP supply, combined with the interest of speculators and collectors in these guns, may have prevented AP prices from falling as did prices for other handguns. The market patterns also suggest that consumers of APs are not as easily satisfied by legalized APs with fewer military-style features; despite the increasing value of APs (in relative terms), post-ban production of legalized APs declined faster than did production of other handguns, and some AP makers went out of business.

Prices of ARs, on the other hand, remained steady during the late 1990s (after the speculative price bubble of 1994-1995) both in absolute terms and relative to other rifles. The failure of AR prices to rise in at least relative terms, as occurred for APs, and the temporary drop in production of AR-type rifles after the ban may signify that the AR market was saturated relative to the AP market for at least a number of years following the ban. However, demand for AR-type rifles later rebounded, as evidenced by the resurgence in production of legalized, AR-type rifles in the late 1990s. In fact, more of these guns were produced in 1999 than in 1994. Unlike AP users, therefore, rifle users appear to be readily substituting the legalized AR-type rifles for the banned ARs, which may be another factor that has kept prices of the latter rifles from rising. All of this suggests that rifle owners, who have a lower prevalence of criminal users than do handgun owners, can more easily substitute rifles with fewer or no military features for the hunting and other sporting purposes that predominate among rifle consumers.

Another relevant factor may have been a surge in the supply of foreign semiautomatic rifles that can accept LCMs for military weapons (the LCMM rifles discussed in Chapter 2) during the early 1990s. Examples of LCMM rifles include legalized versions of banned AK-47, FN-FAL, and Uzi rifles. Importation of LCMM rifles rose from 19,147 in 1991 to 191,341 in 1993, a nine-fold increase (Department of the Treasury, 1998, p. 34). Due to an embargo on the importation of firearms from China (where many legalized AK-type rifles are produced), imports of LCMM rifles dropped

³⁸ It seems likely that the rise and fall of handgun production was linked to the rising crime rates of the late 1980s and early 1990s and the falling crime rates of the mid and late 1990s. Self-defense and fear of crime are important motivations for handgun ownership among the general population (e.g., Cook and Ludwig, 1996; McDowall and Loftin, 1983), and the concealability and price of handguns make them the firearms of choice for criminal offenders. It is likely that the peak in 1993 was also linked to the Congressional debate and passage of the Brady Act, which established a background check system for gun purchases from retail dealers. It is widely recognized in the gun industry that the consideration of new gun control legislation tends to increase gun sales.

The decline in production was more pronounced for SNS handguns, whose sales are likely to be particularly sensitive to crime trends. Criminal offenders make disproportionate use of these guns. We can also speculate that they are prominent among guns purchased by low-income citizens desiring guns for protection. In contrast, the poor quality and reliability of these guns make them less popular among more knowledgeable and affluent gun buyers.

back down to 21,261 in 1994. Importation of all foreign LCMM rifles was ended by federal executive order in 1998.

ATF has reported that criminal use of LCMM rifles increased more quickly during the early 1990s than did that of other military-style rifles (U.S. Department of the Treasury, 1998, p. 33; also see Chapter 6). Accordingly, it is possible that the availability of LCMM rifles also helped to depress the prices of domestic ARs and discourage the production of legalized ARs during the 1990s, particularly if criminal users of rifles place a premium on the ability to accept LCMs. It is noteworthy, moreover, that the rebound in domestic production of legalized ARs came on the heels of the 1998 ban on LCMM rifles, perhaps suggesting the LCMM ban increased demand for domestic rifles accepting LCMs.

In sum, this examination of the AW ban's impact on gun prices and production suggests that there has likely been a sustained reduction in criminal use of APs since the ban but not necessarily ARs. Since most AWs used in crime are APs, this should result in an overall decline in AW use. In the following chapter, we examine the accuracy of this prediction.

6. CRIMINAL USE OF ASSAULT WEAPONS AFTER THE BAN

6.1. Measuring Criminal Use of Assault Weapons: A Methodological Note

In this chapter, we examine trends in the use of AWs using a number of national and local data sources on guns recovered by law enforcement agencies (we focus on the domestic AW models discussed at the beginning of the previous chapter). Such data provide the best available indicator of changes over time in the types (and especially the specific makes and models) of guns used in violent crime and possessed and/or carried by criminal and otherwise deviant or high-risk persons. The majority of firearms recovered by police are tied to weapon possession and carrying offenses, while the remainder are linked primarily to violent crimes and narcotics offenses (e.g., see ATF, 1976; 1977; 1997; Brill, 1977). In general, up to a quarter of guns confiscated by police are associated with violent offenses or shots fired incidents (calculated from ATF, 1977, pp. 96-98; 1997; Brill, 1977, pp. 24,71; Shaw, 1994, pp. 63, 65; also see data presented later in this chapter). Other confiscated guns may be found by officers, turned in voluntarily by citizens, or seized by officers for temporary safekeeping in situations that have the potential for violence (e.g., domestic disputes).

Because not all recovered guns are linked to violent crime investigations, we present analyses based on all gun recoveries and gun recoveries linked to violent crimes where appropriate (some of the data sources are based exclusively, or nearly so, on guns linked to violent crimes). However, the fact that a seized gun is not clearly linked to a violent crime does not rule out the possibility that it had been or would have been used in a violent crime. Many offenders carry firearms on a regular basis for protection and to be prepared for criminal opportunities (Sheley and Wright, 1993a; Wright and Rossi, 1986). In addition, many confiscated guns are taken from persons involved in drugs, a group involved disproportionately in violence and illegal gun trafficking (National Institute of Justice, 1995; Sheley and Wright, 1993a). In some instances, criminal users, including those fleeing crime scenes, may have even possessed discarded guns found by patrol officers. For all these reasons, guns recovered by police should serve as a good approximation of the types of guns used in violent crime, even though many are not clearly linked to such crimes.

Two additional caveats should be noted with respect to tracking the use of AWs. First, we can only identify AWs based on banned makes and models. The databases do not contain information about the specific features of firearms, thus precluding any assessment of non-banned gun models that were altered after purchase in ways making them illegal. In this respect, our numbers may understate the use of AWs, but we know of no data source with which to evaluate the commonality of such alterations. Second, one cannot always distinguish pre-ban versions of AWs from post-ban, legalized versions of the same weapons based on weapon make and model information (this occurs when the post-ban version of an AW has the same name as the pre-ban version), a factor which may have caused us to overstate the use of AWs after the ban. This was more of a problem for our assessment of ARs, as will be discussed below.

Finally, we generally emphasize trends in the percentage of crime guns that are AWs in order to control for overall trends in gun violence and gun recoveries. Because gun violence was declining throughout the 1990s, we expected the number of AW recoveries to drop independently of the ban's impact.

6.2. National Analysis of Guns Reported By Police to the Federal Bureau of Alcohol, Tobacco, and Firearms

6.2.1. An Introduction to Gun Tracing Data

In this section, we examine national trends in AW use based on firearm trace requests submitted to ATF by federal, state, and local law enforcement personnel throughout the nation. A gun trace is an investigation that typically tracks a gun from its manufacture to its first point of sale by a licensed dealer. Upon request, ATF traces guns seized by law enforcement as a service to federal, state, and local agencies. In order to initiate a trace on a firearm, the requesting law enforcement agency provides information about the firearm, such as make, model, and serial number.

Although ATF tracing data provide the only available national sample of the types of guns used in crime and otherwise possessed or carried by criminal and high-risk groups, they do have limitations for research purposes. Gun tracing is voluntary, and police in most jurisdictions do not submit trace requests for all, or in some cases any, guns they seize. Crime and tracing data for 1994, for example, suggest that law enforcement agencies requested traces for 27% of gun homicides but only 1% of gun robberies and gun assaults known to police during that year (calculated from ATF, 1995 and Federal Bureau of Investigation, 1995, pp. 13, 18, 26, 29, 31, 32).

The processes by which state and local law enforcement agencies decide to submit guns for tracing are largely unknown, and there are undoubtedly important sources of variation between agencies in different states and localities. For example, agencies may be less likely to submit trace requests in states that maintain their own registers of gun dealers' sales. Knowledge of ATF's tracing capabilities and procedures,³⁹ as well as participation in federal/state/local law enforcement task forces, are some of the other factors that may affect an agency's tracing practices. Further, these factors are likely to vary over time, a point that is reinforced below.

Therefore, firearms submitted to ATF for tracing may not be representative of the

³⁹ To illustrate, ATF cannot (or does not) trace military surplus weapons, imported guns without the importer name (generally, pre-1968 guns), stolen guns, or guns without a legible serial number (Zawitz 1995). Tracing guns manufactured before 1968 is also difficult because licensed dealers were not required to keep records of their transactions prior to that time. Throughout much of the 1990s, ATF did not generally trace guns older than 5-10 years without special investigative reasons (Kennedy et al., 1996, p. 171). Our data are based on trace requests rather than successful traces, but knowledge of the preceding operational guidelines might have influenced which guns law enforcement agencies chose to trace in some instances.

types of firearms typically seized by police. In general, not much is known about the nature of potential bias in tracing data. In prior studies, however, AWs tended to be more common in tracing data than in more representative samples of guns confiscated by police (Kleck, 1997, pp. 112, 141). This suggests that police have been more likely historically to initiate traces for seized AWs than for other seized guns. Although comparisons across studies are complicated by varying definitions of AWs used in different analyses, studies of guns confiscated by police or used in particular types of crimes generally suggest that AWs accounted for up to 6% of crime guns and about 2% on average prior to the federal AW ban (see Chapter 3 and Kleck, 1997, p. 141), whereas studies of pre-ban tracing data indicated that 8% of traced guns, and sometimes as many as 11%, were AWs (Cox Newspapers, 1989; Lenett, 1995; Zawitz, 1995).

Changes over time in the tracing practices of law enforcement agencies present additional complexities in analyzing tracing data. Due to improvements in the tracing process, ATF promotional efforts, and special initiatives like the Youth Crime Gun Interdiction Initiative (see ATF, 1997; 1999 and more recent reports available via the Internet at www.atf.treas.gov),⁴⁰ the utilization of tracing grew substantially throughout the 1990s in jurisdictions that chose to participate (also see ATF, 2000; Roth and Koper, 1997). To illustrate, trace requests to ATF rose from roughly 42,300 in 1991 to 229,500 in 2002 (see Table 6-1 in the next section), an increase of 443%. This growth reflects changes in tracing practices (i.e., changes in the number of agencies submitting trace requests and/or changes in the percentage of recovered guns for which participating agencies requested traces) rather than changes in gun crime; gun homicides, for example, were falling throughout the 1990s (see Table 6-1 in the next section) and were a third lower in 2002 than in 1991.

Therefore, an increase in trace requests for AWs does not necessarily signal a real increase in the use of AWs. Further, examining trends in the percentage of trace requests associated with AWs is also problematic. Because law enforcement agencies were more likely to request traces for AWs than for other guns in years past, we can expect the growth rate in tracing for non-AWs to exceed the growth rate in traces for AWs as gun tracing becomes more comprehensive. Consequently, AWs are likely to decline over time as a share of trace requests due simply to reporting effects, except perhaps during periods when AWs figure prominently in public discourse on crime.⁴¹

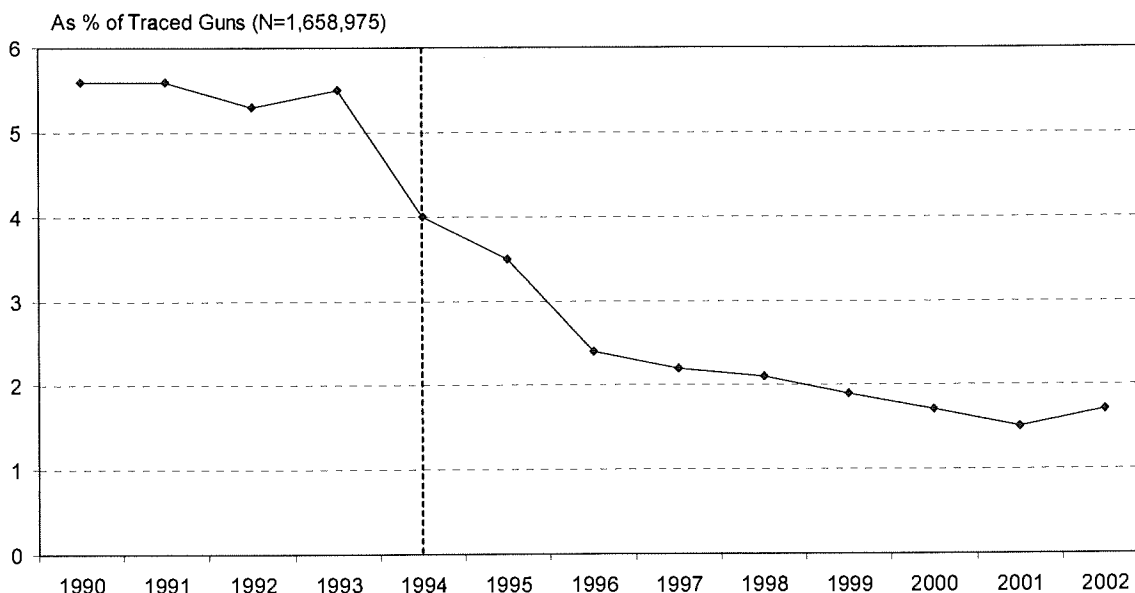
⁴⁰ As part of this initiative, police in a few dozen large cities are submitting trace requests to ATF for all guns that they confiscate. The initiative began with 17 cities in 1996 and has since spread to 55 major urban jurisdictions.

⁴¹ To illustrate, assume that a hypothetical police agency recovers 100 guns a year, 2 of which are AWs, and that the agency has a selective tracing policy that results in the submission of trace requests for 20 of the guns, including 1 of the recovered AWs. Under this scenario, the department would be almost three times as likely to request traces for AWs as for other guns. If the department adopted a policy to request traces on all guns (and again recovered 2 AWs and 98 other guns), AW traces would double and traces of other guns would increase by more than 400%. Moreover, AWs would decline from 5% of traced guns to 2% of traced guns due simply to the change in tracing policy.

6.2.2. Traces of Assault Weapons, 1990-2002

Figure 6-1 illustrates the share of all traces that were for AWs from 1990 through 2002. A more detailed assessment of annual changes in traces for AWs and other guns is presented in Table 6-1. Changes in gun murders are also shown in Table 6-1 to emphasize the differences in trends for tracing and gun crime. Below, we summarize key points from the analysis. Due to the instrumentation problems inherent in tracing data, statistical tests are not presented.⁴²

Figure 6-1. Police Recoveries of Assault Weapons Reported to ATF (National), 1990-2002



Includes Intratec group, SWD group, AR-15 group, and selected Calico and Feather models.

⁴² Nearly 30% of the tracing records lack specific gun model designations (the crucial elements for conducting a trace are the gun make and serial number). For the makes and types of guns likely to be AWs, however, the missing model rate was slightly under 10%. Further, we were able to identify some of the latter weapons as AWs with reasonable confidence based on the makes, types, and calibers alone. Nevertheless, we conducted a supplemental analysis using only those records for which the gun model was identified. The results of that analysis were substantively very similar to those presented below.

Table 6-1. Annual Percentage Changes in Gun Murders and Police Requests to ATF for Traces of Assault Weapons and Other Firearms, 1991-2002 (Number of Traces in Parentheses)

<u>Year</u>	<u>Gun Murders</u> (1)	<u>All Traces</u> (2)	<u>AW Traces*</u> (3)	<u>AP Traces</u> (4)	<u>AR Traces</u> (5)	<u>AW and Substitute Traces</u> (6)	<u>Violent Crime Traces</u> (7)	<u>AW Violent Crime Traces</u> (8)	<u>LCMM Rifle Traces**</u> (9)
1991	9%	14% (42281)	14% (2378)	24% (1775)	-6% (603)	14% (2378)	19% (6394)	20% (344)	--
1992	-1%	6% (44992)	1% (2398)	4% (1838)	-7% (560)	1% (2398)	3% (6558)	7% (367)	--
1993	5%	20% (54189)	25% (2994)	20% (2199)	42% (795)	25% (2994)	26% (8248)	41% (516)	252% (183)
1994	-4%	53% (82791)	11% (3337)	23% (2706)	-21% (631)	11% (3337)	22% (10083)	-18% (424)	223% (592)
1995	-10%	-6% (77503)	-19% (2730)	-24% (2051)	8% (679)	-18% (2747)	23% (12439)	-15% (362)	-10% (530)
1996	-9%	66% (128653)	12% (3059)	13% (2309)	10% (750)	17% (3214)	67% (20816)	27% (459)	40% (743)
1997	-7%	42% (183225)	31% (4019)	31% (3017)	34% (1002)	36% (4362)	11% (23147)	13% (519)	24% (925)
1998	-11%	5% (192115)	0% (4014)	-9% (2751)	26% (1263)	7% (4681)	3% (23844)	-22% (404)	33% (1227)
1999	-8%	-2% (188296)	-11% (3581)	-12% (2414)	-8% (1167)	-6% (4406)	3% (24663)	0% (404)	-18% (1003)
2000	1%	-3% (182961)	-11% (3196)	-16% (2027)	0% (1169)	-6% (4143)	-13% (21465)	-25% (305)	-14% (859)
2001	-1%	18% (215282)	1% (3238)	5% (2138)	-6% (1100)	3% (4273)	20% (25822)	6% (322)	-3% (833)
2002	6%	7% (229525)	19% (3839)	4% (2214)	48% (1625)	12% (4765)	20% (30985)	65% (531)	4% (865)

* Based on Intratec group, SWD group, AR-15 group, and Calico and Feather models.

** Foreign semiautomatic rifles accepting large capacity military magazines (banned by executive order in 1998). (Data are not shown for 1991 and 1992 because very few of these guns were traced in those years.)

6.2.2.1. *Assault Weapons as a Percentage of Crime Gun Traces*

As shown in Figure 6-1, AWs declined from 5.4% of crime gun traces in 1992-1993 to 1.6% in 2001-2002, a decline of 70%. Although this downward trend could be attributable in large part to changes in tracing practices, it is noteworthy that it did not begin until 1994 (the year of the ban); during the pre-ban years, 1990 to 1993, AWs accounted for a steady share of traces despite a 46% increase in total tracing volume. It is also remarkable that about 3,200 AWs were traced in both 2000 and 2001, which is virtually identical to the average number traced during 1993 and 1994 (3,166) even though total traces increased more than 190% during the same period (Table 6-1, columns 2 and 3).⁴³

6.2.2.2. *Annual Changes in Traces for Assault Weapons and Other Guns*

Throughout most of the post-ban period (particularly 1995 to 2001), AW traces either increased less or declined more than total traces (Table 6-1, columns 2 and 3), a pattern that is also consistent with a decline in the use of AWs relative to other guns, though it too may be distorted by changes in tracing practices. This pattern was largely consistent whether analyzing all traces or only traces associated with violent crimes (columns 7 and 8).⁴⁴

The years when total traces declined or were relatively flat are arguably the most informative in the series because they appear to have been less affected by changes in tracing practices. For example, there was a 6% decline in total trace requests from 1994 to 1995 (the years featured in our earlier study) that coincided with a 10% drop in gun murders (Table 6-1, column 1). Therefore, it seems tracing practices were relatively stable (or, conversely, reporting effects were relatively small) from 1994 to 1995. The 19% reduction in AW traces during this same period implies that AW use was declining faster than that of other guns. Furthermore, there were fewer AW traces in 1995 than in 1993, the year prior to the ban. The fact that this occurred during a period when the AW issue was very prominent (and hence police might have been expected to trace more of the AWs they recovered) arguably strengthens the causal inference of a ban effect.⁴⁵

Total traces also declined slightly (2%-3%) in 1999 and 2000. In each of those years, the decline was greater for AWs (11%). Thus, in years when tracing declined overall, AW traces fell 3 to 6 times faster than did total traces. Put another way, AWs fell between 9% and 13% as a percentage of all traces in each of these years.

The general pattern of AW traces increasing less or declining more than those of

⁴³ These general findings are consistent with those of other tracing analyses conducted by ATF (2003 Congressional Q&A memo provided to the author) and the Brady Center to Prevent Gun Violence (2004).

⁴⁴ A caveat is that requests without specific crime type information are often grouped with weapons offenses (ATF, 1999). Therefore, traces associated with violent crimes are likely understated to some degree.

⁴⁵ This inference is also supported by our earlier finding that trace requests for AWs declined by only 8% in states that had their own AW bans prior to the federal ban (Roth and Koper, 1997, Chapter 5).

other crime guns was clearly apparent for APs but less consistent for ARs (Table 6-1, columns 4 and 5). For example, AR traces went up 26% in 1998 while total traces went up only 5% and AP traces declined 9%. In 2000, total and AP traces fell 3% and 16%, respectively, but AR traces remained flat. This is consistent with predictions derived from the price and production analyses described above. But note that the post-ban AR counts could be overstated because the data do not distinguish pre-ban from post-ban versions of some popular AR-15 type rifles like the Colt Sporter and Bushmaster XM-15. (Also note that the percentage of traces for ARs did fall from 1.4% in 1992-1993 to 0.6% in 2001-2002.)

More generally, the use of post-ban AW-type weapons (including both legalized APs and ARs) has not been widespread enough to completely offset the apparent decline in the use of banned AWs. Combined traces for banned AWs and AW substitutes (Table 6-1, column 6) also followed the pattern of increasing less or declining more than did total traces throughout most of the period, though the differences were not as pronounced as those between AWs and total traces. In 1999 and 2000, for example, AWs traces dropped 11%, while combined traces for AWs and legal substitutes declined only 6%. Still, the latter figure was greater than the 2%-3% drop for total traces.

Finally, traces of the LCMM rifles banned by executive order in 1998 were generally rising to that point, reaching levels as high as those for AR-15 type rifles (Table 6-1, column 9). Since 1998, however, the number of traces for LCMM rifles has fallen substantially. Despite a 4% increase from 2001 to 2002, the number of LCMM traces in 2002 (865) was 30% lower than the peak number traced in 1998 (1,227). Tentatively, this suggests that the 1998 extension of the ban has been effective in curtailing weapons that offenders may have been substituting for the ARs banned in 1994.

6.2.2.3. Did Use of Assault Weapons Rebound in 2002?

In 2002, tracing volume increased 7%, which closely matched the 6% increase in gun murders for that year. In contrast to the general pattern, AW traces increased by 19%, suggesting a possible rebound in AW use independent of changes in tracing practices, a development that we have predicted elsewhere (Roth and Koper, 1997) based on the boom in AW production leading up to the ban. The disproportionate growth in AW traces was due to ARs, however, so it could partially reflect increasing use of post-ban AR-type rifles (see the discussion above).

Moreover, this pattern could be illusory. With data from the most recent years, it was possible to run a supplementary analysis screening out traces of older weapons (not shown). Focusing on just those guns recovered and traced in the same year for 2000 through 2002 revealed that recoveries of AWs declined in 2001, more so for ARs (16%) than for APs (9%), while total traces increased 1%.⁴⁶ Traces for APs and ARs then

⁴⁶ The tracing database indicates when guns were recovered and when they were traced. However, the recovery dates were missing for 30% of the records overall and were particularly problematic for years prior to 1998. For this reason, the main analysis is based on request dates. The auxiliary analysis for 2000-

increased in 2002 (1% and 6%, respectively) but by less than total traces (8%). Therefore, the disproportionate growth in AR traces in 2002 shown in Table 6-1 may have been due to tracing of older AWs by newly participating police agencies.

6.2.2.4. Summary of the ATF Gun Tracing Analysis

Complexities arising from recent changes in the use of gun tracing by law enforcement warrant caution in the interpretation of ATF gun tracing data. Notwithstanding, the data suggest that use of AWs in crime, though relatively rare from the start, has been declining. The percentage of gun traces that were for AWs plummeted 70% between 1992-1993 and 2001-2002 (from 5.4% to 1.6%), and this trend did not begin until the year of the AW ban. On a year-to-year basis, AW traces generally increased less or declined by more than other gun traces. Moreover, in years when tracing volume declined – that is, years when changes in reporting practices were least likely to distort the data – traces of AWs fell 3 to 6 times faster than gun traces in general. The drop in AW use seemed most apparent for APs and LCMM rifles (banned in 1998). Inferences were less clear for domestic ARs, but assessment of those guns is complicated by the possible substitution of post-ban legal variations.

6.3. Local Analyses of Guns Recovered By Police

Due to concerns over the validity of national ATF tracing data for investigating the types of guns used in crime, we sought to confirm the preceding findings using local data on guns recovered by police. To this end, we examined data from half a dozen localities and time periods.

- All guns recovered by the Baltimore Police Department from 1992 to 2000 (N=33,933)
- All guns recovered by the Metro-Dade Police Department (Miami and Dade County, Florida) from 1990 to 2000 (N=39,456)
- All guns recovered by the St. Louis Police Department from 1992 to 2003 (N=34,143)
- All guns recovered by the Boston Police Department (as approximated by trace requests submitted by the Department to ATF) from 1991 to 1993 and 2000 to 2002 (N=4,617)⁴⁷

2002 focuses on guns both recovered and traced in the same year because it is likely that some guns recovered in 2002 had not yet been traced by the spring of 2003 when this database was created. Using only guns recovered and traced in the same year should mitigate this bias.

⁴⁷ The Boston Police Department has been tracing guns comprehensively since 1991 (Kennedy et al., 1996). However, we encountered difficulties in identifying Boston Police Department traces for several years in the mid-1990s. For this reason, we chose to contrast the 1991 to 1993 period with the 2000 to 2002 period.

- Guns recovered during murder investigations in Milwaukee County from 1991 to 1998 (N=592)⁴⁸
- Guns linked to serious crimes in Anchorage and other parts of Alaska and submitted to state firearm examiners for evidentiary testing from 1987 to 2000 (N=900)⁴⁹

The selection of these particular locations and samples reflects data availability.⁵⁰ The locations were not selected randomly, and some of the samples are small for conducting trend analysis of relatively rare events (i.e., AW recoveries). Accordingly, we must use caution in generalizing the results to other places. However, the data sources reflect a wide geographic range and cover post-ban periods extending through at least the latter 1990s (and typically through the year 2000 or beyond). To the extent that the results are similar across these jurisdictions, therefore, we can have more confidence that they reflect national patterns.

In each jurisdiction, we examined pre-post changes in recoveries of AWs (focusing on the domestic AW group defined earlier) and substitution of post-ban AW models for the banned models. Where possible, we conducted separate analyses of all AW recoveries and those linked specifically to violent crimes.⁵¹ We also differentiated between AP and AR trends using the larger databases from Baltimore, Miami, and St. Louis. But since most of these databases do not extend more than two years beyond 1998, we do not present analyses specifically for LCMM rifles.

Key summary results are summarized in Table 6-2, while more detailed results from each site appear at the end of the chapter in Tables 6-3 through 6-6 and Figures 6-2 through 6-6.⁵² The number of AW recoveries declined by 28% to 82% across these

⁴⁸ The data are described in reports from the Medical College of Wisconsin (Hargarten et al., 1996; 2000) and include guns used in the murders and other guns recovered at the crime scenes. Guns are recovered in approximately one-third of Milwaukee homicide cases.

⁴⁹ The data include guns submitted by federal, state, and local agencies throughout the state. Roughly half come from the Anchorage area. Guns submitted by police to the state lab are most typically guns that were used in major crimes against persons (e.g. murder, attempted murder, assault, robbery).

⁵⁰ We contacted at least 20 police departments and crime labs in the course of our data search, focusing much of our attention on police departments participating in ATF's Youth Crime Gun Interdiction Initiative (YCGII) (ATF, 1997; 1999). Departments participating in the YCGII submit data to ATF on all guns that they recover. Though the YCGII did not begin until 1996 (well after the implementation of the AW ban), we suspected that these departments would be among those most likely to have electronically-stored gun data potentially extending back in time to before the ban. Unfortunately, most of these departments either did not have their gun data in electronic format or could not provide data for other reasons (e.g., resource constraints). In the course of our first AW study (Roth and Koper, 1997), we contacted many other police departments that also did not have adequate data for the study.

⁵¹ All of the Milwaukee and Anchorage analyses were limited to guns involved in murders or other serious crimes. Despite evidence of a decline, AW recoveries linked to violence were too rare in Boston to conduct valid test statistics.

⁵² We omitted guns recovered in 1994 from both the pre and post-ban counts because the speculative price increases for AWs that occurred in 1994 (see previous section and Roth and Koper, 1997, Chapter 4) raise questions about the precise timing of the ban's impact on AW use during that year, thereby clouding the designation of the intervention point. This is particularly a concern for the Baltimore analysis due to a

locations and time periods, but the discussion below focuses on changes in AWs as a share of crime guns in order to control for general trends in gun crime and gun seizures. Prior to the ban, AWs ranged from about 1% of guns linked to violent crimes in St. Louis to nearly 6% of guns recovered in Milwaukee murder cases.⁵³

AWs dropped as share of crime guns in all jurisdictions after the ban. Reductions ranged from a low of 17% in Milwaukee (based on guns linked to homicides) to a high of 72% in Boston (based on all crime guns) but were generally between 32% and 40%.^{54, 55} A decline in the use of AWs relative to other guns was generally apparent whether examining all AW recoveries or just those linked to violent crimes.⁵⁶ An exception was in St. Louis, where

state AP ban that took effect a few months prior to the federal AW ban.

⁵³ These figures should be treated as approximations of the prevalence of AWs. On the one hand, the numbers may understate the prevalence of AWs to a small degree because they are based on only the domestic AW group defined earlier. Based on analysis of national ATF gun tracing data, we estimated previously that the domestic AW group accounts for 82% of AWs used in crime (Roth and Koper, 1997, Chapter 5). To further test the reliability of this assessment, we investigated the prevalence of all banned AW models among guns recovered in Baltimore using an ATF list of all guns defined as AWs under the 1994 Crime Act criteria (118 model and caliber combinations). We chose the Baltimore database because it provides a complete inventory of guns recovered by police in that city during the study period and, having been maintained by crime lab personnel, is particularly thorough with regard to make and model identifications. Though there was some ambiguity in classifying a small number of AK-type semiautomatic rifles (there are many civilian variations of the AK-47 rifle, some of which were legal under the 1994 legislation), our examination suggested that the domestic AW group accounted for approximately 90% of the AWs recovered in Baltimore. (In addition, including all AWs had virtually no effect on the pre-post changes in AW use in Baltimore.) But as discussed previously, the counts could also overstate AW use to some degree because imprecision in the identification of gun models in some data sources may have resulted in some legalized firearms being counted as banned AWs.

⁵⁴ The AW counts for Miami also include Interdynamics KG9 and KG99 models. These models were produced during the early 1980s and were forerunners to the Intratec models (ATF restricted the KG9 during the early 1980s because it could be converted too easily to fully automatic fire). These weapons were very rare or non-existent in most of the local data sources, but they were more common in Miami, where Interdynamics was formerly based. Including these guns increased the AW count in Miami by about 9% but did not affect pre-post changes in AW recoveries.

⁵⁵ State AW legislation passed in Maryland and Massachusetts could have had some impact on AW trends in Baltimore and Boston, respectively. Maryland implemented an AP ban, similar in coverage to the federal AW ban, in June 1994 (Maryland has also required background checks for retail sales of a broader list of state-defined AWs since 1989), and Massachusetts implemented additional legislation on federally-defined AWs in late 1998. The timing and scope of these laws make them largely redundant with the federal ban, so they should not unduly complicate inferences from the analysis. However, Maryland forbids additional transfers of grandfathered APs, and Massachusetts has imposed additional requirements for possession and transfer of LCMs and guns accepting LCMs. Both states also have enhanced penalties for certain crimes involving APs, LCMs, and/or guns accepting LCMs. Hence, the ban on AWs was arguably strengthened in Baltimore and Boston, relative to the other jurisdictions under study. This does not appear to have affected trends in AW use in Baltimore, which were very similar to those found in the other study sites. However, use of AWs and combined use of AWs and post-ban AW substitutes declined more in Boston than in any other study site. Although the trends in Boston could reflect ongoing, post-2000 reductions in use of AWs and similar weapons (Boston was one of the only study sites from which we obtained post-2000 data), it is possible that the Massachusetts legislation was also a contributing factor.

⁵⁶ There may be some inconsistency across jurisdictions in the identification of guns associated with violent crimes. In Miami, for example, 28% of the guns had an offense code equal to "other/not listed," and this percentage was notably higher for the later years of the data series.

Table 6-2. Pre-Post Changes in Assault Weapons As a Share of Recovered Crime Guns For Selected Localities and Time Periods: Summary Results (Total Number of Assault Weapons for Pre and Post Periods in Parentheses) ^a

Locality and Time Period	AWs	AWs (Linked to Violence)	APs	ARs	AWs and Post-Ban Substitutes
Baltimore (all recoveries) pre=1992-1993, post=1995-2000	-34%*** (425)	-41%** (75)	-35%*** (383)	-24% (42)	-29%*** (444)
Miami-Dade (all recoveries) pre=1990-1993, post=1995-2000	-32%*** (733)	-39%*** (101)	-40%*** (611)	37%* (115)	-30%*** (746)
St. Louis (all recoveries) pre=1992-1993, post=1995-2003	-32%*** (306)	1% (28)	-34%*** (274)	10% (32)	-24%** (328)
Boston (all recoveries) pre=1991-1993, post=2000-2002	-72%*** (71)	N/A	N/A	N/A	-60%*** (76)
Milwaukee (recoveries in murder cases) pre=1991-1993, post=1995-1998	N/A	-17% (28)	N/A	N/A	2% (31)
Anchorage, AK (recoveries in serious crimes) pre=1987-1993, post=1995-2000	N/A	-40% (24)	N/A	N/A	-40% (24)

a. Based on Intratec group, SWD group, AR-15 group, and Calico and Feather models. See the text for additional details about each sample and Tables 6-3 through 6-6 for more detailed results from each locality.

* Statistically significant change at chi-square p level < .1

** Statistically significant change at chi-square p level < .05

*** Statistically significant change at chi-square p level < .01

AWs declined as share of all guns but not of guns linked to violent crimes, though the latter test was based on rather small samples.

These reductions were not due to any obvious pre-ban trends (see Figures 6-2 through 6-6 at the end of the chapter). On the contrary, AW recoveries reached a peak in most of these jurisdictions during 1993 or 1994 (Boston, which is not shown in the graphs due to missing years, was an exception). We tested changes in AW prevalence using simple chi-square tests since there were no observable pre-existing time trends in the data. Due to the small number of AWs in some of these samples, these changes were not all statistically significant. Nonetheless, the uniformity of the results is highly suggestive, especially when one considers the consistency of these results with those found in the national ATF tracing analysis.

The changes in Tables 6-2 through 6-6 reflect the average decline in recoveries of AWs during the post-ban period in each locality. However, some of these figures may understate reductions to date. In several of the localities, the prevalence of AWs among crime guns was at, or close to, its lowest mark during the most recent year analyzed (see Figures 6-2 through 6-6 at the end of the chapter), suggesting that AW use continues to decline. In Miami, for example, AWs accounted for 1.7% of crime guns for the whole 1995 to 2000 period but had fallen to 1% by 2000. Further, the largest AW decline was recorded in Boston, one of two cities for which data extended beyond the year 2000 (however, this was not the case in St. Louis, the other locality with post-2000 data).

Breakouts of APs and ARs in Baltimore, Miami, and St. Louis show that the decline in AW recoveries was due largely to APs, which accounted for the majority of AWs in these and almost all of the other localities (the exception was Anchorage, where crimes with rifles were more common, as a share of gun crimes, than in the other sites). Pre-post changes in recoveries of the domestic AR group weapons, which accounted for less than 1% of crime guns in Baltimore, Miami, and St. Louis, were inconsistent. AR recoveries declined after the ban in Baltimore but increased in St. Louis and Miami. As discussed previously, however, the AR figures may partly reflect the substitution of post-ban, legalized versions of these rifles, thus overstating post-ban use of the banned configurations. Further, trends for these particular rifles may not be indicative of those for the full range of banned rifles, including the various foreign rifles banned by the 1994 law and the import restrictions of 1989 and 1998 (e.g., see the ATF gun tracing analysis of LCMM rifles).⁵⁷

⁵⁷ As discussed in the last chapter, our research design focused on common AWs that were likely to be most affected by the 1994 ban as opposed to earlier regulations (namely, the 1989 import ban) or other events (e.g., company closings or model discontinuations prior to 1994). However, an auxiliary analysis with the Baltimore data revealed a statistically meaningful drop in recoveries of all ARs covered by the 1994 legislation (not including the LCMM rifles) that was larger than that found for just the domestic group ARs discussed in the text. Similarly, an expanded AR analysis in Miami showed that total AR recoveries declined after the ban, in contrast to the increase found for the domestic group ARs. (Even after expanding the analysis, ARs still accounted for no more than 0.64% of crime guns before the ban in both locations. As with the domestic AR group, there are complexities in identifying banned versus non-banned versions of some of the other ARs, so these numbers are approximations.) Consequently, a more nuanced view of AR trends may be that AR use is declining overall, but this decline may be due largely to the 1989 import

Finally, the overall decline in AW use was only partially offset by substitution of the post-ban legalized models. Even if the post-ban models are counted as AWs, the share of crime guns that were AWs still fell 24% to 60% across most jurisdictions. The exception was Milwaukee where recoveries of a few post-ban models negated the drop in banned models in a small sample of guns recovered during murder investigations.⁵⁸

6.4. Summary

Consistent with predictions derived from the analysis of market indicators in Chapter 5, analyses of national ATF gun tracing data and local databases on guns recovered by police in several localities have been largely consistent in showing that criminal use of AWs, while accounting for no more than 6% of gun crimes even before the ban, declined after 1994, independently of trends in gun crime. In various places and times from the late 1990s through 2003, AWs typically fell by one-third or more as a share of guns used in crime.^{59, 60} Some of the most recent, post-2000 data suggest

restrictions that predated the AW ban. It is not yet clear that there has been a decline in the most common ARs prohibited exclusively by the 1994 ban.

⁵⁸ This was not true when focusing on just those guns that were used in the incident as opposed to all guns recovered during the investigations. However, the samples of AWs identified as murder weapons were too small for valid statistical tests of pre-post changes.

⁵⁹ These findings are also supported by prior research in which we found that reported thefts of AWs declined 7% in absolute terms and 14% as a fraction of stolen guns in the early period following the ban (i.e., late 1994 through early 1996) (Koper and Roth, 2002a, p. 21). We conducted that analysis to account for the possibility that an increase in thefts of AWs might have offset the effect of rising AW prices on the availability of AWs to criminals. Because crimes with AWs appear to have declined after the ban, the theft analysis is not as central to the arguments in this paper.

⁶⁰ National surveys of state prisoners conducted by the federal Bureau of Justice Statistics show an increase from 1991 to 1997 in the percentage of prisoners who reported having used an AW (Beck et al., 1993; Harlow, 2001). The 1991 survey (discussed in Chapter 3) found that 2% of violent gun offenders had carried or used an AW in the offense for which they were sentenced (calculated from Beck et al. 1993, pp. 18,33). The comparable figure from the 1997 survey was nearly 7% (Harlow, 2001, pp.3, 7).

Although these figures appear contrary to the patterns shown by gun recovery data, there are ambiguities in the survey findings that warrant caution in such an interpretation. First, the definition of an AW (and most likely the respondents' interpretation of this term) was broader in the 1997 survey. For the 1991 survey, respondents were asked about prior ownership and use of a "...military-type weapon, such as an Uzi, AK-47, AR-15, or M-16" (Beck et al., 1993, p. 18), all of which are ARs or have AR variations. The 1997 survey project defined AWs to "...include the Uzi, TEC-9, and the MAC-10 for handguns, the AR-15 and AK-47 for rifles, and the 'Street Sweeper' for shotguns" (Harlow, 2001, p. 2). (Survey codebooks available from the Inter-University Consortium for Political and Social Research also show that the 1997 survey provided more detail and elaboration about AWs and their features than did the 1991 survey, including separate definitions of APs, ARs, and assault shotguns.)

A second consideration is that many of the respondents in the 1997 survey were probably reporting criminal activity prior to or just around the time of the ban. Violent offenders participating in the survey, for example, had been incarcerated nearly six years on average at the time they were interviewed (Bureau of Justice Statistics, 2000, p. 55). Consequently, the increase in reported AW use may reflect an upward trend in the use of AWs from the 1980s through the early to mid 1990s, as well as a growing recognition of these weapons (and a greater tendency to report owning or using them) stemming from publicity about the AW issue during the early 1990s.

Finally, we might view the 1997 estimate skeptically because it is somewhat higher than that from most other sources. Nevertheless, it is within the range of estimates discussed earlier and could reflect a

reductions as high as 70%.⁶¹ This trend has been driven primarily by a decline in the use of APs, which account for a majority of AWs used in crime. AR trends have been more varied and complicated by the substitution of post-ban guns that are very similar to some banned ARs. More generally, however, the substitution of post-ban AW-type models with fewer military features has only partially offset the decline in banned AWs.

These findings raise questions as to the whereabouts of surplus AWs, particularly APs, produced just prior to the ban. Presumably, many are in the hands of collectors and speculators holding them for their novelty and value.⁶² Even criminal possessors may be more sensitive to the value of their AWs and less likely to use them for risk of losing them to police.

Finally, it is worth noting the ban has not completely eliminated the use of AWs, and, despite large relative reductions, the share of gun crimes involving AWs is similar to that before the ban. Based on year 2000 or more recent data, the most common AWs continue to be used in up to 1.7% of gun crimes.

somewhat higher use of AWs among the subset of offenders who are most active and/or dangerous; recall that the highest estimate of AW use among the sources examined in this chapter came from a sample of guns recovered during murder investigations in Milwaukee (also see the discussion of offender surveys and AWs in Chapter 3).

⁶¹ Developing a national estimate of the number of AW crimes prevented by the ban is complicated by the range of estimates of AW use and changes therein derived from different data sources. Tentatively, nonetheless, it appears the ban prevents a few thousand crimes with AWs annually. For example, using 2% as the best estimate of the share of gun crimes involving AWs prior to the ban (see Chapter 3) and 40% as a reasonable estimate of the post-ban drop in this figure implies that almost 2,900 murders, robberies, and assaults with AWs were prevented in 2002 (this assumes that 1.2% of the roughly 358,000 gun murders, gun robberies, and gun assaults reported to police in 2002 [see the *Uniform Crime Reports*] involved AWs but that 2% would have involved AWs had the ban not been in effect). Even if this estimate is accurate, however, it does not mean the ban prevented 2,900 gun crimes in 2002; indeed, the preceding calculation assumes that offenders prevented from using AWs committed their crimes using other guns. Whether forcing such weapon substitution can reduce the number of persons wounded or killed in gun crimes is considered in more detail in Chapter 9.

⁶² The 1997 national survey of state prisoners discussed in footnote 60 found that nearly 49% of AW offenders obtained their gun from a "street" or illegal source, in contrast to 36% to 42% for other gun users (Harlow, 2001, p. 9). This could be another sign that AWs have become harder to acquire since the ban, but the data cannot be used to make an assessment over time.

Table 6-3. Trends in Police Recoveries of Domestic Assault Weapons in Baltimore, 1992-2000 ^a

	<u>Pre-Ban Period</u>	<u>Post-Ban Period</u>	<u>Change</u>
<u>A. All Recoveries</u>	Jan. 1992-Dec. 1993	Jan. 1995-Dec. 2000	
Total AWs	135	290	
Annual Mean	67.5	48.33	-28%
AW's as % of Guns	1.88%	1.25%	-34%**
APs	123	260	
Annual Mean	61.5	43.33	-30%
APs as % of Guns	1.71%	1.12%	-35%**
ARs	12	30	
Annual Mean	6	5	-17%
ARs as % of Guns	0.17%	0.13%	-24%
Total AWs and Substitutes	135	309	
Annual Mean	67.5	51.5	-24%
AWs/Subs as % of Guns	1.88%	1.33%	-29%**
<u>B. Recoveries Linked to Violent Crimes ^b</u>			
Total AWs	28	47	
Annual Mean	14	7.83	-44%
AWs as % of Violent Crime Guns	2.1%	1.24%	-41%*

a. Domestic assault weapons include Intratec group, SWD group, AR-15 group, and Calico and Feather models.

b. Murders, assaults, and robberies

* Chi-square p level < .05 (changes in percentages of guns that were AWs/APs/ARs/AW-subs were tested for statistical significance).

** Chi-square p level < .01 (changes in percentages of guns that were AWs/APs/ARs/AW-subs were tested for statistical significance).

**Figure 6-2. Police Recoveries of Assault Weapons in
Baltimore, 1992-2000**

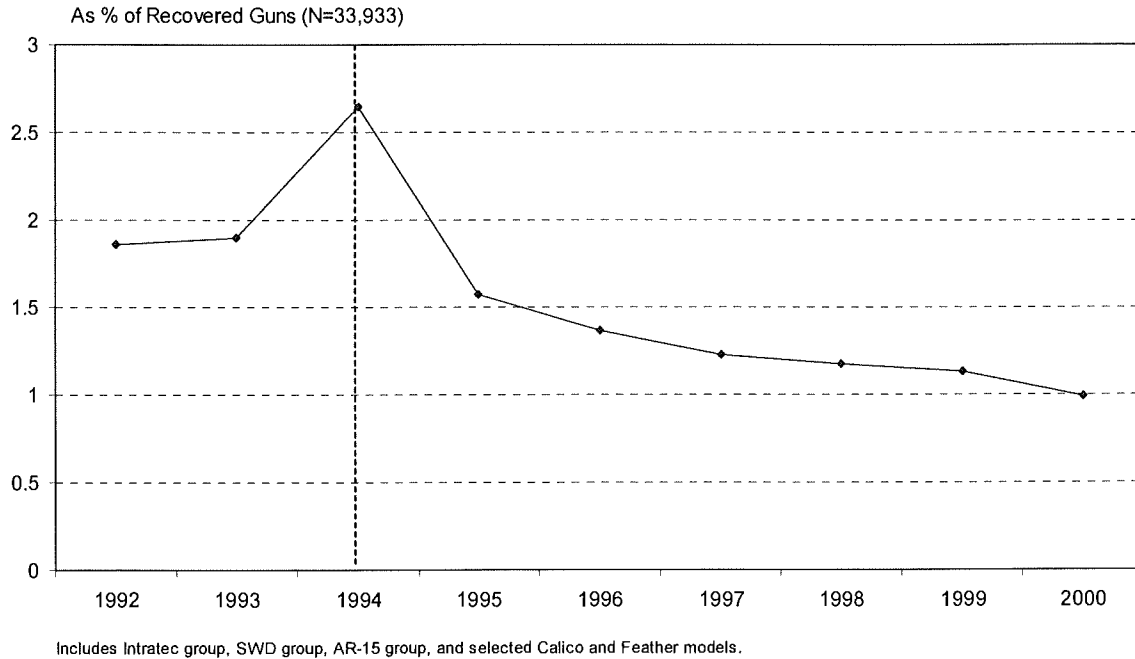


Table 6-4. Trends in Police Recoveries of Domestic Assault Weapons in Miami (Metro-Dade), 1990-2000 ^a

	<u>Pre-Ban Period</u>	<u>Post-Ban Period</u>	<u>Change</u>
<u>A. All Recoveries</u>	Jan. 1990-Dec. 1993	Jan. 1995-Dec. 2000	
Total AWs	403	330	
Annual Mean	100.75	55	-45%
AW's as % of Guns	2.53%	1.71%	-32%***
APs	355	256	
Annual Mean	88.75	42.67	-52%
APs as % of Guns	2.23%	1.33%	-40%***
ARs	43	72	
Annual Mean	10.75	12	12%
ARs as % of Guns	0.27%	0.37%	37%*
Total AWs and Substitutes	403	343	
Annual Mean	100.75	57.17	-43%
AWs/Subs as % of Guns	2.53%	1.78%	-30%***
<u>B. Recoveries Linked to Violent Crimes ^b</u>			
Total AWs	69	32	
Annual Mean	17.25	5.33	-69%
AWs as % of Violent Crime Guns	2.28%	1.39%	-39%**

a. Domestic assault weapons include Intratec group, SWD group, AR-15 group, and Calico and Feather models.

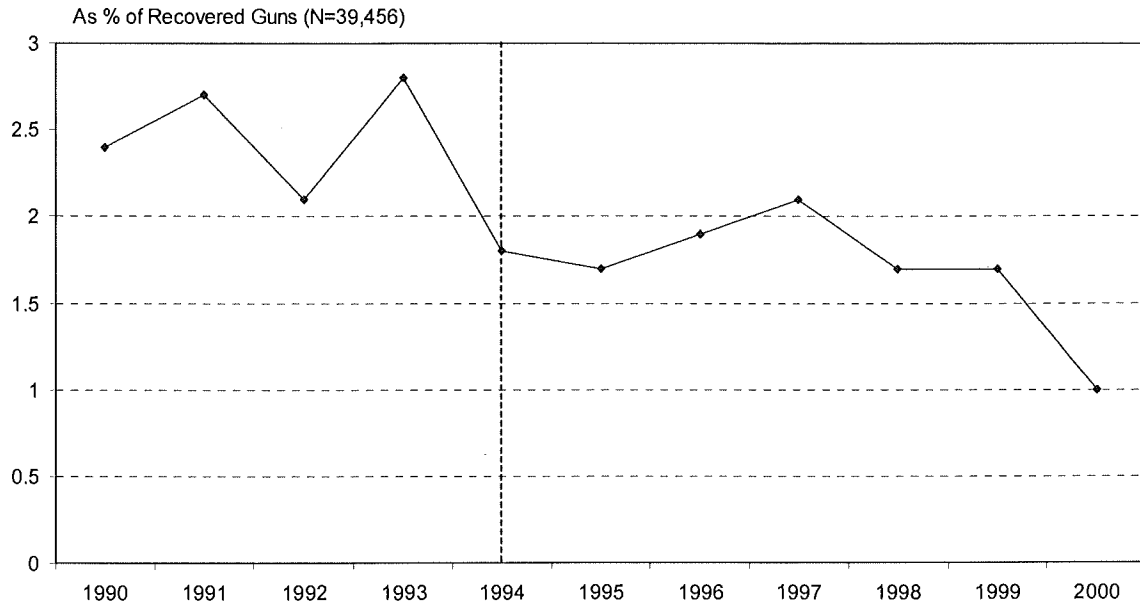
b. Murders, assaults, and robberies

* Chi-square p level < .1 (changes in percentages of guns that were AWs/APs/ARs/AW-subs were tested for statistical significance)

** Chi-square p level < .05 (changes in percentages of guns that were AWs/APs/ARs/AW-subs were tested for statistical significance)

*** Chi-square p level < .01 (changes in percentages of guns that were AWs/APs/ARs/AW-subs were tested for statistical significance)

Figure 6-3. Police Recoveries of Assault Weapons in Miami (Metro-Dade), 1990-2000



Includes Intratec group, SWD group, AR-15 group, and selected Calico and Feather models.

Table 6-5. Trends in Police Recoveries of Domestic Assault Weapons in St. Louis, 1992-2003 ^a

	<u>Pre-Ban Period</u>	<u>Post-Ban Period</u>	<u>Change</u>
<u>A. All Recoveries</u>	Jan. 1992-Dec. 1993	Jan. 1995-Dec. 2003	
Total AWs	94	212	
Annual Mean	47	23.56	-50%
AW's as % of Guns	1.33%	0.91%	-32%**
APs	87	187	
Annual Mean	43.5	20.78	-52%
APs as % of Guns	1.23%	0.81%	-34%**
ARs	7	25	
Annual Mean	3.5	2.78	-21%
ARs as % of Guns	0.1%	0.11%	10%
Total AWs and Substitutes	94	234	
Annual Mean	47	26	-45%
AWs/Subs as % of Guns	1.33%	1.01%	-24%*
<u>B. Recoveries Linked to Violent Crimes ^b</u>			
Total AWs	8	20	
Annual Mean	4	2.2	-45%
AWs as % of Violent Crime Guns	0.8%	0.81%	1%

a. Domestic assault weapons include Intratec group, SWD group, AR-15 group, and Calico and Feather models.

b. Murders, assaults, and robberies

* Chi-square p level < .05 (changes in percentages of guns that were AWs/APs/ARs/AW-subs were tested for statistical significance)

** Chi-square p level < .01 (changes in percentages of guns that were AWs/APs/ARs/AW-subs were tested for statistical significance)

Figure 6-4. Police Recoveries of Assault Weapons in St. Louis, 1992-2003

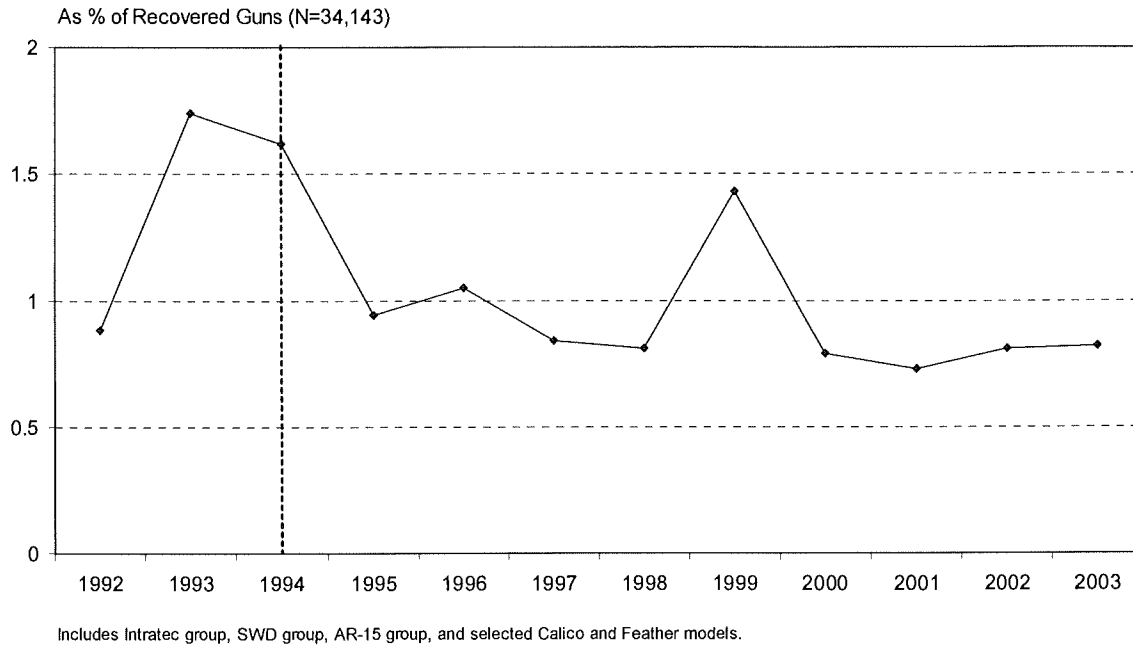


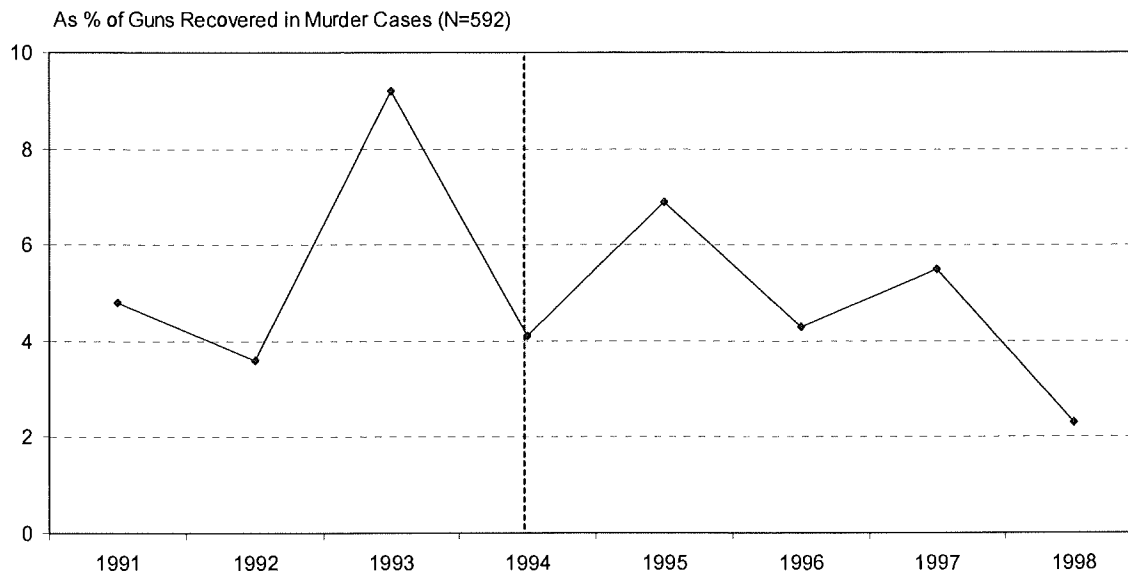
Table 6-6. Trends in Police Recoveries of Domestic Assault Weapons in Boston, Milwaukee, and Anchorage (Alaska) ^a

	<u>Pre-Ban Period</u>	<u>Post-Ban Period</u>	<u>Change</u>
<u>Boston</u>	Jan. 1991-Dec. 1993	Jan. 2000-Dec. 2002	
(All Gun Traces)			
AWs	60	11	
Annual Mean	20	3.7	-82%
AWs as % of Guns	2.16%	0.6%	-72%*
AWs and Substitutes	60	16	
Annual Mean	20	5.3	-74%
AWs/Subs as % of Guns	2.16%	0.87%	-60%*
<u>Milwaukee</u>	Jan. 1991-Dec. 1993	Jan. 1995-Dec. 1998	
(Guns Recovered in Murder Cases)			
AWs	15	13	
Annual Mean	5	3.25	-35%
AWs as % of Guns	5.91%	4.91%	-17%
AWs and Substitutes	15	16	
Annual Mean	5	4	-20%
AWs/Subs as % of Guns	5.91%	6.04%	2%
<u>Anchorage</u>	Jan. 1987-Dec. 1993	Jan. 1995-Dec. 2000	
(Guns Tested for Evidence)			
AWs	16	8	
Annual Mean	2.29	1.33	-42%
AW's as % of Guns	3.57%	2.13%	-40%
AWs and Substitutes	N/A	N/A	

a. Domestic assault weapons include Intratec group, SWD group, AR-15 group, and Calico and Feather models.

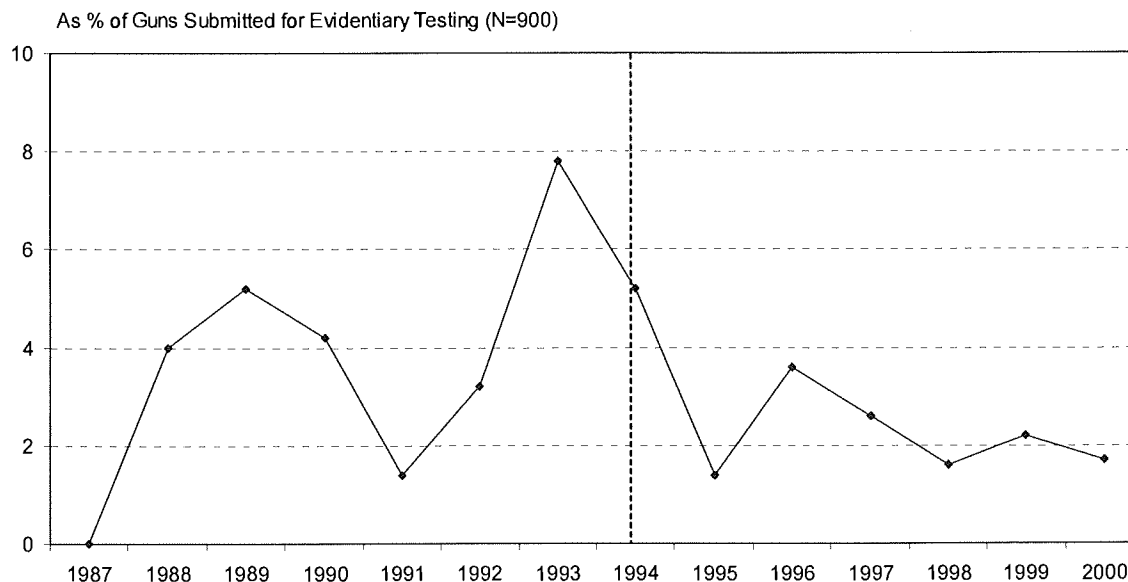
* Chi-square p level < .01 (changes in percentages of guns that were AWs/AW-subs were tested for statistical significance)

Figure 6-5. Assault Weapons Recovered in Milwaukee County Murder Cases, 1991-1998



Includes Intratec group, SWD group, AR-15 group, and selected Calico and Feather models.

Figure 6-6. Police Recoveries of Assault Weapons in Anchorage (Alaska), 1987-2000



Includes Intratec group, SWD group, AR-15 group, and selected Calico and Feather models.

7. MARKET INDICATORS FOR LARGE CAPACITY MAGAZINES: PRICES AND IMPORTATION

The previous chapters examined the AW-LCM ban's impact on the availability and criminal use of AWs. In this chapter and the next, we consider the impact of the ban's much broader prohibition on LCMs made for numerous banned and non-banned firearms. We begin by studying market indicators. Our earlier study of LCM prices for a few gun models revealed that prices rose substantially during 1994 and into 1995 (Roth and Koper, 1997, Chapter 4). Prices of some LCMs remained high into 1996, while others returned to pre-ban levels or oscillated more unpredictably. The price increases may have reduced LCM use at least temporarily in the short-term aftermath of the ban, but we could not confirm this in our prior investigation.

7.1. Price Trends for Large Capacity Magazines

For this study, we sought to approximate longer term trends in the prices at which users could purchase banned LCMs throughout the country. To that end, we analyzed quarterly data on the prices of LCMs advertised by eleven gun and magazine distributors in *Shotgun News*, a national gun industry publication, from April 1992 to December 1998.⁶³ Those prices are available to any gun dealer, and primary market retailers generally re-sell within 15% of the distributors' prices.⁶⁴ The distributors were chosen during the course of the first AW study (Roth and Koper, 1997) based on the frequency with which they advertised during the April 1992 to June 1996 period. For each quarterly period, project staff coded prices for one issue from a randomly selected month. We generally used the first issue of each selected month based on a preliminary, informal assessment suggesting that the selected distributors advertised more frequently in those issues. In a few instances, first-of-month issues were unavailable to us or provided too few observations, so we substituted other issues.⁶⁵ Also, we were unable to obtain *Shotgun News* issues for the last two quarters of 1996. However, we aggregated the data annually to study price trends, and the omission of those quarters did not appear to affect the results (this is explained further below).

We ascertained trends in LCM prices by conducting hedonic price analyses,

⁶³ The *Blue Book of Gun Values*, which served as the data source for the AW price analysis, does not contain ammunition magazine prices.

⁶⁴ According to gun market experts, retail prices track wholesale prices quite closely (Cook et al., 1995, p. 71). Retail prices to eligible purchasers generally exceed wholesale (or original-purchase) prices by 3% to 5% in the large chain stores, by about 15% in independent dealerships, and by about 10% at gun shows (where overhead costs are lower).

⁶⁵ The decision to focus on first-of-month issues was made prior to data collection for price analysis update. For the earlier study (Roth and Koper, 1997), project staff coded data for one or more randomly selected issues of every month of the April 1992 to June 1996 period. For this analysis, we utilized data from only the first-of-month issues selected at random during the prior study. If multiple first-of-month issues were available for a given quarter, we selected one at random or based on the number of recorded advertisements. If no first-of-month issue was available for a given quarter, we selected another issue at random from among those coded during the first study.

similar to those described in the AW price analysis (Chapter 5), in which we regressed inflation-adjusted LCM prices (logged) on several predictors: magazine capacity (logged), gun make (for which the LCM was made), year of the advertisement, and distributor. We cannot account fully for the meaning of significant distributor effects. They may represent unmeasured quality differentials in the merchandise of different distributors, or they may represent other differences in stock volume or selling or service practices between the distributors.⁶⁶ We included the distributor indicators when they proved to be significant predictors of advertised price. In addition, we focused on LCMs made for several of the most common LCM-compatible handguns and rifles, rather than try to model the differences in LCM prices between the several hundred miscellaneous makes and models of firearms that were captured in the data. Finally, for both the handgun and rifle models, we created and tested seasonal indicator variables to determine if their incorporation would affect the coefficient for 1996 (the year with winter/spring data only), but they proved to be statistically insignificant and are not shown in the results below.⁶⁷

7.1.1. Large Capacity Magazines for Handguns

The handgun LCM analysis tracks the prices of LCMs made for Intratec and Cobray (i.e., SWD) APs and non-banned semiautomatic pistols made by Smith and Wesson, Glock, Sturm Ruger, Sig-Sauer, Taurus, and Beretta (each of the manufacturers in the former group produces numerous models capable of accepting LCMs). In general, LCMs with greater magazine capacities commanded higher prices, and there were significant price differentials between LCMs made for different guns and sold by different distributors (see Table 7-1). Not surprisingly, LCMs made for Glock handguns were most expensive, followed by those made for Beretta and Sig-Sauer firearms.

Turning to the time trend indicators (see Table 7-1 and Figure 7-1), prices for these magazines increased nearly 50% from 1993 to 1994, and they rose another 56% in 1995. Prices declined somewhat, though not steadily, from 1996 to 1998. Nevertheless, prices in 1998 remained 22% higher than prices in 1994 and nearly 80% higher than those in 1993.

⁶⁶ For example, one possible difference between the distributors may have been the extent to which they sold magazines made of different materials (e.g., steel, aluminum, etc.) or generic magazines manufactured by companies other than the companies manufacturing the firearms for which the magazines were made. For example, there were indications in the data that 3% of the handgun LCMs and 10% of the AR-15 and Mini-14 rifle LCMs used in the analyses (described below) were generic magazines. We did not control for these characteristic, however, because such information was often unclear from the advertisements and was not recorded consistently by coders.

⁶⁷ Project staff coded all LCM advertisements by the selected distributors. Therefore, the data are inherently weighted. However, the weights are based on the frequency with which the different LCMs were advertised (i.e., the LCMs that were advertised most frequently have the greatest weight in the models) rather than by production volume.

Table 7-1. Regression of Handgun and Rifle Large Capacity Magazine Prices on Annual Time Indicators, 1992-1998, Controlling for Gun Makes/Models and Distributors

	Handgun LCMs (n=1,277)		Rifle LCMs (n=674)	
	Estimate	T value	Estimate	T value
Constant	-1.79	-12.74***	-4.10	-19.12***
1992	-0.19	-2.11**	-0.48	-4.20***
1993	-0.38	-6.00***	-0.55	-6.14***
1995	0.44	6.88***	-0.25	-2.64***
1996	0.29	4.05***	-0.12	-0.93
1997	0.36	6.33***	-0.31	-3.68***
1998	0.20	3.51***	-0.44	-5.19***
Rounds (logged)	0.26	5.73***	0.84	15.08***
Cobray	-0.36	-4.15***		
Glock	0.41	8.15***		
Intratec	-0.40	-4.18***		
Ruger	-0.42	-7.79***		
Smith&Wesson	-0.08	-1.71*		
Sig-Sauer	0	-0.09		
Taurus	-0.31	-6.10***		
AK-type			-0.25	-3.15***
Colt AR-15			0.14	1.68*
Ruger Mini-14			-0.08	-0.92
Distributor 1	-0.72	-16.38***	-0.35	-5.15***
Distributor 2	-0.15	-0.97	-0.83	-5.24***
Distributor 3	-0.16	-3.93***	0.19	2.69***
Distributor 4	-0.55	-5.72***	0.16	0.80
Distributor 5	-0.07	-1.79*	-0.18	-2.65***
Distributor 6	-0.53	-1.23	-0.12	-0.32
Distributor 7	-1.59	-3.70***	-0.10	-0.91
Distributor 8			0.14	0.70
Distributor 9	-0.91	-12.52***	-0.48	-4.00***
F statistic	58.76		21.22	
(p value)	<.0001		<.0001	
Adj. R-square	0.51		0.38	

Year indicators are interpreted relative to 1994, and distributors are interpreted relative to distributor 10. Handgun makes are relative to Beretta and rifle models are relative to SKS.

* Statistically significant at $p \leq .10$.

** Statistically significant at $p \leq .05$.

*** Statistically significant at $p \leq .01$.

Figure 7-1. Annual Price Trends for Large Capacity Magazines, 1992-1998



Based on 1,277 sampled ads for LCMs fitting models of 8 handgun makers and 674 sampled ads for LCMs fitting 4 rifle model groups.

7.1.2. Large Capacity Magazines for Rifles

We approximated trends in the prices of LCMs for rifles by modeling the prices of LCMs manufactured for AR-15, Mini-14, SKS,⁶⁸ and AK-type rifle models (including various non-banned AK-type models). As in the handgun LCM model, larger LCMs drew higher prices, and there were several significant model and distributor effects. AR-15 magazines tended to have the highest prices, and magazines for AK-type models had the lowest prices (Table 7-1).

Like their handgun counterparts, prices for rifle LCMs increased over 40% from 1993 to 1994, as the ban was debated and implemented (see Table 7-1 and Figure 7-1). However, prices declined over 20% in 1995. Following a rebound in 1996, prices moved downward again during 1997 and 1998. Prices in 1998 were over one third lower than the peak prices of 1994 and were comparable to pre-ban prices in 1992 and 1993.

⁶⁸ The SKS is a very popular imported rifle (there are Russian and Chinese versions) that was not covered by either the 1989 AR import ban or the 1994 AW ban. However, importation of SKS rifles from China was discontinued in 1994 due to trade restrictions.

7.2. Post-Ban Importation of Large Capacity Magazines

ATF does not collect (or at least does not publicize) statistics on production of LCMs. Therefore, we cannot clearly document pre-ban production trends. Nevertheless, it seems likely that gun and magazine manufacturers boosted their production of LCMs during the debate over the ban, just as AW makers increased production of AWs. Regardless, gun industry sources estimated that there were 25 million LCMs available as of 1995 (including aftermarket items for repairing magazines or converting them to LCMs) (Gun Tests, 1995, p. 30).

Moreover, the supply of LCMs continued to grow even after the ban due to importation of foreign LCMs that were manufactured prior to the ban (and thus grandfathered by the LCM legislation), according to ATF importation data.⁶⁹ As shown in Table 7-2, nearly 4.8 million LCMs were imported for commercial sale (as opposed to law enforcement uses) from 1994 through 2000, with the largest number (nearly 3.7 million) arriving in 1999.⁷⁰ During this period, furthermore, importers received permission to import a total of 47.2 million LCMs; consequently, an additional 42 million LCMs may have arrived after 2000 or still be on the way, based on just those approved through 2000.^{71, 72}

To put this in perspective, gun owners in the U.S. possessed 25 million firearms that were equipped with magazines holding 10 or more rounds as of 1994 (Cook and Ludwig, 1996, p. 17). Therefore, the 4.7 million LCMs imported in the U.S. from 1994 through 2000 could conceivably replenish 19% of the LCMs that were owned at the time of the ban. The 47.2 million approved during this period could supply nearly 2 additional LCMs for all guns that were so equipped as of 1994.

7.3. Summary and Interpretations

Prices of LCMs for handguns rose significantly around the time of the ban and, despite some decline from their peak levels in 1995, remained significantly higher than pre-ban prices through at least 1998. The increase in LCM prices for rifles proved to be more temporary, with prices returning to roughly pre-ban levels by 1998.⁷³

⁶⁹ To import LCMs into the country, importers must certify that the magazines were made prior to the ban. (The law requires companies to mark post-ban LCMs with serial numbers.) As a practical matter, however, it is hard for U.S. authorities to know for certain whether imported LCMs were produced prior to the ban.

⁷⁰ The data do not distinguish between handgun and rifle magazines or the specific models for which the LCMs were made. But note that roughly two-thirds of the LCMs imported from 1994 through 2000 had capacities between 11 and 19 rounds, a range that covers almost all handgun LCMs as well as many rifle LCMs. It seems most likely that the remaining LCMs (those with capacities of 20 or more rounds) were primarily for rifles.

⁷¹ The statistics in Table 7-2 do not include belt devices used for machine guns.

⁷² A caveat to the number of approved LCMs is that importers may overstate the number of LCMs they have available to give themselves leeway to import additional LCMs, should they become available.

⁷³ A caveat is that we did not examine prices of smaller magazines, so the price trends described here may not have been entirely unique to LCMs. Yet it seems likely that these trends reflect the unique impact of the ban on the market for LCMs.

Table 7-2. Large Capacity Magazines Imported into the United States or Approved For Importation for Commercial Sale, 1994-2000

<u>Year</u>	<u>Imported</u>	<u>Approved</u>
1994	67,063	77,666
1995	3,776	2,066,228
1996	280,425	2,795,173
1997	99,972	1,889,773
1998	337,172	20,814,574
1999	3,663,619	13,291,593
2000	346,416	6,272,876
<i>Total</i>	<i>4,798,443</i>	<i>47,207,883</i>

Source: Firearms and Explosives Imports Branch, Bureau of Alcohol, Tobacco, Firearms, and Explosives. Counts do not include "links" (belt devices) or imports for law enforcement purposes.

The drop in rifle LCM prices between 1994 and 1998 may have due to the simultaneous importation of approximately 788,400 grandfathered LCMs, most of which appear to have been rifle magazines (based on the fact that nearly two-thirds had capacities over 19 rounds), as well as the availability of U.S. military surplus LCMs that fit rifles like the AR-15 and Mini-14. We can also speculate that demand for LCMs is not as great among rifle consumers, who are less likely to acquire their guns for defensive or criminal purposes.

The pre-ban supply of handgun LCMs may have been more constricted than the supply of rifle LCMs for at least a few years following the ban, based on prices from 1994 to 1998. Although there were an estimated 25 million LCMs available in the U.S. as of 1995, some major handgun manufacturers (including Ruger, Sig Sauer, and Glock) had or were close to running out of new LCMs by that time (Gun Tests, 1995, p. 30). Yet the frequency of advertisements for handgun LCMs during 1997 and 1998, as well as the drop in prices from their 1995 peak, suggests that the supply had not become particularly low. In 1998, for example, the selected distributors posted a combined total of 92 LCM ads per issue (some of which may have been for the same make, model, and capacity combinations) for just the handguns that we incorporated into our model.⁷⁴ Perhaps the

⁷⁴ Project staff found substantially more advertisements per issue for 1997 and 1998 than for earlier years. For the LCMs studied in the handgun analysis, staff recorded an average of 412 LCM advertisements per year (103 per issue) during 1997 and 1998. For 1992-1996, staff recorded an average of about 100 ads per year (25 per issue) for the same LCMs. A similar but smaller differential existed in the volume of ads for the LCMs used in the rifle analysis. The increase in LCM ads over time may reflect changes in supply and

demand for enhanced firepower among handgun consumers, who are more likely to acquire guns for crime or defense against crime, was also a factor (and perhaps a large one) putting a premium on handgun LCMs.

Although we might hypothesize that high prices depressed use of handguns with LCMs for at least a few years after the ban, a qualification to this prediction is that LCM use may be less sensitive to prices than is use of AWs because LCMs are much less expensive than the firearms they complement and therefore account for a smaller fraction of users' income (e.g., see Friedman, 1962). To illustrate, TEC-9 APs typically cost \$260 at retail during 1992 and 1993, while LCMs for the TEC-9, ranging in capacity from 30 to 36 rounds, averaged \$16.50 in *Shotgun News* advertisements (and probably \$19 or less at retail) during the same period. So, for example, a doubling of both gun and LCM prices would likely have a much greater impact on purchases of TEC-9 pistols than purchases of LCMs for the TEC-9. Users willing and able to pay for a gun that accepts an LCM are most likely willing and able to pay for an LCM to use with the gun.

Moreover, the LCM supply was enhanced considerably by a surge in LCM imports that occurred after the period of our price analysis. During 1999 and 2000, an additional 4 million grandfathered LCMs were imported into the U.S., over two-thirds of which had capacities of 11-19 rounds, a range that covers almost all handgun LCMs (as well as many rifle LCMs). This may have driven prices down further after 1998.

In sum, market indicators yield conflicting signs on the availability of LCMs. It is perhaps too early to expect a reduction in crimes with LCMs, considering that tens of millions of grandfathered LCMs were available at the time of the ban, an additional 4.8 million – enough to replenish one-fifth of those owned by civilians – were imported from 1994 through 2000, and that the elasticity of demand for LCMs may be more limited than that of firearms. And if the additional 42 million foreign LCMs approved for importation become available, there may not be a reduction in crimes with LCMs anytime in the near future.

demand for LCMs during the study period, as well as product shifts by distributors and perhaps changes in ad formats (e.g., ads during the early period may have been more likely to list magazines by handgun model without listing the exact capacity of each magazine, in which case coders would have been more likely to miss some LCMs during the early period). Because the data collection effort for the early period was part of a larger effort that involved coding prices in *Shotgun News* for LCMs and numerous banned and non-banned firearms, it is also possible that coders were more likely to miss LCM ads during that period due to random factors like fatigue or time constraints.

8. CRIMINAL USE OF LARGE CAPACITY MAGAZINES AFTER THE BAN

Assessing trends in criminal use of LCMs is difficult. There is no national data source on crime guns equipped with LCMs (ATF national tracing data do not include information about magazines recovered with traced firearms), and, based on our contacts with numerous police departments over the course of this study and the first AW study, it seems that even those police departments that maintain electronic databases on recovered firearms do not typically record the capacity of the magazines with which the guns are equipped.^{75,76} Indeed, we were unable to acquire sufficient data to examine LCM use for the first AW study (Roth and Koper, 1997).

For the current study, we obtained four data sources with which to investigate trends in criminal use of LCMs. Three of the databases utilized in the AW analysis – those from Baltimore, Milwaukee, and Anchorage – contained information about the magazines recovered with the guns (see the descriptions of these databases in Chapter 6). Using updated versions of these databases, we examined all LCM recoveries in Baltimore from 1993 through 2003, recoveries of LCMs in Milwaukee murder cases from 1991 to 2001, and recoveries of LCMs linked to serious crimes in Anchorage (and other parts of Alaska) from 1992 through 2002.⁷⁷ In addition, we studied records of guns and magazines submitted to the Jefferson Regional Forensics Lab in Louisville, Kentucky from 1996 through 2000. This lab of the Kentucky State Police services law enforcement agencies throughout roughly half of Kentucky, but most guns submitted to the lab are from the Louisville area. Guns examined at the lab are most typically those associated with serious crimes such as murders, robberies, and assaults.

The LCM analyses and findings were not as uniform across locations as were those for AWs. Therefore, we discuss each site separately. As in the AW analysis, we emphasize changes in the percentage of guns equipped with LCMs to control for overall trends in gun crime and gun recoveries. Because gun crime was falling during the latter 1990s, we anticipated that the number of guns recovered with LCMs might decline independently of the ban's impact. (Hereafter, we refer to guns equipped with LCMs as LCM guns.)

⁷⁵ For the pre-ban period, one can usually infer magazine capacity based on the firearm model. For post-ban recoveries, this is more problematic because gun models capable of accepting LCMs may have been equipped with grandfathered LCMs or with post-ban magazines designed to fit the same gun but holding fewer rounds.

⁷⁶ As for the AW analysis in Chapter 6, we utilize police data to examine trends in criminal use of LCMs. The reader is referred to the general discussion of police gun seizure data in Chapter 6.

⁷⁷ Findings presented in our 2002 interim report (Koper and Roth, 2002b) indicated that LCM use had not declined as of the late 1990s. Therefore, we sought to update the LCM analyses where possible for this version of the report.

8.1. Baltimore

In Baltimore, about 14% of guns recovered by police were LCM guns in 1993. This figure remained relatively stable for a few years after the ban but had dropped notably by 2002 and 2003 (Figure 8-1). For the entire post-ban period (1995-2003), recoveries of LCM guns were down 8% relative to those of guns with smaller magazines (Table 8-1, panel A), a change of borderline statistical significance. Focusing on the most recent years, however, LCM gun recoveries were 24% lower in 2002 and 2003 than during the year prior to the ban, a difference that was clearly significant (Table 8-1, panel B).^{78,79,80} This change was attributable to a 36% drop in LCM handguns (Table 8-1, panel C). LCM rifles actually increased 36% as a share of crime guns, although they still accounted for no more than 3% in 2002 and 2003 (Table 8-1, panel D).⁸¹

Yet there was no decline in recoveries of LCM guns used in violent crimes (i.e., murders, shootings, robberies, and other assaults). After the ban, the percentage of violent crime guns with LCMs generally oscillated in a range consistent with the pre-ban level (14%) and hit peaks of roughly 16% to 17% in 1996 and 2003 (Figure 8-1).⁸² Whether comparing the pre-ban period to the entire post-ban period (1995-2003) or the most recent years (2002-2003), there was no meaningful decline in LCM recoveries linked to violent crimes (Table 8-2, panels A and B).⁸³ Neither violent uses of LCM

⁷⁸ Data on handgun magazines were also available for 1992. An auxiliary analysis of those data did not change the substantive inferences described in the text.

⁷⁹ The Maryland AP ban enacted in June 1994 also prohibited ammunition magazines holding over 20 rounds and did not permit additional sales or transfers of such magazines manufactured prior to the ban. This ban, as well as the Maryland and federal bans on AWs that account for many of the guns with magazines over 20 rounds, may have contributed to the downward trend in LCMs in Baltimore, but only 2% of the guns recovered in Baltimore from 1993 to 2000 were equipped with such magazines.

⁸⁰ All comparisons of 1993 to 2002-2003 in the Baltimore data are based on information from the months of January through November of each year. At the time we received these data, information was not yet available for December 2003, and preliminary analysis revealed that guns with LCMs were somewhat less likely to be recovered in December than in other months for years prior to 2003. Nevertheless, utilizing the December data for 1993 and 2002 did not change the substantive inferences. We did not remove December data from the comparisons of 1993 and the full post-ban period because those comparisons seemed less likely to be influenced by the absence of one month of data.

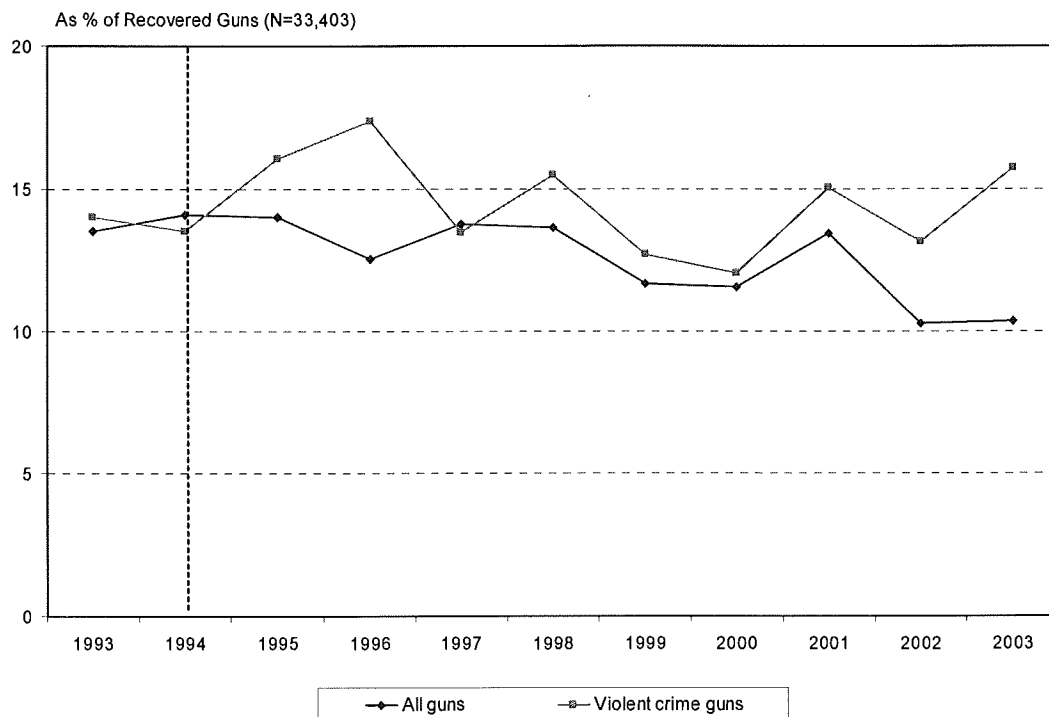
⁸¹ This increase may have been due largely to a general increase in rifle seizures. LCM rifles actually dropped as a percentage of all rifle recoveries from 1993 to 2002-2003, suggesting that recoveries of LCM rifles were increasing less than recoveries of other rifles.

⁸² For 1996, 45% of all records and 24% of those linked to violent crimes had missing data for magazine capacity (due to temporary changes in operational procedures in the Baltimore crime lab). For other years, missing data rates were no more than 6%. Based on those cases for which data were available, the share of guns with LCMs in 1996 was comparable to that in other years, particularly when examining all gun recoveries. At any rate, the analyses focusing on 1993, 2002, and 2003 reinforce the findings of those that include the 1996 data.

⁸³ The ammunition capacity code in the Baltimore data usually reflected the full capacity of the magazine and weapon, but sometimes reflected the capacity of the magazine only. (For instance, a semiautomatic with a 10-round magazine and the ability to accept one additional round in the chamber might have been coded as having a capacity of 10 or 11.) Informal assessment suggested that capacity was more likely to reflect the exact capacity of the magazine in the early years of the database and more likely to reflect the full capacity of the gun and magazine in later years. For the main runs presented in the text and tables, guns were counted as having LCMs if the coded capacity was greater than 11 rounds. This ensured that LCMs were not overestimated, but it potentially understated LCM prevalence, particularly for the earlier

handguns or LCM rifles had declined appreciably by 2002-2003 (Table 8-2, panels C and D). Hence, the general decline in LCM recoveries may reflect differences in the availability and use of LCMs among less serious offenders, changes in police practices,⁸⁴ or other factors.

Figure 8-1. Police Recoveries of Guns Equipped With Large Capacity Magazines in Baltimore, 1993-2003



years. However, coding the guns as LCM weapons based on a threshold of 10 (i.e., a coded capacity over 10 rounds) in 1993 and a threshold of 11 (i.e., a coded capacity over 11 rounds) for 2002-2003 did not change the inferences of the violent crime analysis. Further, this coding increased the pre-ban prevalence of LCMs by very little (about 4% in relative terms).

⁸⁴ During the late 1990s, for example, Baltimore police put greater emphasis on detecting illegal gun carrying (this statement is based on prior research and interviews the author has done in Baltimore as well as the discussion in Center to Prevent Handgun Violence, 1998). One can hypothesize that this effort reduced the fraction of recovered guns with LCMs because illegal gun carriers are probably more likely to carry smaller, more concealable handguns that are less likely to have LCMs.

Table 8-1. Trends in All Police Recoveries of Firearms Equipped With Large Capacity Magazines, Baltimore, 1993-2003

	<u>Pre-Ban Period</u>	<u>Post-Ban Period</u>	<u>Change</u>
<u>A. All LCM Guns</u>	Jan.-Dec. 1993	Jan. 1995-Nov. 2003	
Total	473	3703	
Annual Mean	473	445.86 ^a	-6%
LCM Guns as % of All Guns	13.51%	12.38%	-8%*
<u>B. All LCM Guns</u>	Jan.-Nov. 1993	Jan.-Nov. 2002-2003	
Total	430	626	
Annual Mean	430	313	-27%
LCM Guns as % of All Guns	13.47%	10.3%	-24%***
<u>C. LCM Handguns</u>	Jan.-Nov. 1993	Jan.-Nov. 2002-2003	
Total	359	440	
Annual Mean	359	220	-39%
LCM Handguns as % of All Guns	11.25%	7.24%	-36%***
<u>D. LCM Rifles</u>	Jan.-Nov. 1993	Jan.-Nov. 2002-2003	
LCM Rifles	71	183	
Annual Mean	71	91.5	29%
LCM Rifles as % of All Guns	2.22%	3.01%	36%**

a. Annual average calculated without 1996 and 2003 (to correct for missing months or missing magazine data).

* Chi-square p level < .10 (changes in percentages of guns equipped with LCMs were tested for statistical significance)

** Chi-square p level < .05 (changes in percentages of guns equipped with LCMs were tested for statistical significance)

** Chi-square p level < .01 (changes in percentages of guns equipped with LCMs were tested for statistical significance)

Table 8-2. Trends in Police Recoveries of Firearms Equipped With Large Capacity Magazines in Violent Crime Cases, Baltimore, 1993-2003

	<u>Pre-Ban Period</u>	<u>Post-Ban Period</u>	<u>Change</u> ^a
<u>A. All LCM Guns</u>	Jan.-Dec. 1993	Jan. 1995-Nov. 2003	
Total	87	711	
Annual Mean	87	81.86 ^b	-6%
LCM Guns as % of All Guns	14.01%	14.44%	3%
<u>B. All LCM Guns</u>	Jan.-Nov. 1993	Jan.-Nov. 2002-2003	
Total	79	104	
Annual Mean	79	52	-34%
LCM Guns as % of All Guns	13.96%	13.65%	-2%
<u>C. LCM Handguns</u>	Jan.-Nov. 1993	Jan.-Nov. 2002-2003	
Total	62	81	
Annual Mean	62	40.5	-35%
LCM Handguns as % of All Guns	10.95%	10.63%	-3%
<u>D. LCM Rifles</u>	Jan.-Nov. 1993	Jan.-Nov. 2002-2003	
LCM Rifles	17	23	
Annual Mean	17	11.5	-32%
LCM Rifles as % of All Guns	3%	3.02%	1%

a. Changes in the percentages of guns with LCMs were statistically insignificant in chi-square tests.

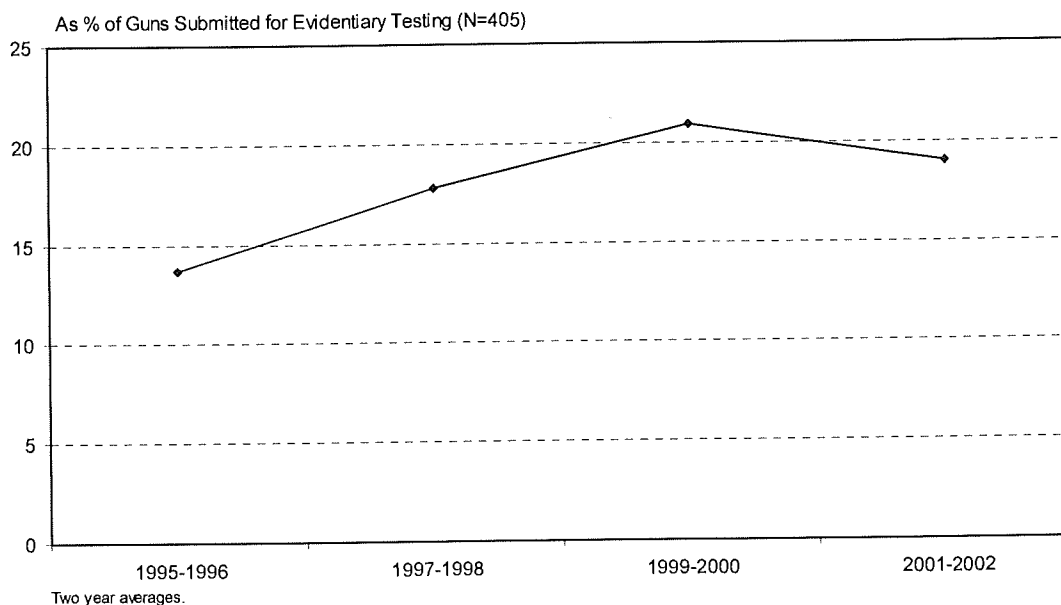
b. Annual average calculated without 1996 and 2003 (to correct for missing months or missing magazine data).

8.2. Anchorage

In the Alaska database, magazine capacity was recorded only for guns recovered during the post-ban years, 1995 through 2002. However, we estimated pre-ban use of LCM handguns by identifying handgun models inspected during 1992 and 1993 that were manufactured with LCMs prior to the ban.⁸⁵ This permitted an assessment of pre-post changes in the use of LCM handguns.

As shown in Figure 8-2 (also see Table 8-3, panel A), LCM guns rose from 14.5% of crime guns in 1995-1996 to 24% in 2000-2001 (we present two-year averages because the sample are relatively small, particularly for the most recent years) and averaged about 20% for the entire post-ban period. LCM handguns drove much of this trend, but LCM rifles also increased from about 3% of crime guns in 1995-96 to 11% in 2000-2001.

Figure 8-2. Police Recoveries of Guns Equipped With Large Capacity Magazines in Anchorage (Alaska), 1995-2002



⁸⁵ To make these determinations, we consulted gun catalogs such as the *Blue Book of Gun Values* and *Guns Illustrated*.

Table 8-3. Trends in Police Recoveries of Firearms Equipped With Large Capacity Magazines in Violent Crime Cases, Anchorage (Alaska), 1992-2002 ^a

	<u>Pre-Ban Period</u>	<u>Post-Ban Period</u>	<u>Change ^b</u>
<u>A. All LCM Guns</u>	N/A	Jan. 1995-Dec. 2002	
Total		80	
Annual Mean		10	N/A
LCM Guns as % of All Guns		19.75%	N/A
<u>B. LCM Handguns</u>	Jan. 1992-Dec. 1993	Jan. 1995-Dec. 2002	
Total	17	57	
Annual Mean	8.5	7.13	-16%
LCM Handguns as % All Handguns	26.15%	22.35%	-15%
<u>C. LCM Handguns</u>	Jan. 1992-Dec. 1993	Jan. 2001-Dec. 2002	
Total	17	10	
Annual Mean	8.5	5	-41%
LCM Handguns as % of All Handguns	26.15%	19.23%	-26%

a. Based on guns submitted to State Police for evidentiary testing.

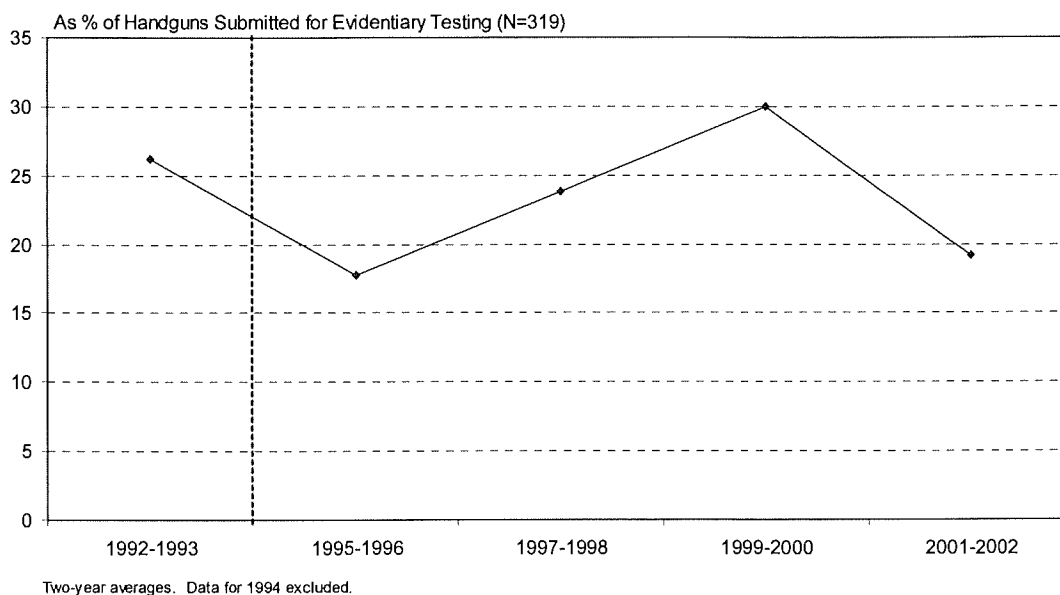
b. Changes in the percentages of guns equipped with LCMs were statistically insignificant in chi-square tests.

Investigation of pre-post changes for handguns revealed an inconsistent pattern (Figure 8-3). LCM handguns dropped initially after the ban, declining from 26% of handguns in 1992-1993 to 18% in 1995-1996. However, they rebounded after 1996, reaching a peak of 30% of handguns in 1999-2000 before declining to 19% in 2001-2002.

For the entire post-ban period, the share of handguns with LCMs was about 15% lower than in the pre-ban period (Table 8-3, panel B). By the two most recent post-ban years (2001-2002), LCM use had dropped 26% from the pre-ban years (Table 8-3, panel C). These changes were not statistically significant, but the samples of LCM handguns were rather small for rigorous statistical testing. Even so, it seems premature to conclude

that there has been a lasting reduction in LCM use in Alaska. LCM use in 2001-2002 was somewhat higher than that immediately following the ban in 1995-1996, after which there was a substantial rebound. Considering the inconsistency of post-ban patterns, further follow-up seems warranted before making definitive conclusions about LCM use in Alaska.

Figure 8-3. Police Recoveries of Handguns Equipped With Large Capacity Magazines in Anchorage (Alaska), 1992-2002



8.3. Milwaukee

LCM guns accounted for 21% of guns recovered in Milwaukee murder investigations from 1991 to 1993 (Table 8-4, panel A). Following the ban, this figure rose until reaching a plateau of over 36% in 1997 and 1998 (Figure 8-4). On average, the share of guns with LCMs grew 55% from 1991-1993 to 1995-1998, a trend that was driven by LCM handguns (Table 8-4, panels A and B).⁸⁶ LCM rifles held steady at between 4% and 5% of the guns (Table 8-4, panel C).

We also analyzed a preliminary database on 48 guns used in murders during 2000 and 2001 (unlike the 1991-1998 database, this database did not include information on other guns recovered during the murder investigations). About 11% of these guns were LCM guns, as compared to 19% of guns used in murders from 1991 to 1993 (analyses not shown). However, nearly a quarter of the 2000-2001 records were missing information on magazine capacity.⁸⁷ Examination of the types and models of guns with

⁸⁶ LCM guns also increased as share of guns that were used in the murders (the full sample results discussed in the text include all guns recovered during the investigations).

⁸⁷ Magazine capacity was missing for less than 4% of the records in earlier years.

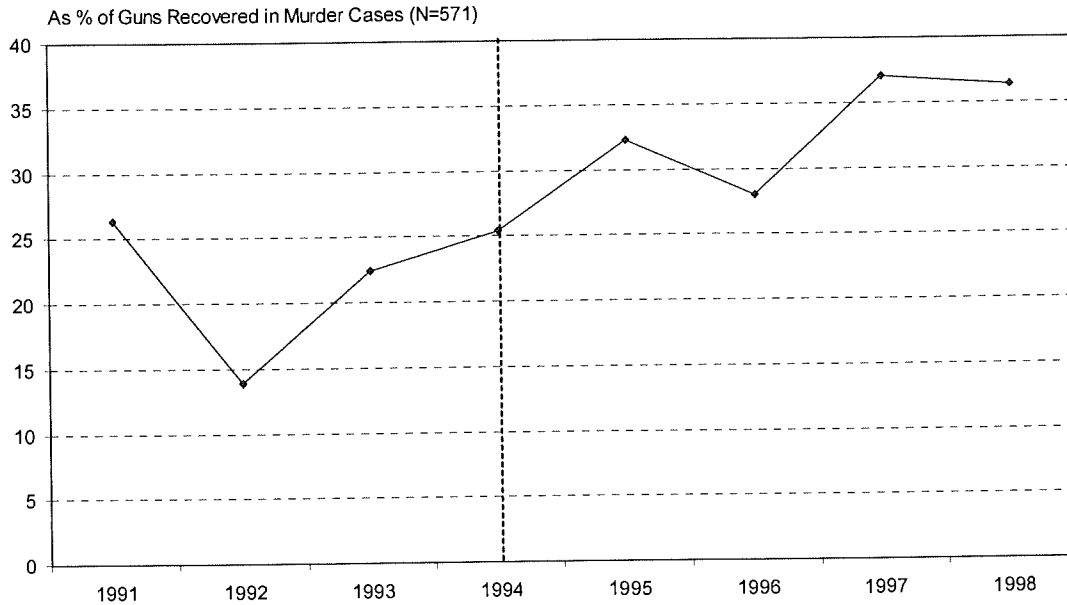
unidentified magazines suggested that as many as 17% of guns used in murders during 2000 and 2001 may have been LCM guns (based on all those that either had LCMs, were models sold with LCMs prior to the ban, or were unidentified semiautomatics). While this still suggests a drop in LCM use from the peak levels of the late 1990s (26% of guns used in murders from 1995 to 1998 had LCMs), it is not clear that LCM use has declined significantly below pre-ban levels.

Table 8-4. Trends in Police Recoveries of Firearms Equipped With Large Capacity Magazines in Murder Cases, Milwaukee County, 1991-1998

	<u>Pre-Ban Period</u>	<u>Post-Ban Period</u>	<u>Change</u>
	Jan. 1991-Dec. 1993	Jan. 1995-Dec. 1998	
<u>A. All LCM Guns</u>			
Total	51	83	
Annual Mean	17	20.75	22%
LCM Guns as % of All Guns	20.9%	32.42%	55%*
<u>B. LCM Handguns</u>	Jan. 1991-Dec. 1993	Jan. 1995-Dec. 1998	
Total	40	71	
Annual Mean	13.33	17.75	33%
LCM Handguns as % of All Guns	16.39%	27.73%	69%*
<u>C. LCM Rifles</u>	Jan. 1991-Dec. 1993	Jan. 1995-Dec. 1998	
Total	11	12	
Annual Mean	3.67	3	-18%
LCM Rifles as % of All Guns	4.51%	4.69%	4%

* Chi-square p level < .01 (changes in percentages of guns equipped with LCMs were tested for statistical significance)

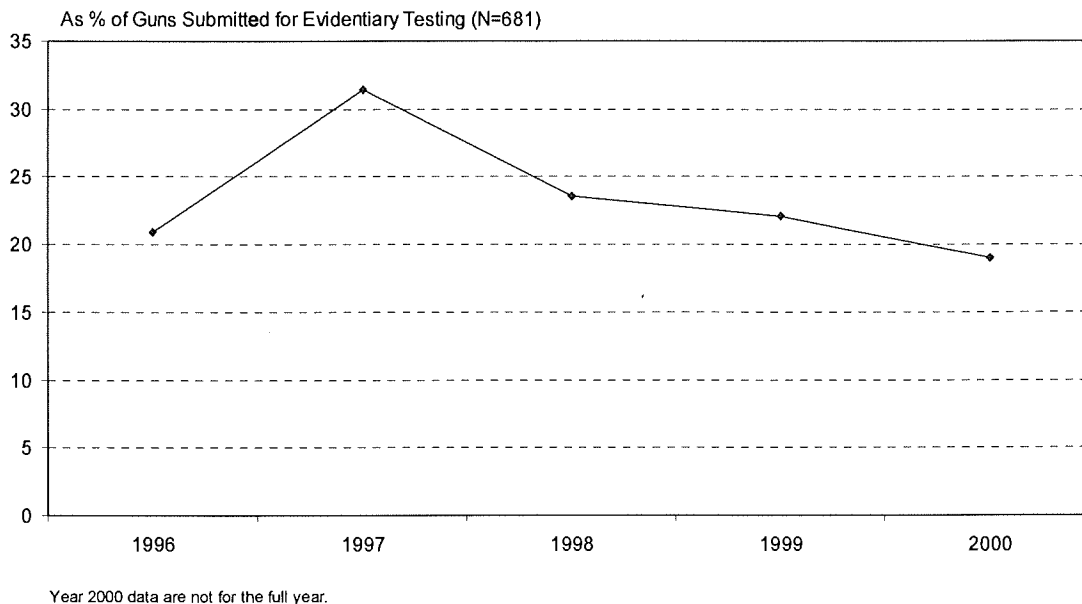
Figure 8-4. Recoveries of Guns Equipped With Large Capacity Magazines in Milwaukee County Murder Cases, 1991-1998



8.4. Louisville

The Louisville LCM data are all post-ban (1996-2000), so we cannot make pre-post comparisons. Nonetheless, the share of crime guns with LCMs in Louisville (24%) was within the range of that observed in the other cities during this period. And similar to post-ban trends in the other sites, LCM recoveries peaked in 1997 before leveling off and remaining steady through the year 2000 (Figure 8-5). LCM rifles dropped 21% as a share of crime guns between 1996 and 2000 (analyses not shown), but there were few in the database, and they never accounted for more than 6.2% of guns in any year.

Figure 8-5. Police Recoveries of Guns Equipped With Large Capacity Magazines in Louisville (Kentucky), 1996-2000



8.5. Summary

Despite a doubling of handgun LCM prices between 1993 and 1995 and a 40% increase in rifle LCM prices from 1993 to 1994, criminal use of LCMs was rising or steady through at least the latter 1990s, based on police recovery data from four jurisdictions studied in this chapter. These findings are also consistent with an earlier study finding no decline in seizures of LCM guns from juveniles in Washington, DC in the year after the ban (Koper, 2001).⁸⁸ Post-2000 data, though more limited and inconsistent, suggest that LCM use may be dropping from peak levels of the late 1990s but provide no definitive evidence of a drop below pre-ban levels.⁸⁹ These trends have been driven primarily by LCM handguns, which are used in crime roughly three times as

⁸⁸ From 1991 to 1993, 16.4% of guns recovered from juveniles in Washington, DC had LCMs (14.2% had LCMs in 1993). In 1995, this percentage increased to 17.1%. We did not present these findings in this chapter because the data were limited to guns recovered from juveniles, the post-ban data series was very short, and the gun markets supplying DC and Baltimore are likely to have much overlap (Maryland is a leading supplier of guns to DC – see ATF, 1997; 1999).

⁸⁹ We reran selected key analyses with the Baltimore, Milwaukee, and Louisville data after excluding .22 caliber guns, some of which could have been equipped with attached tubular magazines that are exempted from the LCM ban, and obtained results consistent with those reported in the text. It was possible to identify these exempted magazines in the Anchorage data. When they were removed from Anchorage's LCM count, the general pattern in use of banned LCMs was similar to that presented in the main 1995-2002 analysis: guns with banned LCMs rose, reaching a peak of 21% of crime guns in 1999-2000, before declining slightly to 19% in 2001-2002.

often as LCM rifles. Nonetheless, there has been no consistent reduction in the use of LCM rifles either.

The observed patterns are likely due to several factors: a hangover from pre-ban growth in the production and marketing of LCM guns (Cook and Ludwig, 1997, pp. 5-6; Wintemute, 1996);⁹⁰ the low cost of LCMs relative to the firearms they complement, which seems to make LCM use less sensitive to prices than is firearm use;⁹¹ the utility that gun users, particularly handgun users, attach to LCMs; a plentiful supply of grandfathered LCMs, likely enhanced by a pre-ban surge in production (though this has not been documented) and the importation of millions of foreign LCMs since the ban;⁹² thefts of LCM firearms (see Roth and Koper, 1997, Chapter 4); or some combination of these factors.⁹³ However, it is worth noting that our analysis did not reveal an upswing in use of LCM guns following the surge of LCM importation in 1999 (see the previous chapter). It remains to be seen whether recent imports will have a demonstrable effect on patterns of LCM use.

Finally, we must be cautious in generalizing these results to the nation because they are based on a small number of non-randomly selected jurisdictions. Nonetheless, the consistent failure to find clear evidence of a pre-post drop in LCM use across these geographically diverse locations strengthens the inference that the findings are indicative of a national pattern.

⁹⁰ To illustrate this trend, 38% of handguns acquired by gun owners during 1993 and 1994 were equipped with magazines holding 10 or more rounds, whereas only 14% of handguns acquired before 1993 were so equipped (Cook and Ludwig, 1997, pp. 5-6).

⁹¹ Although elevated post-ban prices did not suppress use of LCMs, a more subtle point is that LCM use rose in most of these locations between 1995 and 1998, as LCM prices were falling from their peak levels of 1994-1995. Therefore, LCM use may have some sensitivity to price trends.

⁹² However, we do not have the necessary data to determine if LCMs used in crime after the ban were acquired before or after the ban.

⁹³ In light of these considerations, it is conceivable that the ban slowed the rate of growth in LCM use, accelerated it temporarily (due to a pre-ban production boom), or had no effect. We do not have the data necessary to examine this issue rigorously. Moreover, the issue might be regarded as somewhat superfluous; the more critical point would seem to be that nearly a decade after the ban, LCM use has still not declined demonstrably below pre-ban levels.

9. THE CONSEQUENCES OF CRIMES WITH ASSAULT WEAPONS AND LARGE CAPACITY MAGAZINES

One of the primary considerations motivating passage of the ban on AWs and LCMs was a concern over the perceived dangerousness of these guns and magazines. In principal, semiautomatic weapons with LCMs enable offenders to fire high numbers of shots rapidly, thereby potentially increasing both the number of person wounded per gunfire incident (including both intended targets and innocent bystanders) and the number of gunshot victims suffering multiple wounds, both of which would increase deaths and injuries from gun violence. Ban advocates also argued that the banned AWs possessed additional features conducive to criminal applications.

The findings of the previous chapters suggest that it is premature to make definitive assessments of the ban's impact on gun violence. Although criminal use of AWs has declined since the ban, this reduction was offset through at least the late 1990s by steady or rising use of other guns equipped with LCMs. As argued previously, the LCM ban has greater potential for reducing gun deaths and injuries than does the AW ban. Guns with LCMs – of which AWs are only a subset – were used in up to 25% of gun crimes before the ban, whereas AWs were used in no more than 8% (Chapter 3). Furthermore, an LCM is arguably the most important feature of an AW. Hence, use of guns with LCMs is probably more consequential than use of guns with other military-style features, such as flash hiders, folding rifle stocks, threaded barrels for attaching a silencers, and so on.⁹⁴

This is not to say that reducing use of AWs will have no effect on gun crime; a decline in the use of AWs does imply fewer crimes with guns having particularly large magazines (20 or more rounds) and other military-style features that could facilitate some crimes. However, it seems that any such effects would be outweighed, or at least

⁹⁴ While it is conceivable that changing features of AWs other than their magazines might prevent some gunshot victimizations, available data provide little if any empirical basis for judging the likely size of such effects. Speculatively, some of the most beneficial weapon redesigns may be the removal of folding stocks and pistol grips from rifles. It is plausible that some offenders who cannot obtain rifles with folding stocks (which make the guns more concealable) might switch to handguns, which are more concealable but generally cause less severe wounds (e.g. see DiMaio, 1985). However, such substitution patterns cannot be predicted with certainty. Police gun databases rarely have information sufficiently detailed to make assessments of changes over time in the use of weapons with specific features like folding stocks. Based on informal assessments, there was no consistent pattern in post-ban use of rifles (as a share of crime guns) in the local databases examined in the prior chapters (also see the specific comments on LCM rifles in the previous chapters).

Pistol grips enhance the ability of shooters to maintain control of a rifle during rapid, "spray and pray" firing (e.g., see Violence Policy Center, 2003). (Heat shrouds and forward handgrips on APs serve the same function.) While this feature may prove useful in military contexts (e.g., firefights among groups at 100 meters or less – see data of the U.S. Army's Operations Research Office as cited in Violence Policy Center, 2003), it is unknown whether civilian attacks with semiautomatic rifles having pistol grips claim more victims per attack than do those with other semiautomatic rifles. At any rate, most post-ban AR-type rifles still have pistol grips. Further, the ban does not count a stock thumbhole grip, which serves the same function as a pistol grip (e.g., see the illustration of LCMM rifles in Chapter 2), as an AR feature.

obscured, by the wider effects of LCM use, which themselves are likely to be small at best, as we argue below.⁹⁵

Because offenders can substitute non-banned guns and small magazines for banned AWs and LCMs, there is not a clear rationale for expecting the ban to reduce assaults and robberies with guns.⁹⁶ But by forcing AW and LCM offenders to substitute non-AWs with small magazines, the ban might reduce the number of shots fired per gun attack, thereby reducing both victims shot per gunfire incident and gunshot victims sustaining multiple wounds. In the following sections, we consider the evidence linking high-capacity semiautomatics and AWs to gun violence and briefly examine recent trends in lethal and injurious gun violence.

9.1. The Spread of Semiautomatic Weaponry and Trends in Lethal and Injurious Gun Violence Prior to the Ban

Nationally, semiautomatic handguns grew from 28% of handgun production in 1973 to 80% in 1993 (Zawitz, 1995, p. 3). Most of this growth occurred from the late 1980s onward, during which time the gun industry also increased marketing and production of semiautomatics with LCMs (Wintemute, 1996). Likewise, semiautomatics grew as a percentage of crime guns (Koper, 1995; 1997), implying an increase in the average firing rate and ammunition capacity of guns used in crime.⁹⁷

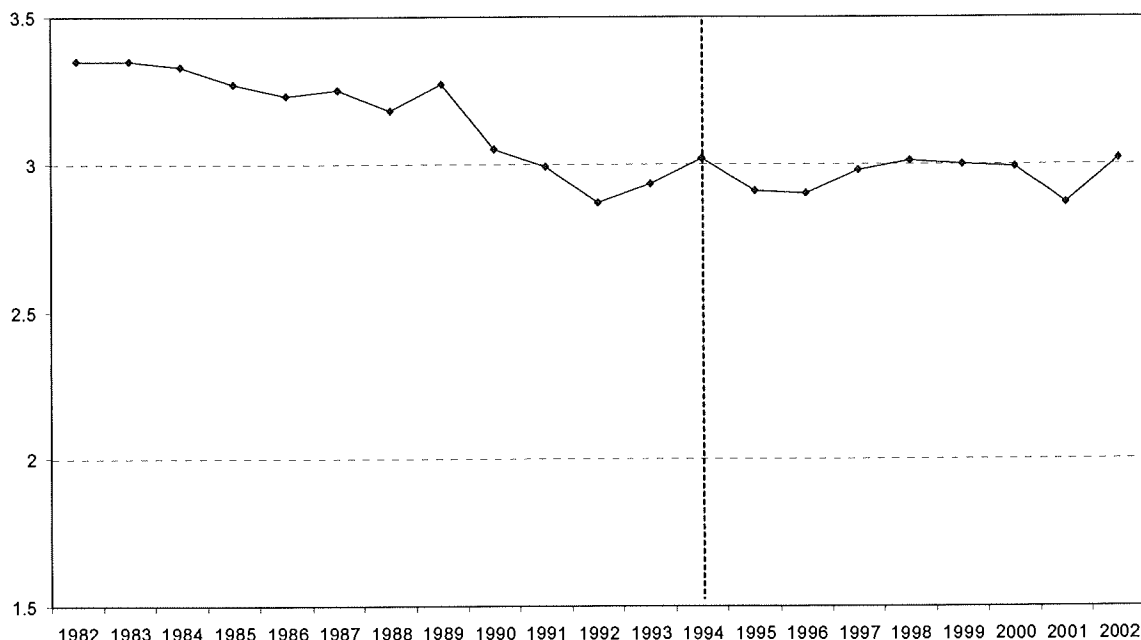
⁹⁵ On a related note, a few studies suggest that state-level AW bans have not reduced crime (Koper and Roth, 2001a; Lott, 2003). This could be construed as evidence that the federal AW ban will not reduce gunshot victimizations without reducing LCM use because the state bans tested in those studies, as written at the time, either lacked LCM bans or had LCM provisions that were less restrictive than that of the federal ban. (New Jersey's 1990 AW ban prohibited magazines holding more than 15 rounds. AP bans passed by Maryland and Hawaii prohibited magazines holding more than 20 rounds and pistol magazines holding more than 10 rounds, respectively, but these provisions did not take effect until just a few months prior to the federal ban.) However, it is hard to draw definitive conclusions from these studies for a number of reasons, perhaps the most salient of which are the following: there is little evidence on how state AW bans affect the availability and use of AWs (the impact of these laws is likely undermined to some degree by the influx of AWs from other states, a problem that was probably more pronounced prior to the federal ban when the state laws were most relevant); studies have not always examined the effects of these laws on gun homicides and shootings, the crimes that are arguably most likely to be affected by AW bans (see discussion in the main text); and the state AW bans that were passed prior to the federal ban (those in California, New Jersey, Hawaii, Connecticut, and Maryland) were in effect for only three months to five years (two years or less in most cases) before the imposition of the federal ban, after which they became largely redundant with the federal legislation and their effects more difficult to predict and estimate.

⁹⁶ One might hypothesize that the firepower provided by AWs and other semiautomatics with LCMs emboldens some offenders to engage in aggressive behaviors that prompt more shooting incidents. On the other hand, these weapons might also prevent some acts of violence by intimidating adversaries, thus discouraging attacks or resistance. We suspect that firepower does influence perceptions, considering that many police departments have upgraded their weaponry in recent years – often adopting semiautomatics with LCMs – because their officers felt outgunned by offenders. However, hypotheses about gun types and offender behavior are very speculative, and, pending additional research on such issues, it seems prudent to focus on indicators with stronger theoretical and empirical foundations.

⁹⁷ Revolvers, the most common type of non-semiautomatic handgun, typically hold only 5 or 6 rounds (and sometimes up to 9). Semiautomatic pistols, in contrast, hold ammunition in detachable magazines that, prior to the ban, typically held 5 to 17 bullets and sometimes upwards of 30 (Murtz et al., 1994).

The impact of this trend is debatable. Although the gun homicide rate rose considerably during the late 1980s and early 1990s (Bureau of Justice Statistics, 1994, p. 13), the percentage of violent gun crimes resulting in death was declining (see Figure 9-1 and the related discussion in section 9.3). Similarly, the percentage of victims killed or wounded in handgun discharge incidents declined from 27% during the 1979-1987 period to 25% for the 1987-1992 period (calculated from Rand, 1990, p. 5; 1994, p. 2) as semiautomatics were becoming more common crime weapons.⁹⁸ On the other hand, an increasing percentage of gunshot victims died from 1992 to 1995 according to hospital data (Cherry et al., 1998), a trend that could have been caused in part by a higher number of gunshot victims with multiple wounds (also see McGonigal et al., 1993). Most notably, the case fatality rate for assaultive gunshot cases involving 15 to 24-year-old males rose from 15.9% in late 1993 to 17.5% in early 1995 (p. 56).

Figure 9-1. Percentage of Violent Gun Crimes Resulting in Death (National), 1982-2002



Based on gun homicides, gun robberies, and gun assaults reported in the Uniform Crime Reports and Supplemental Homicide Reports.

⁹⁸ A related point is that there was a general upward trend in the average number of shots fired by offenders in gunfights with New York City police from the late 1980s through 1992 (calculated from Goehl, 1993, p. 51). However, the average was no higher during this time than during many years of the early 1980s and 1970s.

Some researchers have inferred links between the growing use of semiautomatics in crime and the rise of both gun homicides and bystander shootings in a number of cities during the late 1980s and early 1990s (Block and Block, 1993; McGonigal et al., 1993; Sherman et al., 1989; Webster et al., 1992). A study in Washington, DC, for example, reported increases in wounds per gunshot victim and gunshot patient mortality during the 1980s that coincided with a reported increase in the percentage of crime guns that were semiautomatics (Webster et al., 1992).

Nevertheless, changes in offender behavior, coupled with other changes in crime guns (e.g., growing use of large caliber handguns – see Caruso et al., 1999; Koper, 1995; 1997; Wintemute, 1996), may have been key factors driving such trends. Washington, DC, for example, was experiencing an exploding crack epidemic at the time of the aforementioned study, and this may have raised the percentage of gun attacks in which offenders had a clear intention to injure or kill their victims. Moreover, studies that attempted to make more explicit links between the use of semiautomatic firearms and trends in lethal gun violence via time series analysis failed to produce convincing evidence of such links (Koper, 1995; 1997). However, none of the preceding research related specific trends in the use of AWs or LCMs to trends in lethal gun violence.

9.2. Shots Fired in Gun Attacks and the Effects of Weaponry on Attack Outcomes

The evidence most directly relevant to the potential of the AW-LCM ban to reduce gun deaths and injuries comes from studies examining shots fired in gun attacks and/or the outcomes of attacks involving different types of guns. Unfortunately, such evidence is very sparse.

As a general point, the faster firing rate and larger ammunition capacities of semiautomatics, especially those equipped with LCMs, have the potential to affect the outcomes of many gun attacks because gun offenders are not particularly good shooters. Offenders wounded their victims in no more than 29% of gunfire incidents according to national, pre-ban estimates (computed from Rand, 1994, p. 2; also see estimates presented later in this chapter). Similarly, a study of handgun assaults in one city revealed a 31% hit rate per shot, based on the sum totals of all shots fired and wounds inflicted (Reedy and Koper, 2003, p. 154). Other studies have yielded hit rates per shot ranging from 8% in gunfights with police (Goehl, 1993, p. 8) to 50% in mass murders (Kleck, 1997, p. 144). Even police officers, who are presumably certified and regularly re-certified as proficient marksman and who are almost certainly better shooters than are average gun offenders, hit their targets with only 22% to 39% of their shots (Kleck, 1991, p. 163; Goehl, 1993). Therefore, the ability to deliver more shots rapidly should raise the likelihood that offenders hit their targets, not to mention innocent bystanders.⁹⁹

⁹⁹ However, some argue that this capability is offset to some degree by the effects of recoil on shooter aim, the limited number of shots fired in most criminal attacks (see below), and the fact that criminals using non-semiautomatics or semiautomatics with small magazines usually have the time and ability to deliver multiple shots if desired (Kleck, 1991, pp. 78-79).

A few studies have compared attacks with semiautomatics, sometimes specifically those with LCMs (including AWs), to other gun assaults in terms of shots fired, persons hit, and wounds inflicted (see Tables 9-1 and 9-2). The most comprehensive of these studies examined police reports of attacks with semiautomatic pistols and revolvers in Jersey City, New Jersey from 1992 through 1996 (Reedy and Koper, 2003), finding that use of pistols resulted in more shots fired and higher numbers of gunshot victims (Table 9-1), though not more gunshot wounds per victim (Table 9-2).¹⁰⁰ Results implied there would have been 9.4% fewer gunshot victims overall had semiautomatics not been used in any of the attacks. Similarly, studies of gun murders in Philadelphia (see McGonigal et al., 1993 in Table 9-1) and a number of smaller cities in Pennsylvania, Ohio, and Iowa (see Richmond et al., 2003 in Table 9-2) found that attacks with semiautomatics resulted in more shots fired and gunshot wounds per victim. An exception is that the differential in shots fired between pistol and revolver cases in Philadelphia during 1990 did not exist for cases that occurred in 1985, when semiautomatics and revolvers had been fired an average of 1.6 and 1.9 times, respectively. It is not clear whether the increase in shots fired for pistol cases from 1985 to 1990 was due to changes in offender behavior, changes in the design or quality of pistols (especially an increase in the use of models with LCMs – see Wintemute, 1996), the larger sample for 1990, or other factors.

¹⁰⁰ But unlike other studies that have examined wounds per victim (see Table 9-2), this study relied on police reports of wounds inflicted rather than medical reports, which are likely to be more accurate.

Table 9-1. Shots Fired and Victims Hit in Gunfire Attacks By Type of Gun and Magazine

Data Source	Measure	Outcome
Gun attacks with semiautomatic pistols and revolvers, Jersey City, 1992-1996 ^a	Shots Fired	Avg. = 3.2 – 3.7 (n=165 pistol cases) * Avg. = 2.3 – 2.6 (n=71 revolver cases) *
Gun homicides with semiautomatic pistols and revolvers, Philadelphia, 1985 and 1990 ^b	Shots Fired	Avg. = 1.6 (n=21 pistol cases, 1985) Avg. = 1.9 (n=57 revolver cases, 1985) Avg. = 2.7 (n=95 pistol cases, 1990) Avg. = 2.1 (n=108 revolver cases, 1990)
Gun attacks with semiautomatic pistols and revolvers, Jersey City, 1992-1996 ^a	Victims Hit	Avg. = 1.15 (n=95 pistol cases) * Avg. = 1.0 (n=40 revolver cases) *
Mass shootings with AWs, semiautomatics having LCMs, or other guns, 6+ dead or 12+ shot, United States, 1984-1993 ^c	Victims Hit	Avg. = 29 (n=6 AW/LCM cases) Avg. = 13 (n=9 non-AW/LCM cases)
Self-reported gunfire attacks by state prisoners with AWs, other semiautomatics, and non-semiautomatic firearms, United States, 1997 or earlier ^d	% of Attacks With Victims Hit	19.5% (n=72 AW or machine gun cases) 22.3% (n=419 non-AW, semiautomatic cases) 23.3% (n=608 non-AW, non-semiautomatic cases)

a. Reedy and Koper (2003)

b. McGonigal et al. (1993)

c. Figures calculated by Koper and Roth (2001a) based on data presented by Kleck (1997, p. 144)

d. Calculated from Harlow (2001, p. 11). (Sample sizes are based on unpublished information provided by the author of the survey report.)

* Pistol/revolver differences statistically significant at $p < .05$ (only Reedy and Koper [2003] and Harlow [2001] tested for statistically significant differences). The shots fired ranges in Reedy and Koper are based on minimum and maximum estimates.

Table 9-2. Gunshot Wounds Per Victim By Type of Gun and Magazine

Data Source	Measure	Outcome
Gun attacks with semiautomatic pistols and revolvers, Jersey City, 1992-1996 ^a	Gunshot Wounds	Avg. = 1.4 (n=107 pistol victims) Avg. = 1.5 (n=40 revolver victims)
Gun homicides with semiautomatic pistols and revolvers, Iowa City (IA), Youngstown (OH), and Bethlehem (PA), 1994-1998 ^b	Gunshot Wounds	Avg. = 4.5 total (n=212 pistol victims)* Avg. = 2.9 entry Avg. = 2.0 total (n=63 revolver victims)* Avg. = 1.5 entry
Gun homicides with assault weapons (AWs), guns having large capacity magazines (LCMs), and other firearms, Milwaukee, 1992-1995 ^c	Gunshot Wounds	Avg. = 3.23 (n=30 LCM victims) ** Avg. = 3.14 (n=7 AW victims) Avg. = 2.08 (n=102 non-AW/LCM victims)**

a. Reedy and Koper (2003)

b. Richmond et al. (2003)

c. Roth and Koper (1997, Chapter 6)

* Pistol/revolver differences statistically significant at $p < .01$.

** The basic comparison between LCM victims and non-AW/LCM victims was moderately significant ($p < .10$) with a one-tailed test. Regression results (with a slightly modified sample) revealed a difference significant at $p = .05$ (two-tailed test). Note that the non-LCM group included a few cases involving non-banned LCMs (.22 caliber attached tubular devices).

Also, a national survey of state prisoners found that, contrary to expectations, offenders who reported firing on victims with AWs and other semiautomatics were no more likely to report having killed or injured victims than were other gun offenders who reported firing on victims (Table 9-1). However, the measurement of guns used and attack outcomes were arguably less precise in this study, which was based on offender self-reports, than in other studies utilizing police and medical reports.¹⁰¹

Attacks with AWs or other guns with LCMs may be particularly lethal and injurious, based on very limited evidence. In mass shooting incidents (defined as those in which at least 6 persons were killed or at least 12 were wounded) that occurred during the decade preceding the ban, offenders using AWs and other semiautomatics with LCMs (sometimes in addition to other guns) claimed an average of 29 victims in comparison to an average of 13 victims for other cases (Table 9-1). (But also see the study discussed in the preceding paragraph in regards to victims hit in AW cases.)

Further, a study of Milwaukee homicide victims from 1992 through 1995 revealed that those killed with AWs were shot 3.14 times on average, while those killed with any

¹⁰¹ See the discussion of self-reports and AW use in Chapter 3.

gun having an LCM were shot 3.23 times on average (Table 9-2). In contrast, victims shot with guns having small magazines had only 2.1 wounds on average. If such a wound differential can be generalized to other gun attacks – if, that is, both fatal and non-fatal LCM gunshot victims are generally hit one or more extra times – then LCM use could have a considerable effect on the number of gunshot victims who die. To illustrate, the fatality rate among gunshot victims in Jersey City during the 1990s was 63% higher for those shot twice than for those shot once (26% to 16%) (Koper and Roth, 2001a; 2001b). Likewise, fatality rates are 61% higher for patients with multiple chest wounds than for patients with a single chest wound (49% to 30.5%), based on a Washington, DC study (Webster et al., 1992, p. 696).

Similar conclusions can also be inferred indirectly from the types of crimes involving LCM guns. To illustrate, handguns associated with gunshot victimizations in Baltimore (see the description of the Baltimore gun and magazine data in the preceding chapter) are 20% to 50% more likely to have LCMs than are handguns associated with other violent crimes, controlling for weapon caliber (Table 9-3). This difference may be due to higher numbers of shots and hits in crimes committed with LCMs, although it is also possible that offenders using LCMs are more likely to fire on victims. But controlling for gunfire, guns used in shootings are 17% to 26% more likely to have LCMs than guns used in gunfire cases resulting in no wounded victims (perhaps reflecting higher numbers of shots fired and victims hit in LCM cases), and guns linked to murders are 8% to 17% more likely to have LCMs than guns linked to non-fatal gunshot victimizations (perhaps indicating higher numbers of shots fired and wounds per victim in LCM cases).¹⁰² These differences are not all statistically significant, but the pattern is consistent. And as discussed in Chapter 3, AWs account for a larger share of guns used in mass murders and murders of police, crimes for which weapons with greater firepower would seem particularly useful.

¹⁰² Cases with and without gunfire and gunshot victims were approximated based on offense codes contained in the gun seizure data (some gunfire cases not resulting in wounded victims may not have been identified as such, and it is possible that some homicides were not committed with the guns recovered during the investigations). In order to control for caliber effects, we focused on 9mm and .38 caliber handguns. Over 80% of the LCM handguns linked to violent crimes were 9mm handguns. Since all (or virtually all) 9mm handguns are semiautomatics, we also selected .38 caliber guns, which are close to 9mm in size and consist almost entirely of revolvers and derringers.

The disproportionate involvement of LCM handguns in injury and death cases is greatest in the comparisons including both 9mm and .38 caliber handguns. This may reflect a greater differential in average ammunition capacity between LCM handguns and revolvers/derringers than between LCM handguns and other semiautomatics. The differential in fatal and non-fatal gunshot victims may also be due to caliber effects; 9mm is generally a more powerful caliber than .38 based on measures like kinetic energy or relative stopping power (e.g., see DiMaio, 1985, p. 140; Warner 1995, p. 223; Wintemute, 1996, p. 1751).

Table 9-3. Probabilities That Handguns Associated With Murders, Non-Fatal Shootings, and Other Violent Crimes Were Equipped With Large Capacity Magazines in Baltimore, 1993-2000

<u>Handgun Sample</u>	<u>% With LCM</u>	<u>% Difference (#2 Relative to #1)</u>
A. Handguns Used in Violent Crimes With and Without Gunshot Injury		
1) 9mm and .38: violence, no gunshot victims	23.21%	
2) 9mm and .38: violence with gunshot victims	34.87%	50%*
1) 9mm: violence, no gunshot victims	52.92%	
2) 9mm: violence with gunshot victims	63.24%	20%*
B. Handguns Used in Gunfire Cases With and Without Gunshot Injury		
1) 9mm and .38: gunfire, no gunshot victims	27.66%	
2) 9mm and .38: gunfire with gunshot victims	34.87%	26%
1) 9mm: gunfire, no gunshot victims	54.17%	
2) 9mm: gunfire with gunshot victims	63.24%	17%
C. Handguns Used in Fatal Versus Non-Fatal Gunshot Victimizations		
1) 9mm and .38: non-fatal gunshot victims	32.58%	
2) 9mm and .38: homicides	38.18%	17%
1) 9mm: non-fatal gunshot victims	61.14%	
2) 9mm: homicides	66.04%	8%

* Statistically significant difference at $p < .01$ (chi-square).

The findings of the preceding studies are subject to numerous caveats. There were few if any attempts to control for characteristics of the actors or situations that might have influenced weapon choices and/or attack outcomes.¹⁰³ Weapons data were typically missing for substantial percentages of cases. Further, many of the comparisons in the tables were not tested for statistical significance (see the notes to Tables 9-1 and 9-2).¹⁰⁴

Tentatively, nonetheless, the evidence suggests more often than not that attacks with semiautomatics, particularly those equipped with LCMs, result in more shots fired, leading to both more injuries and injuries of greater severity. Perhaps the faster firing rate and larger ammunition capacities afforded by these weapons prompt some offenders to fire more frequently (i.e., encouraging what some police and military persons refer to as a “spray and pray” mentality). But this still begs the question of whether a 10-round limit on magazine capacity will affect the outcomes of enough gun attacks to measurably reduce gun injuries and deaths.

¹⁰³ In terms of offender characteristics, recall from Chapter 3 that AP buyers are more likely than other gun buyers to have criminal histories and commit subsequent crimes. This does not seem to apply, however, to the broader class of semiautomatic users: handgun buyers with and without criminal histories tend to buy pistols in virtually the same proportions (Wintemute et al., 1998b), and youthful gun offenders using pistols and revolvers have very comparable criminal histories (Sheley and Wright, 1993b, p. 381). Further, semiautomatic users, including many of those using AWs, show no greater propensity to shoot at victims than do other gun offenders (Harlow, 2001, p. 11; Reedy and Koper, 2003). Other potential confounders to the comparisons in Tables 9-1 and 9-2 might include shooter age and skill, the nature of the circumstances (e.g., whether the shooting was an execution-style shooting), the health of the victim(s), the type of location (e.g., indoor or outdoor location), the distance between the shooter and intended victim(s), the presence of multiple persons who could have been shot intentionally or accidentally (as bystanders), and (in the mass shooting incidents) the use of multiple firearms.

¹⁰⁴ Tables 9-1 and 9-2 present the strongest evidence from the available studies. However, there are additional findings from these studies and others that, while weaker, are relevant. Based on gun model information available for a subset of cases in the Jersey City study, there were 12 gunfire cases involving guns manufactured with LCMs before the ban (7 of which resulted in wounded victims) and 94 gunfire cases involving revolvers or semiautomatic models without LCMs. Comparisons of these cases produced results similar to those of the main analysis: shot fired estimates ranged from 2.83 to 3.25 for the LCM cases and 2.22 to 2.6 for the non-LCM cases; 1.14 victims were wounded on average in the LCM gunshot cases and 1.06 in the non-LCM gunshot cases; and LCM gunshot victims had 1.14 wound on average, which, contrary to expectations, was less than the 1.47 average for other gunshot victims.

The compilation of mass shooting incidents cited in Table 9-1 had tentative shots fired estimates for 3 of the AW-LCM cases and 4 of the other cases. The AW-LCM cases averaged 93 shots per incident, a figure two and a half times greater than the 36.5 shot average for the other cases.

Finally, another study of firearm mass murders found that the average number of victims killed (tallies did not include others wounded) was 6 in AW cases and 4.5 in other cases (Roth and Koper, 1997, Appendix A). Only 2 of the 52 cases studied clearly involved AWs (or very similar guns). However, the make and model of the firearm were available for only eight cases, so additional incidents may have involved LCMs; in fact, at least 35% of the cases involved unidentified semiautomatics. (For those cases in which at least the gun type and firing action were known, semiautomatics outnumbered non-semiautomatics by 6 to 1, perhaps suggesting that semiautomatics are used disproportionately in mass murders.)

9.2.1. *Will a 10-Round Magazine Limit Reduce Gunshot Victimization?*

Specific data on shots fired in gun attacks are quite fragmentary and often inferred indirectly, but they suggest that relatively few attacks involve more than 10 shots fired.¹⁰⁵ Based on national data compiled by the FBI, for example, there were only about 19 gun murder incidents a year involving four or more victims from 1976 through 1995 (for a total of 375) (Fox and Levin, 1998, p. 435) and only about one a year involving six or more victims from 1976 through 1992 (for a total of 17) (Kleck, 1997, p. 126). Similarly, gun murder victims are shot two to three times on average according to a number of sources (see Table 9-2 and Koper and Roth, 2001a), and a study at a Washington, DC trauma center reported that only 8% of all gunshot victims treated from 1988 through 1990 had five or more wounds (Webster et al., 1992, p. 696).

However, counts of victims hit or wounds inflicted provide only a lower bound estimate of the number of shots fired in an attack, which could be considerably higher in light of the low hit rates in gunfire incidents (see above).¹⁰⁶ The few available studies on shots fired show that assailants fire less than four shots on average (see sources in Table 9-1 and Goehl, 1993), a number well within the 10-round magazine limit imposed by the AW-LCM ban, but these studies have not usually presented the full distribution of shots fired for all cases, so it is usually unclear how many cases, if any, involved more than 10 shots.

An exception is the aforementioned study of handgun murders and assaults in Jersey City (Reedy and Koper, 2003). Focusing on cases for which at least the type of handgun (semiautomatic, revolver, derringer) could be determined, 2.5% of the gunfire cases involved more than 10 shots.¹⁰⁷ These incidents – all of which involved pistols – had a 100% injury rate and accounted for 4.7% of all gunshot victims in the sample (see Figure 9-2). Offenders fired a total of 83 shots in these cases, wounding 7 victims, only 1 of whom was wounded more than once. Overall, therefore, attackers fired over 8 shots

¹⁰⁵ Although the focus of the discussion is on attacks with more than 10 shots fired, a gun user with a post-ban 10-round magazine can attain a firing capacity of 11 shots with many semiautomatics by loading one bullet into the chamber before loading the magazine.

¹⁰⁶ As a dramatic example, consider the heavily publicized case of Amadou Diallo, who was shot to death by four New York City police officers just a few years ago. The officers in this case fired upon Diallo 41 times but hit him with only 19 shots (a 46% hit rate), despite his being confined in a vestibule. Two of the officers reportedly fired until they had emptied their 16-round magazines, a reaction that may not be uncommon in such high-stress situations. In official statistics, this case will appear as having only one victim.

¹⁰⁷ The shots fired estimates were based on reported gunshot injuries, physical evidence (for example, shell casings found at the scene), and the accounts of witnesses and actors. The 2.5% figure is based on minimum estimates of shots fired. Using maximum estimates, 3% of the gunfire incidents involved more than 10 shots (Reedy and Koper, 2003, p. 154).

A caveat to these figures is that the federal LCM ban was in effect for much of the study period (which spanned January 1992 to November 1996), and a New Jersey ban on magazines with more than 15 rounds predated the study period. It is thus conceivable that these laws reduced attacks with LCM guns and attacks with more than 10 shots fired, though it seems unlikely that the federal ban had any such effect (see the analyses of LCM use presented in the previous chapter). Approximately 1% of the gunfire incidents involved more than 15 shots.

for every wound inflicted, suggesting that perhaps fewer persons would have been wounded had the offenders not been able to fire as often.¹⁰⁸

Figure 9-2. Attacks With More Than 10 Shots Fired

Jersey City Handgun Attacks, 1992-1996

- **2.5% - 3% of gunfire incidents involved 11+ shots**
 - **3.6% - 4.2% of semiauto pistol attacks**
- **100% injury rate**
- **Produced 4.7% of all gunshot wound victims**
- **8.3 shots per gunshot wound**

Based on data reported by Reedy and Koper (2003). Injury statistics based on the 2.5% of cases involving 11+ shots by minimum estimate.

Caution is warranted in generalizing from these results because they are based on a very small number of incidents (6) from one sample in one city. Further, it is not known if the offenders in these cases had LCMs (gun model and magazine information was very limited); they may have emptied small magazines, reloaded, and continued firing. But subject to these caveats, the findings suggest that the ability to deliver more than 10 shots without reloading may be instrumental in a small but non-trivial percentage of gunshot victimizations.

On the other hand, the Jersey City study also implies that eliminating AWs and LCMs might only reduce gunshot victimizations by up to 5%. And even this estimate is probably overly optimistic because the LCM ban cannot be expected to prevent all incidents with more than 10 shots. Consequently, any effects from the ban (should it be extended) are likely to be smaller and perhaps quite difficult to detect with standard statistical methods (see Koper and Roth, 2001a), especially in the near future, if recent patterns of LCM use continue.

9.3. Post-Ban Trends in Lethal and Injurious Gun Violence

Having established some basis for believing the AW-LCM ban could have at least a small effect on lethal and injurious gun violence, is there any evidence of such an effect to date? Gun homicides plummeted from approximately 16,300 in 1994 to 10,100 in 1999, a reduction of about 38% (see the Federal Bureau of Investigation's *Uniform Crime*

¹⁰⁸ These figures are based on a supplemental analysis not contained in the published study. We thank Darin Reedy for this analysis.

Reports). Likewise, non-fatal, assaultive gunshot injuries treated in hospitals nationwide declined one-third, from about 68,400 to under 46,400, between 1994 and 1998 (Gotsch et al., 2001, pp. 23-24). Experts believe numerous factors contributed to the recent drop in these and other crimes, including changing drug markets, a strong economy, better policing, and higher incarceration rates, among others (Blumstein and Wallman, 2000). Attributing the decline in gun murders and shootings to the AW-LCM ban is problematic, however, considering that crimes with LCMs appear to have been steady or rising since the ban. For this reason, we do not undertake a rigorous investigation of the ban's effects on gun violence.¹⁰⁹

But a more casual assessment shows that gun crimes since the ban have been no less likely to cause death or injury than those before the ban, contrary to what we might expect if crimes with AWs and LCMs had both declined. For instance, the percentage of violent gun crimes resulting in death has been very stable since 1990 according to national statistics on crimes reported to police (see Figure 9-1 in section 9.1).¹¹⁰ In fact, the percentage of gun crimes resulting in death during 2001 and 2002 (2.94%) was slightly higher than that during 1992 and 1993 (2.9%).

Similarly, neither medical nor criminological data sources have shown any post-ban reduction in the percentage of crime-related gunshot victims who die. If anything, this percentage has been higher since the ban, a pattern that could be linked in part to more multiple wound victimizations stemming from elevated levels of LCM use. According to medical examiners' reports and hospitalization estimates, about 20% of gunshot victims died nationwide in 1993 (Gotsch et al., 2001). This figure rose to 23% in 1996, before declining to 21% in 1998 (Figure 9-3).¹¹¹ Estimates derived from the Uniform Crime Reports and the Bureau of Justice Statistics' annual National Crime Victimization Survey follow a similar pattern from 1992 to 1999 (although the ratio of fatal to non-fatal cases is much higher in these data than that in the medical data) and also show a considerable increase in the percentage of gunshot victims who died in 2000 and 2001 (Figure 9-3).¹¹² Of course, changes in offender behavior or other changes in crime

¹⁰⁹ In our prior study (Koper and Roth 2001a; Roth and Koper, 1997, Chapter 6), we estimated that gun murders were about 7% lower than expected in 1995 (the first year after the ban), adjusting for pre-existing trends. However, the very limited post-ban data available for that study precluded a definitive judgment as to whether this drop was statistically meaningful (see especially Koper and Roth, 2001a). Furthermore, that analysis was based on the assumption that crimes with both AWs and LCMs had dropped in the short-term aftermath of the ban, an assumption called into question by the findings of this study. It is now more difficult to credit the ban with any of the drop in gun murders in 1995 or anytime since. We did not update the gun murder analysis because interpreting the results would be unavoidably ambiguous. Such an investigation will be more productive after demonstrating that the ban has reduced crimes with both AWs and LCMs.

¹¹⁰ The decline in this figure during the 1980s was likely due in part to changes in police reporting of aggravated assaults in recent decades (Blumstein, 2000). The ratio of gun murders to gun robberies rose during the 1980s, then declined and remained relatively flat during the 1990s.

¹¹¹ Combining homicide data from 1999 with non-fatal gunshot estimates for 2000 suggests that about 20% of gunshot victimizations resulted in death during 1999 and 2000 (Simon et al., 2002).

¹¹² The SHR/NCVS estimates should be interpreted cautiously because the NCVS appears to undercount non-fatal gunshot wound cases by as much as two-thirds relative to police data, most likely because it fails to represent adequately the types of people most likely to be victims of serious crime (i.e., young urban males who engage in deviant lifestyles) (Cook, 1985). Indeed, the rate of death among gunshot victims

weaponry (such as an increase in shootings with large caliber handguns) may have influenced these trends. Yet it is worth noting that multiple wound shootings were elevated over pre-ban levels during 1995 and 1996 in four of five localities examined during our first AW study, though most of the differences were not statistically significant (Table 9-4, panels B through E).

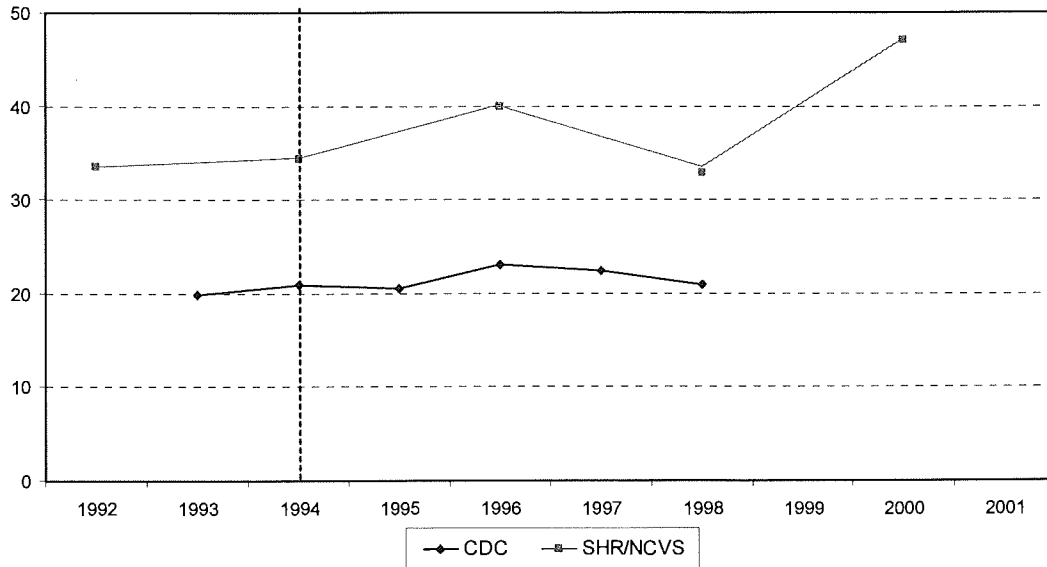
Another potential indicator of ban effects is the percentage of gunfire incidents resulting in fatal or non-fatal gunshot victimizations. If attacks with AWs and LCMs result in more shots fired and victims hit than attacks with other guns and magazines, we might expect a decline in crimes with AWs and LCMs to reduce the share of gunfire incidents resulting in victims wounded or killed. Measured nationally with UCR and NCVS data, this indicator was relatively stable at around 30% from 1992 to 1997, before rising to about 40% from 1998 through 2000 (Figure 9-4).¹¹³ Along similar lines, multiple victim gun homicides remained at relatively high levels through at least 1998, based on the national average of victims killed per gun murder incident (Table 9-4, panel A).¹¹⁴

appears much higher in the SHR/NCVS series than in data compiled from medical examiners and hospitals (see the CDC series in Figure 9-3). But if these biases are relatively consistent over time, the data may still provide useful insights into trends over time.

¹¹³ The NCVS estimates are based on a compilation of 1992-2002 data recently produced by the Inter-University Consortium for Political and Social Research (ICPSR study 3691). In 2002, only 9% of non-fatal gunfire incidents resulted in gunshot victimizations. This implies a hit rate for 2002 that was below pre-ban levels, even after incorporating gun homicide cases into the estimate. However, the 2002 NCVS estimate deviates quite substantially from earlier years, for which the average hit rate in non-fatal gunfire incidents was 24% (and the estimate for 2001 was 20%). Therefore, we did not include the 2002 data in our analysis. We used two-year averages in Figures 9-3 and 9-4 because the annual NCVS estimates are based on very small samples of gunfire incidents. The 2002 sample was especially small, so it seems prudent to wait for more data to become available before drawing conclusions about hit rates since 2001.

¹¹⁴ We thank David Huffer for this analysis.

**Figure 9-3. Percentage of Gunshot Victimization Resulting in Death
(National), 1992-2001**



SHR/NCVS series based on two-year averages from the Supplemental Homicide Reports and National Crime Victimization Survey. CDC series based on homicide and hospitalization data from the Centers for Disease Control (reported by Gotsch et al. 2001).

Table 9-4. Short-Term, Post-Ban Changes in the Lethality and Injuriousness of Gun Violence: National and Local Indicators, 1994-1998 ^a

Measure and Location	<u>Pre-Ban Period</u>	<u>Post-Ban Period</u>	Change
A. Victims Per Gun Homicide Incident (National)	Jan. 1986-Sept. 1994 1.05 (N=106,668)	Oct. 1994-Dec. 1998 1.06 (N=47,511)	1%**
B. Wounds per Gun Homicide Victim: Milwaukee County	Jan. 1992-Aug. 1994 2.28 (N=282)	Sept. 1994-Dec. 1995 2.52 (N=136)	11%
C. Wounds Per Gun Homicide Victim: Seattle (King County)	Jan. 1992-Aug. 1994 2.08 (N=184)	Sept. 1994-Jun. 1996 2.46 (N=91)	18%
D. Wounds Per Gunshot Victim: Jersey City (NJ)	Jan. 1992-Aug. 94 1.42 (N=125)	Sept. 1994-Jun. 1996 1.39 (N=137)	-2%
E. % of Gun Homicide Victims With Multiple Wounds: San Diego County	Jan. 1992-Aug. 1994 41% (N=445)	Sept. 1994-Jun. 1996 43% (N=223)	5%
F. % of Non-Fatal Gunshot Victims With Multiple Wounds: Boston	Jan. 1992-Aug. 1994 18% (N=584)	Sept. 1994-Dec. 1995 24% (N=244)	33%*

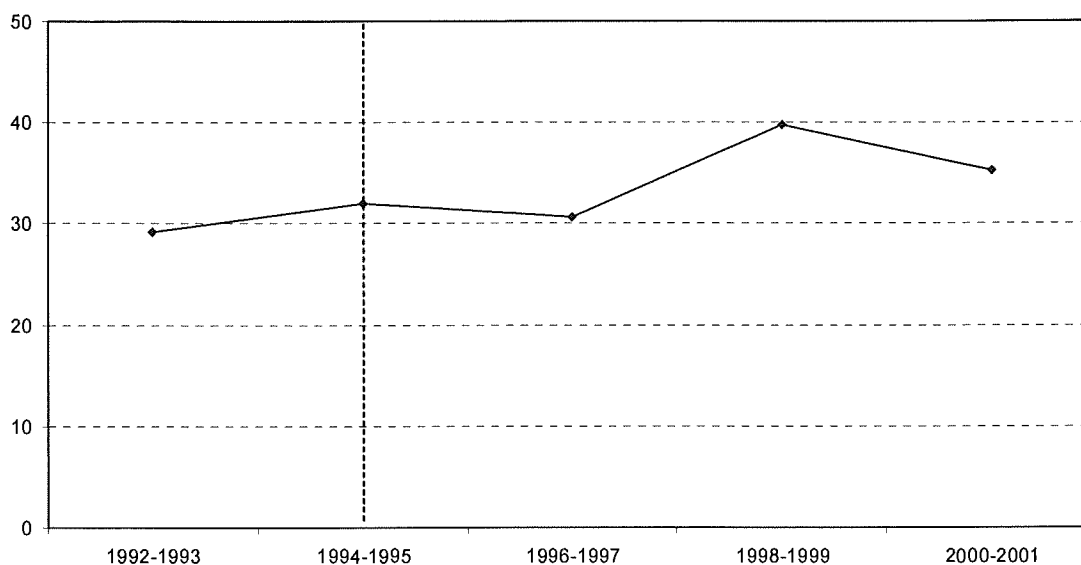
a. National victims per incident figures based on unpublished update of analysis reported in Roth and Koper (1997, Chapter 5). Gunshot wound data are taken from Roth and Koper (1997, Chapter 6) and Koper and Roth (2001a). Wound data are based on medical examiners' reports (Milwaukee, Seattle, San Diego), hospitalization data (Boston), and police reports (Jersey City).

* Chi-square p level < .1.

** T-test p level < .01.

If anything, therefore, gun attacks appear to have been more lethal and injurious since the ban. Perhaps elevated LCM use has contributed to this pattern. But if this is true, then the reverse would also be true – a reduction in crimes with LCMs, should the ban be extended, would reduce injuries and deaths from gun violence.

Figure 9-4. Percentage of Gunfire Cases Resulting in Gunshot Victimizations (National), 1992-2001



Based on two-year averages from the Supplemental Homicide Reports and National Crime Victimization Survey.

9.4. Summary

Although the ban has been successful in reducing crimes with AWs, any benefits from this reduction are likely to have been outweighed by steady or rising use of non-banned semiautomatics with LCMs, which are used in crime much more frequently than AWs. Therefore, we cannot clearly credit the ban with any of the nation's recent drop in gun violence. And, indeed, there has been no discernible reduction in the lethality and injuriousness of gun violence, based on indicators like the percentage of gun crimes resulting in death or the share of gunfire incidents resulting in injury, as we might have expected had the ban reduced crimes with both AWs and LCMs.

However, the grandfathering provision of the AW-LCM ban guaranteed that the effects of this law would occur only gradually over time. Those effects are still unfolding and may not be fully felt for several years into the future, particularly if foreign, pre-ban LCMs continue to be imported into the U.S. in large numbers. It is thus premature to make definitive assessments of the ban's impact on gun violence.

Having said this, the ban's impact on gun violence is likely to be small at best, and perhaps too small for reliable measurement. AWs were used in no more than 8% of gun crimes even before the ban. Guns with LCMs are used in up to a quarter of gun crimes, but it is not clear how often the outcomes of gun attacks depend on the ability to fire more than 10 shots (the current limit on magazine capacity) without reloading.

Nonetheless, reducing crimes with AWs and especially LCMs could have non-trivial effects on gunshot victimizations. As a general matter, hit rates tend to be low in gunfire incidents, so having more shots to fire rapidly can increase the likelihood that offenders hit their targets, and perhaps bystanders as well. While not entirely consistent, the few available studies contrasting attacks with different types of guns and magazines generally suggest that attacks with semiautomatics – including AWs and other semiautomatics with LCMs – result in more shots fired, persons wounded, and wounds per victim than do other gun attacks. Further, a study of handgun attacks in one city found that about 3% of gunfire incidents involved more than 10 shots fired, and those cases accounted for nearly 5% of gunshot victims. However, the evidence on these matters is too limited (both in volume and quality) to make firm projections of the ban's impact, should it be reauthorized.

10. LOOKING TO THE FUTURE: RESEARCH RECOMMENDATIONS AND SPECULATION ABOUT THE CONSEQUENCES OF REAUTHORIZING, MODIFYING, OR LIFTING THE ASSAULT WEAPONS BAN

In this chapter, we discuss future lines of inquiry that would be informative whether or not the AW-LCM ban is renewed in September 2004. We then offer some brief thoughts about the possible consequences of reauthorizing the ban, modifying it, or allowing it to expire.

10.1. Research Recommendations and Data Requirements

10.1.1. An Agenda for Assault Weapons Research and Recommendations for Data Collection by Law Enforcement

The effects of the AW-LCM ban have yet to be fully realized; therefore, we recommend continued study of trends in the availability and criminal use of AWs and LCMs. Even if the ban is lifted, longer-term study of crimes with AWs and LCMs will inform future assessment of the consequences of these policy shifts and improve understanding of the responses of gun markets to gun legislation more generally.¹¹⁵

Developing better data on crimes with LCMs is especially important. To this end, we urge police departments and their affiliated crime labs to record information about magazines recovered with crime guns. Further, we recommend that ATF integrate ammunition magazine data into its national gun tracing system and encourage reporting of magazine data by police departments that trace firearms.

As better data on LCM use become available, more research is warranted on the impacts of AW and LCM trends (which may go up or down depending on the ban's fate) on gun murders and shootings, as well as levels of death and injury per gun crime. Indicators of the latter, such as victims per gunfire incident and wounds per gunshot victim, are useful complementary outcome measures because they reflect the mechanisms through which use of AWs and LCMs is hypothesized to affect gun deaths and injuries.¹¹⁶ Other potentially promising lines of inquiry might relate AW and LCM use to mass murders and murders of police, crimes that are very rare but appear more likely to involve AWs (and perhaps LCMs) and to disproportionately affect public perceptions.¹¹⁷

¹¹⁵ Establishing time series data on primary and secondary market prices and production or importation of various guns and magazines of policy interest could provide benefits for policy researchers. Like similar statistical series maintained for illegal drugs, such price and production series would be valuable instruments for monitoring effects of policy changes and other influences on markets for various weapons.

¹¹⁶ However, more research is needed on the full range of factors that cause variation in these indicators over time and between places.

¹¹⁷ Studying these crimes poses a number of challenges, including modeling of rare events, establishing the reliability and validity of methods for measuring the frequency and characteristics of mass murders (such as through media searches; see Duwe, 2000, Roth and Koper, 1997, Appendix A), and controlling for factors like the use of bullet-proof vests by police.

Finally, statistical studies relating AW and LCM use to trends in gun violence should include statistical power analysis to ensure that estimated models have sufficient ability to detect small effects, an issue that has been problematic in some of our prior time series research on the ban (Koper and Roth, 2001a) and is applicable more generally to the study of modest, incremental policy changes.

Research on aggregate trends should be complemented by more incident-based studies that contrast the dynamics and outcomes of attacks with different types of guns and magazines, while controlling for relevant characteristics of the actors and situations. Such studies would refine predictions of the change in gun deaths and injuries that would follow reductions in attacks with AWs and LCMs. For instance, how many homicides and injuries involving AWs and LCMs could be prevented if offenders were forced to substitute other guns and magazines? In what percentage of gun attacks does the ability to fire more than ten rounds without reloading affect the number of wounded victims or determine the difference between a fatal and non-fatal attack? Do other AW features (such as flash hiders and pistol grips on rifles) have demonstrable effects on the outcomes of gun attacks? Studies of gun attacks could draw upon police incident reports, forensic examinations of recovered guns and magazines, and medical and law enforcement data on wounded victims.

10.1.2. Studying the Implementation and Market Impacts of Gun Control

More broadly, this study reiterates the importance of examining the implementation of gun policies and the workings of gun markets, considerations that have been largely absent from prior research on gun control. Typical methods of evaluating gun policies involve statistical comparisons of total or gun crime rates between places and/or time periods with and without different gun control provisions. Without complimentary implementation and market measures, such studies have a “black box” quality and may lead to misleading conclusions. For example, a time series study of gun murder rates before and after the AW-LCM ban might find that the ban has not reduced gun murders. Yet the interpretation of such a finding would be ambiguous, absent market or implementation measures. Reducing attacks with AWs and LCMs may in fact have no more than a trivial impact on gun deaths and injuries, but any such impact cannot be realized or adequately assessed until the availability and use of the banned guns and magazines decline appreciably. Additionally, it may take many years for the effects of modest, incremental policy changes to be fully felt, a reality that both researchers and policy makers should heed. Similar implementation concerns apply to the evaluation of various gun control policies, ranging from gun bans to enhanced sentences for gun offenders.

Our studies of the AW ban have shown that the reaction of manufacturers, dealers, and consumers to gun control policies can have substantial effects on demand and supply for affected weapons both before and after a law’s implementation. It is important to study these factors because they affect the timing and form of a law’s impact

on the availability of weapons to criminals and, by extension, the law's impact on gun violence.

10.2. Potential Consequences of Reauthorizing, Modifying, or Lifting the Assault Weapons Ban

10.2.1. Potential Consequences of Reauthorizing the Ban As Is

Should it be renewed, the ban might reduce gunshot victimizations. This effect is likely to be small at best and possibly too small for reliable measurement. A 5% reduction in gunshot victimizations is perhaps a reasonable upper bound estimate of the ban's potential impact (based on the only available estimate of gunshot victimizations resulting from attacks in which more than 10 shots were fired), but the actual impact is likely to be smaller and may not be fully realized for many years into the future, particularly if pre-ban LCMs continue to be imported into the U.S. from abroad. Just as the restrictions imposed by the ban are modest – they are essentially limits on weapon accessories like LCMs, flash hiders, threaded barrels, and the like – so too are the potential benefits.¹¹⁸ In time, the ban may be seen as an effective prevention measure that stopped further spread of weaponry considered to be particularly dangerous (in a manner similar to federal restrictions on fully automatic weapons). But that conclusion will be contingent on further research validating the dangers of AWs and LCMs.

10.2.2. Potential Consequences of Modifying the Ban

We have not examined the specifics of legislative proposals to modify the AW ban. However, we offer a few general comments about the possible consequences of such efforts, particularly as they relate to expanding the range of the ban as some have advocated (Halstead, 2003, pp. 11-12).

¹¹⁸ But note that although the ban's impact on gunshot victimizations would be small in percentage terms and unlikely to have much effect on the public's fear of crime, it could conceivably prevent hundreds of gunshot victimizations annually and produce notable cost savings in medical care alone. To help place this in perspective, there were about 10,200 gun homicides and 48,600 non-fatal, assault-related shootings in 2000 (see the FBI's *Uniform Crime Reports* for the gun homicide estimate and Simon et al. [2002] for the estimate of non-fatal shootings). Reducing these crimes by 1% would have thus prevented 588 gunshot victimizations in 2000 (we assume the ban did not actually produce such benefits because the reduction in AW use as of 2000 was outweighed by steady or rising levels of LCM use). This may seem insubstantial compared to the 342,000 murders, assaults, and robberies committed with guns in 2000 (see the *Uniform Crime Reports*). Yet, gunshot victimizations are particularly costly crimes. Setting aside the less tangible costs of lost lives and human suffering, the lifetime medical costs of assault-related gunshot injuries (fatal and non-fatal) were estimated to be about \$18,600 per injury in 1994 (Cook et al., 1999). Therefore, the lifetime costs of 588 gun homicides and shootings would be nearly \$11 million in 1994 dollars (the net medical costs could be lower for reasons discussed by Cook and Ludwig [2000] but, on the other hand, this estimate does not consider other governmental and private costs that Cook and Ludwig attribute to gun violence). This implies that small reductions in gunshot victimizations sustained over many years could produce considerable long-term savings for society. We do not wish to push this point too far, however, considering the uncertainty regarding the ban's potential impact.

Gun markets react strongly merely to debates over gun legislation. Indeed, debate over the AW ban's original passage triggered spikes upwards of 50% in gun distributors' advertised AW prices (Roth and Koper, 1997, Chapter 4). In turn, this prompted a surge in AW production in 1994 (Chapter 5). Therefore, it seems likely that discussion of broadening the AW ban to additional firearms would raise prices and production of the weapons under discussion. (Such market reactions may already be underway in response to existing proposals to expand the ban, but we have not investigated this issue.) Heightened production levels could saturate the market for the weapons in question, depressing prices and delaying desired reductions in crimes with the weapons, as appears to have happened with banned ARs.

Mandating further design changes in the outward features of semiautomatic weapons (e.g., banning weapons having any military-style features) may not produce benefits beyond those of the current ban. As noted throughout this report, the most important feature of military-style weapons may be their ability to accept LCMs, and this feature has been addressed by the LCM ban and the LCMM rifle ban. Whether changing other features of military-style firearms will produce measurable benefits is unknown.

Finally, curbing importation of pre-ban LCMs should help reduce crimes with LCMs and possibly gunshot victimizations. Crimes with LCMs may not decline substantially for quite some time if millions of LCMs continue to be imported into the U.S.

10.2.3. Potential Consequences of Lifting the Ban

If the ban is lifted, it is likely that gun and magazine manufacturers will reintroduce AW models and LCMs, perhaps in substantial numbers.¹¹⁹ In addition, AWs grandfathered under the 1994 law may lose value and novelty, prompting some of their lawful owners to sell them in secondary markets, where they may reach criminal users. Any resulting increase in crimes with AWs and LCMs might increase gunshot victimizations, though this effect could be difficult to discern statistically.

It is also possible, and perhaps probable, that new AWs and LCMs will eventually be used to commit mass murder. Mass murders garner much media attention, particularly when they involve AWs (Duwe, 2000). The notoriety likely to accompany mass murders if committed with AWs and LCMs, especially after these guns and magazines have been deregulated, could have a considerable negative impact on public perceptions, an effect that would almost certainly be intensified if such crimes were committed by terrorists operating in the U.S.

¹¹⁹ Note, however, that foreign semiautomatic rifles with military features, including the LCMM rifles and several rifles prohibited by the 1994 ban, would still be restricted by executive orders passed in 1989 and 1998. Those orders stem from the sporting purposes test of the Gun Control Act of 1968.

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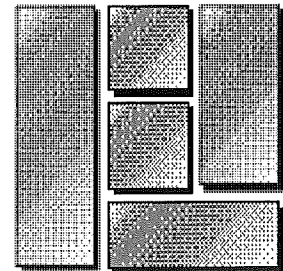
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IMPACT EVALUATION OF THE PUBLIC SAFETY AND RECREATIONAL FIREARMS USE PROTECTION ACT OF 1994

Final Report



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March 13, 1997

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1. OVERVIEW

Title XI of the Violent Crime Control and Law Enforcement Act of 1994 (the Crime Control Act) took effect on September 13, 1994. Subtitle A banned the manufacture, transfer, and possession of designated semiautomatic assault weapons. It also banned “large-capacity” magazines, which were defined as ammunition feeding devices designed to hold more than 10 rounds. Finally, it required a study of the effects of these bans, with particular emphasis on violent and drug trafficking crime, to be conducted within 30 months following the effective date of the bans. To satisfy the study requirement, the National Institute of Justice (NIJ) awarded a grant to The Urban Institute for an impact evaluation of Subtitle A. This report contains the study findings.

In defining assault weapons, Subtitle A banned 8 named categories of rifles and handguns. It also banned *exact copies* of the named guns, revolving cylinder shotguns, and guns with detachable magazines that were manufactured with certain features such as flash suppressors and folding rifle stocks. The ban specifically exempted *grandfathered* assault weapons and magazines that had been manufactured before the ban took effect. Implicitly, the ban exempts all other guns; several of these, which we treated as *legal substitutes*, closely resemble the banned guns but are not classified as exact copies.

Among other characteristics, ban proponents cited the capacity of these weapons, most of which had been originally designed for military use, to fire many bullets rapidly. While this capacity had been demonstrated in several highly publicized mass murders in the decade before 1994, ban supporters argued that it was largely irrelevant for hunting, competitive shooting, and self-defense. Therefore, it was argued, the ban could prevent violent crimes with only a small burden on law-abiding gun owners. Some of our own analyses added evidence that assault weapons are disproportionately involved in murders with multiple victims, multiple wounds per victim, and police officers as victims.

To reduce levels of these crimes, the law must increase the scarcity of the banned weapons. Scarcity would be reflected in higher prices not only in the *primary markets* where licensed dealers create records of sales to legally eligible purchasers, but also in *secondary markets* that lack such records. Although most secondary-market transfers are legal, minors, convicted felons, and other ineligible purchasers may purchase guns in them (usually at highly inflated prices) without creating records. In theory, higher prices in secondary markets would discourage criminal use of assault weapons, thereby reducing levels of the violent crimes in which assault weapons are disproportionately used.

For these reasons, our analysis considered potential ban effects on gun markets, on assault weapon use in crime, and on lethal consequences of assault weapon use. However, the statutory schedule for this study constrained our findings to short-run effects, which are not necessarily a reliable guide to long-term effects. The timing also limited the power of our statistical analyses to detect worthwhile ban effects that may have occurred. Most fundamentally, because the banned guns and magazines were never used in more than a fraction of all gun murders, even the maximum theoretically achievable preventive effect of the ban on gun murders is almost certainly too small to detect statistically with only one year of post-ban crime data.

With these cautions in mind, our analysis suggests that the primary-market prices of the banned guns and magazines rose by upwards of 50 percent during 1993 and 1994, while the ban was being debated, as gun distributors, dealers, and collectors speculated that the banned weapons would become expensive collectors’ items. However, production of the banned guns also surged, so that more than an extra year’s normal supply of assault weapons and legal substitutes was manufactured during 1994. After the ban took effect, primary-market prices of the banned guns and most large-capacity magazines fell to nearly pre-ban levels and remained there at

least through mid-1996, reflecting both the oversupply of grandfathered guns and the variety of legal substitutes that emerged around the time of the ban.

Even though the expected quick profits failed to materialize, we found no strong evidence to date that licensed dealers have increased “off the books” sales of assault weapons in secondary markets and concealed them with false stolen gun reports. Stolen gun reports for assault weapons did increase slightly after the ban took effect, but by less than reported thefts of unbanned large-capacity semiautomatic handguns, which began rising well before the ban.

The lack of an increase in stolen gun reports suggests that so far, the large stock of grandfathered assault weapons has remained largely in dealers’ and collectors’ inventories instead of leaking into the secondary markets through which criminals tend to obtain guns. In turn, this speculative stockpiling of assault weapons by law-abiding dealers and owners apparently reduced the flow of assault weapons to criminals, at least temporarily. Between 1994 and 1995, the criminal use of assault weapons, as measured by law enforcement agency requests for BATF traces of guns associated with crimes, fell by 20 percent, compared to an 11 percent decrease for all guns. BATF trace requests are an imperfect measure because they reflect only a small percentage of guns used in crime. However, we found similar trends in data on all guns recovered in crime in two cities. We also found similar decreases in trace requests concerning guns associated with violent and drug crimes.

At best, the assault weapons ban can have only a limited effect on total gun murders, because the banned weapons and magazines were never involved in more than a modest fraction of all gun murders. Our best estimate is that the ban contributed to a 6.7 percent decrease in total gun murders between 1994 and 1995, beyond what would have been expected in view of ongoing crime, demographic, and economic trends. However, with only one year of post-ban data, we cannot rule out the possibility that this decrease reflects chance year-to-year variation rather than a true effect of the ban. Nor can we rule out effects of other features of the 1994 Crime Act or a host of state and local initiatives that took place simultaneously. Further, any short-run preventive effect observable at this time may ebb in the near future as the stock of grandfathered assault weapons and legal substitute guns leaks to secondary markets, then increase as the stock of large-capacity magazines gradually dwindles.

We were unable to detect any reduction to date in two types of gun murders that are thought to be closely associated with assault weapons, those with multiple victims in a single incident and those producing multiple bullet wounds per victim. We did find a reduction in killings of police officers since mid-1995. However, the available data are partial and preliminary, and the trends may have been influenced by law enforcement agency policies regarding bullet-proof vests.

The following pages explain these findings in more detail, and recommend future research to update and refine our results at this early post-ban stage.

1.1. PRIMARY-MARKET EFFECTS

1.1.1. Prices and Production

1.1.1.1. Findings

We found clear peaks in legal-market prices of the banned weapons and magazines around the effective date of the ban, based on display ads in the nationally distributed periodical Shotgun News between 1992 and mid-1996. For example, a price index of banned SWD semiautomatic pistols rose by about 47 percent during the year preceding the ban, then fell by about 20 percent the following year, to a level where it remains. Meanwhile, the

prices of non-banned Davis and Lorcin semiautomatic pistols remained virtually constant over the entire period. Similarly, a price index for banned AR-15 rifles, exact copies, and legal substitutes at least doubled in the year preceding the ban, then fell after the ban nearly to 1992 levels, where they have remained. Prices of unbanned semiautomatic rifles (e.g., the Ruger Mini-14, Maadi, and SKS) behaved similarly to AR-15 prices, presumably due to pre-ban speculation that these guns would be included in the final version of the Crime Act.

Like assault weapon prices, large-capacity magazine prices generally doubled within the year preceding the ban. However, trends diverged after the ban depending on what gun the magazine was made for. For example, magazines for non-banned Glock handguns held their new high levels, while magazines for banned Uzi and unbanned Mini-14 weapons fell substantially from their peaks. AR-15 large-capacity magazine prices also fell to 1993 levels shortly after the ban took effect, but returned to their 1994 peak in mid-1996. We believe that demand for grandfathered Glock and AR-15 magazines was sustained or revived by continuing sales of legal guns that accept them.

Production of the banned assault weapons surged in the months leading up to the ban. Data limitations preclude precise and comprehensive counts. However, we estimate that the annual production of five categories of assault weapons (AR-15s and models by Intratec, SWD, AA Arms, and Calico) and legal substitutes rose by more than 120 percent, from an estimated 1989–93 annual average of 91,000 guns to about 204,000 in 1994 — more than an extra year's supply. In contrast, production of non-banned Lorcin and Davis pistols, which are among the guns most frequently seized by police, fell by about 35 percent, from a 1989–93 annual average of 283,000 to 184,000 in 1994.

Our interpretation of these trends is that the pre-ban price and production increases reflected speculation that grandfathered weapons and magazines in the banned categories would become profitable collectors' items after the ban took effect. Instead, however, assault weapon prices fell sharply within months after the ban took effect, apparently under the combined weight of the extra year's supply of grandfathered guns, along with legal substitute guns that entered the distribution chain around the time of the ban. While large-capacity magazine prices for several banned assault weapons followed similar trends, those for unbanned Glock pistols sustained their peaks, and those for the widely-copied AR-15 rifle rebounded at least temporarily to peak levels in 1996, after an immediate post-ban fall.

1.1.1.2. Recommendations

To establish our findings about legal-market effects more definitively, we have short-term (i.e., 12-month) and long-term research recommendations for consideration by NIJ. In the short term, we recommend entering and analyzing large-capacity magazine price data that we have already coded but not entered, in order to study how the prices and legal status of guns affect the prices of large-capacity magazines as economic complements. We also recommend updating our price and production analyses for both the banned firearms and large-capacity magazines, to learn about retention of the apparent ban effects we identified. For the long term, we recommend that NIJ and BATF cooperate in establishing and maintaining time-series data on prices and production of assault weapons, legal substitutes, other guns commonly used in crime, and the respective large and small capacity magazines; like similar statistical series currently maintained for illegal drugs, we believe such a price and production series would be a valuable instrument for monitoring effects of policy changes and other influences on markets for weapons that are commonly used in violent and drug trafficking crime.

1.2. SECONDARY-MARKET EFFECTS

1.2.1. Findings

In addition to the retail markets discussed above, there are secondary gun markets in which gun transfers are made without formal record keeping requirements. Secondary market transfers are by and large legal transactions. However, prohibited gun purchasers such as minors, felons, and fugitives tend to acquire most of their guns through secondary markets and pay premiums of 3 to 5 times the legal-market prices in order to avoid eligibility checks, sales records, and the 5-day waiting period required by the Brady Act. We were unable to observe secondary-market prices and quantities directly. Anecdotally, however, the channels through which guns "leak" from legal to secondary markets include gun thieves, unscrupulous licensed dealers who sell guns on the streets and in gun shows more or less exclusively to prohibited purchasers (who may resell the guns), as well as "storefront" dealers who sell occasionally in secondary markets, reporting the missing inventories to BATF inspectors as "stolen or lost." Since two of these channels may lead to theft reports to the FBI's National Crime Information Center (NCIC), we tested for an increase in reported assault weapon thefts after the ban.

To this point, there has been only a slight increase in assault weapon thefts as a share of all stolen semiautomatic weapons. Thus, there does not appear to have been much leakage of assault weapons from legal to secondary markets.

In order to assess the effects of the large-capacity magazine ban on secondary markets, we examined thefts of Glock and Ruger handgun models that accept these magazines. Theft of these guns continued to increase after the ban, despite the magazine ban, which presumably made the guns less attractive. Yet we also did not find strong evidence of an increase in thefts of these guns relative to what would have been predicted based on pre-ban trends. This implies that dealers have not been leaking the guns to illegitimate users on a large scale.

1.2.2. Recommendations

To monitor possible future leakage of the large existing stock of assault weapons into secondary markets, we recommend updating our analyses of trends in stolen gun reports. We also recommend that BATF and NCIC encourage reporting agencies to ascertain and record the magazines with which guns were stolen. Also, because stolen gun reports are deleted from NCIC files when the guns are recovered, we recommend that analyses be conducted on periodic downloads of the database in order to analyze time from theft to recovery. For strategic purposes, it would also be useful to compare dealer patterns of assault weapon theft reports with patterns of occurrence in BATF traces of guns recovered in crime.

1.3. EFFECTS ON ASSAULT WEAPON USE IN CRIME

1.3.1. Findings

Requests for BATF traces of assault weapons recovered in crime by law enforcement agencies throughout the country declined 20 percent in 1995, the first calendar year after the ban took effect. Some of this decrease may reflect an overall decrease in gun crimes; total trace requests dropped 11 percent in 1995 and gun murders dropped 12 percent. Nevertheless, these trends suggest an 8–9 percent additional decrease due to substitution of other guns for the banned assault weapons in 1995 gun crimes. We were unable to find similar assault pistol reductions in states with pre-existing assault pistol bans. Nationwide decreases related to violent and drug crimes were at least as great as that in total trace requests in percentage terms, although these categories were quite small

in number. The decrease we observed was evidently not a spurious result of a spurt of assault-weapon tracing around the effective date of the ban, because there were fewer assault weapon traces in 1995 than in 1993.

Trace requests for assault weapons rose by 7 percent in the first half of 1996, suggesting that the 1995 effect we observed may be temporary. However, data limitations have prevented us from attributing this rebound to changes in overall crime patterns, leakage of grandfathered assault weapons to secondary markets, changes in trace request practices, or other causes. Data from two cities not subject to a pre-existing state bans suggested that assault weapon use, while rare in those cities both before and after the ban, also tapered off during late 1995 and into 1996.

With our local data sources, we also examined confiscations of selected unbanned handguns capable of accepting large-capacity magazines. Criminal use of these guns relative to other guns remained stable or was higher during the post-ban period, though data from one of these cities were indicative of a recent plateau. However, we were unable to acquire data on the magazines with which these guns were equipped. Further, trends in confiscations of our selected models may not be indicative of trends for other unbanned large-capacity handguns. It is therefore difficult to make any definitive statements about the use of large-capacity magazines in crime since the ban. Nevertheless, the contrasting trends for these guns and assault weapons provide some tentative hints of short-term substitution of non-banned large-capacity semiautomatic handguns for the banned assault weapons.

1.3.2. Recommendations

Although BATF trace request data provide the only national trends related to assault weapon use, our findings based on them are subject to limitations. Law enforcement agencies request traces on only a fraction of confiscated guns that probably does not represent the entire population. Therefore, we recommend further study of available data on all guns recovered in crime in selected cities that either were or were not under state assault weapon bans when the Federal ban took effect. Beyond that, we recommend analyzing BATF trace data already in-house to compare trends for specific banned assault weapon models with trends for non-banned models that are close substitutes. Most strongly, we also recommend updating our trend analysis, to see if the early 1996 rebound in BATF trace requests for assault weapons continued throughout the year and to relate any change to 1996 trends in gun crime and overall trace requests.

From a broader and longer-term perspective, we share others' concerns about the adequacy of BATF trace data, the only available national data, as a basis for assessing the effects of firearms policies and other influences on the use of assault weapons and other guns in violent and drug trafficking crime. Therefore, we commend recent BATF efforts to encourage local law enforcement agencies to request traces on more of the guns they seize from criminals. As a complement, however, we recommend short-term research on departmental policies and officers' decisions that affect the probability that a specific gun recovered in crime will be submitted for tracing.

Unfortunately, we have been unable to this point to assemble much information regarding trends in the criminal use of large-capacity magazines or guns capable of accepting these magazines. This gap is especially salient for the following reasons: the large-capacity magazine is perhaps the most functionally important distinguishing feature of assault weapons; the magazine ban affected more gun models than did the more visible bans on designated assault weapons; and based on 1993 BATF trace requests, non-banned semiautomatic weapons accepting large-capacity magazines were used in more crimes than were the banned assault weapons. For these reasons, we recommend that BATF and state/local law enforcement agencies encourage concerted efforts to record the magazines with which confiscated firearms are equipped — information that frequently goes unrecorded under present practice — and we recommend further research on trends, at both the national and local levels, on the

criminal use of guns equipped with large-capacity magazines. Finally, to support this research and a variety of strategic objectives for reducing the consequences of violent and drug trafficking crime, consideration should be given to studying the costs and benefits of legislative and administrative measures that would encourage recording, tracing, and analyzing magazines recovered in crimes, with or without guns.

1.4. CONSEQUENCES OF ASSAULT WEAPON USE

1.4.1. Findings

A central argument for special regulation of assault weapons and large-capacity magazines is that the rapid-fire/multi-shot capabilities they make available to gun offenders increase the expected number of deaths per criminal use, because an intended victim may receive more wounds, and more people can be wounded, in a short period of time. Therefore, we examined trends in three consequences of gun use: gun murders, victims per gun homicide incident, and wounds per gunshot victim.

Our ability to discern ban effects on these consequences is constrained by a number of facts. The potential size of ban effects is limited because the banned weapons and magazines were used in only a minority of gun crimes — based on limited evidence, we estimate that 25% of gun homicides are committed with guns equipped with large-capacity magazines, of which assault weapons are a subset. Further, the power to discern small effects statistically is limited because post-ban data are available for only one full calendar year. Also, a large stock still exists of grandfathered magazines as well as grandfathered and legal-substitute guns with assault weapon characteristics.

Our best estimate of the impact of the ban on state level gun homicide rates is that it caused a reduction of 6.7% in gun murders in 1995 relative to a projection of recent trends. However, the evidence is not strong enough for us to conclude that there was any meaningful effect (i.e., that the effect was different from zero). Note also that a true decrease of 6.7% in the gun murder rate attributable to the ban would imply a reduction of 27% in the use of assault weapons and large-capacity guns and no effective substitution of other guns. While we do not yet have an estimate of large-capacity magazine use in 1995, our nationwide assessment of assault weapon utilization suggested only an 8 to 20 percent drop in assault weapon use in 1995.

Using a variety of national and local data sources, we found no statistical evidence of post-ban decreases in either the number of victims per gun homicide incident, the number of gunshot wounds per victim, or the proportion of gunshot victims with multiple wounds. Nor did we find assault weapons to be overrepresented in a sample of mass murders involving guns (see Appendix A).

The absence of stronger ban effects may be attributable to the relative rarity with which the banned weapons are used in violent crimes. At the same time, our chosen measures reflect only a few of the possible manifestations of the rapid-fire/multi-shot characteristics thought to make assault weapons and large-capacity magazines particularly dangerous. For example, we might have found the use of assault weapons and large-capacity magazines to be more consequential in an analysis of the number of victims receiving any wound (fatal or non-fatal), in broader samples of firearm discharge incidents. Moreover, our comparisons did not control for characteristics of incidents and offenders that may affect the choice of weapon, the consequences of weapon use, or both.

Recommendations: First, we recommend further study of the impact measures examined in this investigation. Relatively little time has passed since the implementation of the ban. This weakens the ability of statistical tests — particularly those in our time-series analyses — to discern meaningful impacts. Moreover, the

ban's effects on the gun market are still unfolding. Hence, the long term consequences of the ban may differ substantially from the short term consequences which have been the subject of this investigation.

Therefore, we recommend updating the state-level analysis of gun murder rates as more data become available. Similarly, investigations of trends in wounds per gunshot victim could be expanded to include longer post ban periods, larger numbers of jurisdictions, and, wherever possible, data on both fatal and non-fatal victims. Examination of numbers of total wounded victims in both fatal and non-fatal gunshot incidents may also be useful. In some jurisdictions, it may also be possible to link trends in the types of guns seized by police to trends in specific weapon-related consequence measures.

Second, we recommend further research on the role of assault weapons and large-capacity magazines in murders of police officers. Our analysis of police murders has shown that the fraction of police murders involving assault weapons is higher than that for civilian murders. This suggests that gun murders of police should be more sensitive to the ban than gun murders in general. Yet, further research, considering such factors as numbers of shots fired, wounds inflicted, and offender characteristics, is necessary for a greater understanding of the role of the banned weaponry in these murders.

Along similar lines, we strongly recommend in-depth, incident-based research on the situational dynamics of both fatal and non-fatal gun assaults to gain greater understanding of the roles of banned and other weapons in intentional deaths and injuries. A goal of this research should be to determine the extent to which assault weapons and guns equipped with large-capacity magazines are used in homicides and assaults and to compare the fatality rates of attacks with these weapons to those with other firearms. A second goal should be to determine the extent to which the properties of the banned weapons influence the outcomes of criminal gun attacks after controlling for important characteristics of the situations and the actors. In other words, how many homicides and non-fatal gunshot wound cases involving assault weapons or large-capacity magazines would not occur if the offenders were forced to substitute other firearms and/or small capacity magazines? In what percentage of gun attacks, for instance, does the ability to fire more than 10 rounds without reloading influence the number of gunshot wound victims or determine the difference between a fatal and non-fatal attack? In this study, we found some weak evidence that victims killed with guns having large-capacity magazines tend to have more bullet wounds than victims killed with other firearms, and that mass murders with assault weapons tend to involve more victims than those with other firearms. However, our results were based on simple comparisons; much more comprehensive research should be pursued in this area.

Future research on the dynamics of criminal shootings, including various measures of the number of shots fired and wounds inflicted, would provide information on possible effects of the assault weapon and magazine ban that we were unable to estimate, as well as useful information on violent gun crime generally. Such research requires linking medical and law enforcement data sets on victim wounds, forensic examinations of recovered firearms and magazines, and police incident reports.

2. BACKGROUND FOR THE IMPACT ASSESSMENT

Title XI of the Violent Crime Control and Law Enforcement Act of 1994 (the Crime Control Act), took effect on its enactment date, September 13, 1994. Subtitle A, which is itself known as the Public Safety and Recreational Firearms Use Protection Act, contains three provisions related to “semiautomatic assault weapons.” Section 110102 (the assault weapons ban) made unlawful the manufacture, transfer, or possession of such weapons under 18:922 of the United States Code. Section 110103 (the magazine ban) made unlawful the transfer or possession of “large-capacity ammunition feeding devices”: detachable magazines that accept more than 10 rounds¹ and can be attached to semi- or automatic firearms. Section 110104 (the evaluation requirement) required the Attorney General to study the effect of these prohibitions and “in particular...their impact, if any, on violent and drug trafficking crime.” The evaluation requirement specified a time period for the study: an 18-month period beginning 12 months after the enactment date of the Act. It also required the Attorney General to report the study results to Congress 30 months after enactment of the Crime Control Act — March 13, 1997. The National Institute of Justice awarded a grant to the Urban Institute to conduct the mandated study, and this report contains the findings.

This chapter first explains the legislation in additional detail, then discusses what is already known about the role of the banned weapons in crime, and finally explains certain relevant features of firearms markets.

2.1. THE LEGISLATION

Effective on its enactment date, September 13, 1994, Section 110102 of Title XI banned the manufacture, transfer, and possession of “semiautomatic assault weapons.” It defined the banned items defined in four ways:

- 1) Named guns: specific rifles and handguns, available from ten importers and manufacturers: Norinco, Mitchell, and Poly Technologies (all models, popularly known as AKs); Israeli Military Industries UZI and Galil models, imported by Action Arms; Beretta Ar 70 (also known as SC-70); Colt AR-15; Fabrique National FN/FAL, FN/LAR, FN/FNC), SWD M-10, M-11, M-11/9, and M-12; Steyr AUG; and INTRATEC TEC-9, TEC-DC9, and TEC-22;
- 2) Exact copies: “Copies or duplicates of the [named guns] in any caliber”;
- 3) Revolving cylinder shotguns: Large-capacity shotguns, with the Street Sweeper and Striker 12 named as examples; and
- 4) Features-test guns: semiautomatic weapons capable of accepting detachable magazines and having at least two named features.²

Several provisions of the ban require further explanation because they affected our approach to this study. First, the ban exempted several categories of guns: a long list of specific models specified in Appendix A to Sec.

¹ Or “that can be readily restored or converted to accept.”

² For rifles, the named features were: a folding or telescoping stock; a pistol grip that protrudes below the firing action; a bayonet mount; a flash suppressor or threaded barrel designed to accommodate one; a grenade launcher. For pistols, the features were a magazine outside the pistol grip; a threaded barrel (capable of accepting a barrel extender, flash suppressor, forward handgrip, or silencer); a heat shroud that encircles the barrel; a weight of more than 50 ounces unloaded; and a semiautomatic version of an automatic firearm. For shotguns, named features included the folding or telescoping stock, protruding pistol grip, fixed magazine capacity over 5 rounds, and ability to accept a detachable magazine.

110102; bolt- or pump-action, inoperable, and antique guns; semiautomatic rifles and shotguns that cannot hold more than 5 rounds; and firearms belonging to a unit of government, a nuclear materials security organization, a retired law enforcement officer, or an authorized weapons tester.

Second, the prohibitions exempted weapons and magazines that met the definitional criteria but were legally owned (by manufacturers, distributors, retailers, or consumers) on the effective date of the Act. Such "grandfathered" guns may legally be sold, resold, and transferred indefinitely. Estimates of their numbers are imprecise. However, a 1992 report by the American Medical Association reported an estimate of 1 million semiautomatic assault weapons manufactured for civilian use, plus 1.5 million semiautomatic M-1 rifles sold as military surplus (AMA Council, 1992). To distinguish grandfathered guns from exempt guns that might be stolen or diverted to illegal markets, the ban required the serial numbers of guns in the banned categories to clearly indicate their dates of manufacture.

Third, the ban on exact copies of the named guns did not prohibit the manufacture, sale, or transfer of legal substitutes, most of which first appeared around or after the effective date of the ban. Legal substitutes differ from banned exact copies by lacking certain named features or by incorporating minimal design modifications such as slight reductions of pistol barrel length, thumbholes drilled in a rifle stock, or the like. Manufacturers named some legal substitutes by adding a designation such as "Sporter," "AB," (After Ban), or "PCR" (Politically Correct Rifle) to the name of the corresponding banned weapon.

Section 110103 of Title XI banned large-capacity magazines, i.e., magazines that accept ten or more rounds of ammunition. Its effective date, exemptions, and grandfathering provisions correspond to those governing firearms under Section 110102. This provision exempts attached tubular devices capable of operating only with .22 caliber rimfire ammunition.

Section 110104 required the study that is the subject of this report: a study of the effect of the ban, citing impacts on violent crime and drug trafficking in particular. It also specified the time period of the study: to begin 12 months after enactment, to be conducted over an 18-month period, and to be reported to Congress after 30 months. Finally, Title XI included a "sunset provision" for the ban, repealing it 10 years after its effective date.

Subtitles B and C of Title XI are relevant to this study because they took effect at the same time, and so special efforts are needed to distinguish their effects from those effects of the assault weapon and magazine bans in Subtitle A. With certain exemptions, Subtitle B bans the sale, delivery, or transfer of handguns to juveniles less than 18 years old. This juvenile handgun possession ban applies, of course, to assault pistols and to other semiautomatic handguns that are frequently recovered in crimes. Subtitle C requires applicants for new and renewal Federal Firearms Licenses — the Federal dealers' licenses — to submit a photograph and fingerprints with their applications and to certify that their businesses will comply with all state and local laws pertinent to their business operations. These subtitles gave force of law to practices that BATF had begun early in 1994, to require the fingerprints and photographs, and to cooperate with local law enforcement agencies in investigations of Federal Firearms Licensees' (FFLs) compliance with local sales tax, zoning, and other administrative requirements. These BATF practices are believed to have contributed to an 11 percent reduction in licensees (from 281,447 to 250,833) between January and the effective date of the Crime Act, and a subsequent 50 percent reduction to about 124,286 by December 1996 (U.S. Department of Treasury, 1997). These practices and subtitles were intended to discourage license applications and renewals by the subset of licensees least likely to comply with laws governing sales to felons, juveniles, and other prohibited purchasers.

2.2. CONTEXT FOR THE ASSAULT WEAPONS BAN

At least three considerations appear to have motivated the Subtitle A bans on assault weapons and large-capacity magazines: arguments over particularly dangerous consequences of their use, highly publicized incidents that drew public attention to the widespread availability of military-style weapons, and the disproportionate use of the banned weapons in crime.

The argument over dangerous consequences is that the ban targets a large array of semiautomatic weapons capable of accepting large-capacity magazines (i.e., magazines holding more than 10 rounds). Semiautomatic firearms permit a somewhat more rapid rate of fire than do non-semiautomatics. When combined with large-capacity magazines, semiautomatic firearms enable gun offenders to fire more times and at a faster rate, thereby increasing the probability that offenders hit one or more victims at least once.

There is very little empirical evidence, however, on the direct role of ammunition capacity in determining the outcomes of criminal gun attacks (see Koper 1995). The limited data which do exist suggest that criminal gun attacks involve three or fewer shots on average (Kleck 1991, pp.78-79; McGonigal et al. 1993, p.534). Further, there is no evidence comparing the fatality rate of attacks perpetrated with guns having large-capacity magazines to those involving guns without large-capacity magazines (indeed, there is no evidence comparing the fatality rate of attacks with semiautomatics to those with other firearms). But in the absence of substantial data on the dynamics of criminal shootings (including the number of shots fired and wounds inflicted per incident), it seems plausible that offenders using semiautomatics, especially assault weapons and other guns capable of accepting large-capacity magazines, have the ability to wound more persons, whether they be intended targets or innocent bystanders (see Sherman et al. 1989). This possibility encouraged us to attempt to estimate the effect of the ban on both the number of murder victims per incident and the number of wounds per murder victim.

The potential of assault weapons to kill multiple victims quickly was realized in several dramatic public murder incidents that occurred in the decade preceding the ban and involved assault weapons or other semiautomatic firearms with large-capacity magazines (e.g., see Cox Newspapers 1989; Lenett 1995). In one of the worst mass murders ever committed in the United States, for example, James Huberty killed 21 persons and wounded 19 others in a San Ysidro, California, McDonald's on July 18, 1984, using an Uzi handgun and a shotgun. On September 14, 1989, Joseph T. Wesbecker killed seven persons and wounded thirteen others at his former workplace in Louisville, Kentucky before taking his own life. Wesbecker was armed with an AK-47 rifle, two MAC-11 handguns, and a number of other firearms. One of the most infamous assault weapon cases occurred on January 17, 1989, when Patrick Edward Purdy used an AK-47 to open fire on a schoolyard in Stockton, California, killing 5 children.

There were additional high profile incidents in which offenders using semiautomatic handguns with large-capacity magazines killed large numbers of persons. In October of 1991, a gunman armed with a Glock 17, a Ruger P89 (both the Glock and Ruger models are semiautomatic handguns capable of accepting magazines with more than 10 rounds), and several large-capacity magazines killed 23 people and wounded another 19 in Killeen, Texas. In a December 1993 incident, six people were killed and another 20 were wounded on a Long Island commuter train by a gunman equipped with a semiautomatic pistol and large-capacity magazines.

These events have been cited as jarring the public consciousness, highlighting the public accessibility of weapons generally associated with military use, and demonstrating the apparent danger to public health posed by semiautomatic weapons with large-capacity magazines. These considerations, along with the claim that large-capacity magazines were unnecessary for hunting or sporting purposes, reportedly galvanized public support for the initiative to ban these magazines (Lenett, 1995).

Debate over assault weapons raged for several years prior to the passage of the 1994 Crime Act. Throughout that time, different studies, news reports, policy debates, and legal regulations employed varying definitions of assault weapons. Yet, in general terms, the firearms targeted in these debates and those ultimately prohibited by the federal government's ban consist of various semiautomatic pistols, rifles, and shotguns, most of which accept detachable ammunition magazines and have military-style features. Mechanically, the most important features of these guns are their semiautomatic firing mechanisms and the ability to accept detachable magazines, particularly large-capacity magazines. However, these traits do not distinguish them from many other semiautomatic weapons used for hunting and target shooting. Therefore, some have argued that assault weapons differ only cosmetically from other semiautomatic firearms (Kleck 1991; Cox Newspapers 1989).

Nonetheless, proponents of assault weapons legislation argued that these weapons are too inaccurate to have much hunting or sporting value. Furthermore, they argued that various features of these weapons, such as folding stocks and shrouds surrounding their barrels, have no hunting or sporting value and serve to make these weapons more concealable and practical for criminal use (Cox Newspapers 1989). To the extent that these features facilitated criminal use of long guns or handguns with large-capacity magazines, one could hypothesize that there would be an increase in the deadliness of gun violence. Proponents also claimed that some of these weapons, such as Uzi carbines and pistols, could be converted rather easily to fully automatic firing.³

To buttress these arguments, proponents of assault weapons legislation pointed out that assault weapons are used disproportionately in crime. According to estimates generated prior to the federal ban, assault weapons represented less than one percent of the over 200 million privately-owned guns in the United States; yet they were reported to account for 8% of all firearms trace requests submitted to BATF from 1986 to 1993 (Lenett 1995; also see Zawitz 1995). Moreover, these guns were perceived to be especially attractive to offenders involved in drug dealing and organized crime, as evidenced by the relatively high representation of these weapons among BATF gun trace requests for these crimes. To illustrate, a late 1980s study of BATF trace requests reported that nearly 30% of the guns tied to organized crime cases were assault weapons, and 12.4% of gun traces tied to narcotics crimes involved these guns (Cox Newspapers 1989, p.4).

Further, most assault weapons combine semiautomatic firing capability with the ability to accept large-capacity magazines and higher stopping power (i.e., the ability to inflict more serious wounds).⁴ Thus, assault weapons would appear to be a particularly lethal group of firearms. However, this is also true of many non-banned semiautomatic firearms. Moreover, there have been no studies comparing the fatality rate of attacks with assault weapons to those committed with other firearms.

³ Fully automatic firearms, which shoot continuously as long as the trigger is held down, have been illegal to own in the U.S. without a federal permit since 1934. BATF has the responsibility of determining whether particular firearm models are too easily convertible to fully automatic firing. Earlier versions of the SWD M series assault pistols made by RPB Industries were met with BATF disapproval for this reason during the early 1980s.

⁴ Determinants of firearm stopping power include the velocity, size, shape, and jacketing of projectiles fired from a gun. Notwithstanding various complexities, the works of various forensic, medical, and criminological researchers suggest we can roughly categorize different types of guns as inflicting more or less lethal wounds (see review in Koper 1995). At perhaps the most general level, we can classify shotguns, centerfire (high-velocity) rifles, magnum handguns, and other large caliber handguns (generally, those larger than .32 caliber) as more lethal firearms and small caliber handguns and .22 caliber rimfire (low velocity) rifles as less lethal firearms. Most assault weapons are either high velocity rifles, large caliber handguns, or shotguns.

Nonetheless, the involvement of assault weapons in a number of mass murder incidents such as those discussed above provided an important impetus to the movement to ban assault weapons. Commenting on Patrick Purdy's murder of five children with an AK-47 rifle in Stockton, California in 1989, one observer noted, "The crime was to raise renewed outcries against the availability of exotic military-style weapons in our society. This time police forces joined forces with those who have traditionally opposed the widespread ownership of guns" (Cox Newspapers 1989, p.i). Later that year, California became the first state in the nation to enact an assault weapons ban, and the federal government enacted a ban on the importation of several foreign military-style rifles.

2.3. ASSAULT WEAPONS AND CRIME

Table 2-1 describes the named guns banned by Subtitle A in terms of their design, price, pre-ban legal status, and examples of legal substitutes for the banned guns. The table also reports counts of BATF trace requests — law enforcement agency requests for BATF to trace the recorded purchase history of a gun. Trace counts are commonly used to compare the relative frequencies of gun model uses in crime, although they are subject to biases discussed in the next chapter. Together, the named guns and legal substitutes accounted for 3,493 trace requests in 1993, the last full pre-ban year. This represented about 6.3 percent of all 55,089 traces requested that year.

Of the nine types of banned weapons shown in Table 2-1, five are foreign-made: AKs, UZI/ Galil, Beretta Ar-70, FN models, and the Steyr AUG. Together they accounted for only 394 BATF trace requests in 1993, and 281 of those concerned Uzis. There are at least three reasons for these low frequencies. First, imports of all of them had been banned under the 1989 assault weapon importation ban. Second, the Blue Book prices of the UZI, FN models, and Steyr AUG were all high relative to the prices of guns typically used in crime. Third, the FN and Steyr models lack the concealability that is often desired in criminal uses.

Among the four domestically produced banned categories, two handgun types were the most frequently submitted for tracing, with 1,377 requests for TEC models and exact copies, and 878 traces of SWD's M-series. Table 2-1 also reports 581 trace requests for Colt AR-15 rifles, 99 for other manufacturers' exact copies of the AR-15, and a handful of trace requests for Street Sweepers and Berettas.

Table 2-1. Description of firearms banned in Title XI

<i>Name of firearm</i>	<i>Description</i>	<i>1993 Blue Book price</i>	<i>Pre-ban Federal legal status</i>	<i>1993 trace request count</i>	<i>Examples of legal substitutes</i>
Avtomat Kalashnikov (AK)	Chinese, Russian, other foreign and domestic: .223 or 7.62x39mm cal., semi-auto Kalashnikov rifle, 5, 10*, or 30* shot mag., may be supplied with bayonet.	\$550 (plus 10-15% for folding stock models)	Imports banned in 1989	87	Norinco NHM 90/91
UZI, Galil	Israeli: 9mm, .41, or .45 cal. semi-auto carbine, mini-carbine, or pistol. Magazine capacity of 16, 20, or 25, depending on model and type (10 or 20 on pistols).	\$550-\$1050 (UZI) \$875-\$1150 (Galil)	Imports banned in 1989	281 UZI 12 Galil	
Beretta Ar-70	Italian: .222 or .223 cal., semi-auto paramilitary design rifle, 5, 8, or 30 shot mag.	\$1050	Imports banned in 1989	1	
Colt AR-15	Domestic: .Primarily 223 cal. paramilitary rifle or carbine, 5-shot magazine, often comes with two 5-shot detachable mags. Exact copies by DPMS, Eagle, Olympic, and others.	\$825-\$1325	Legal (civilian version of military M-16)	581 Colt 99 Other manufacturers	Colt Sporter, Match H-Bar, Target. Olympic PCR Models.
FN/FAL, FN/LAR, FNC	Belgian design: .308 Winchester cal., semi-auto rifle or .223 Remington combat carbine with 30-shot mag. Rifle comes with flash hider, 4-position fire selector on automatic models. Manufacturing discontinued in 1988.	\$1100-\$2500	Imports banned in 1989	9	LIAI Sporter (FN, Century)
SWD M-10, M-11, M-11/9, M-12	Domestic: 9mm paramilitary semi-auto pistol, fires from closed bolt, 32-shot mag. Also available in fully automatic variation.	\$215	Legal	878	Cobray PM-11, PM12 Kimel AP-9, Mini AP-9
Steyr AUG	Austrian: .223 Remington/5.56mm cal., semi-auto paramilitary design rifle.	\$2500	Imports banned in 1989	4	
TEC-9, TEC*DC-9, TEC-22	Domestic: 9mm semi-auto paramilitary design pistol, 10** or 32** shot mag.; .22 LR semi-auto paramilitary design pistol, 30-shot mag.	\$145-\$295	Legal	1202 Intratec 175 Exact copies	TEC-AB
Revolving Cylinder Shotguns	Domestic: 12 gauge, 12-shot rotary mag., paramilitary configuration, double action.	\$525***	Legal	64 SWD Street Sweepers	

* The 30-shot magazine was banned by the 1994 Crime Act, and the 10-shot magazine was introduced as a result.

** The 32-shot magazine was banned by the 1994 Crime Act, and the 10-shot magazine was introduced as a result.

*** Street Sweeper

Source: *Blue Book of Gun Values*, 17th Edition, by S.P. Fjestad, 1996.

Although the banned weapons are more likely than most guns to be used in crime, they are so rare that only 5 models appeared among the BATF National Tracing Center list of the 50 most frequently traced guns in 1993: the SWD M-11/9 (659 trace requests, ranked 8), the TEC-9 (602 requests, ranked 9), the Colt AR-15 (581 requests, ranked 11), the TEC-DC9 (397 requests, ranked 21), and the TEC-22 (203, ranked 48). In addition, the list named eight unbanned guns that accept banned large-capacity magazines: the Glock 17 pistol (509 requests, ranked 13), the Ruger P85 pistol (403 requests, ranked 20), the Ruger P89 pistol (361 requests, ranked 24), the

Glock 19 pistol (339 requests, ranked 28), the Taurus PT92 (282 requests, ranked 31), the Beretta/FI Industries Model 92 pistol (270 requests, ranked 33), the Beretta Model 92 (264 requests, ranked 34), and the Ruger Mini-14 rifle (255 requests, ranked 36).

In contrast, the list of ten most frequently traced guns is dominated by inexpensive small-caliber semiautomatic handguns not subject to the ban. These included the Raven P-25 (1,674 requests, ranked 1), the Davis P380 (1,539 requests, ranked 2), the Lorcin L-380 (1,163 requests, ranked 3), the Jennings J-22 (714 requests, ranked 6), and the Lorcin L-25 (691 requests, ranked 7). Other guns among the 1993 top ten list were: the Norinco SKS, a Chinese-made semi-automatic rifle (786 requests, ranked 4); the Mossberg 500 .12-gauge shotgun (742 requests, ranked 5), and the Smith & Wesson .38 caliber revolver (596 requests, ranked 10). None of these are subject to the assault weapon ban.

The relative infrequency of BATF trace requests for assault weapons is consistent with other findings summarized in Koper (1995). During the two years preceding the 1989 import ban, the percentage of traces involving assault weapons reportedly increased from 5.5 to 10.5 percent for all crimes (Cox Newspapers, n.d., p.4), and was 12.4 percent for drug crimes. Because law enforcement agencies are thought to request BATF traces more frequently in organized crime and drug crime cases, many criminal researchers (including ourselves) believe that raw trace request statistics overstate the criminal use of assault weapons in crime. Based on more representative samples, Kleck (1991) reports that assault weapons comprised 3.6 percent or less of guns confiscated from most of the Florida agencies he surveyed, with only one agency reporting as high as 8 percent. Similarly, Hutson et al. (1994) report that assault weapons were involved in less than one percent of 1991 Los Angeles drive-by shootings with juvenile victims. Based on his reanalysis of 1993 New York City data, Koper (1995) concluded that assault weapons were involved in only 4 percent of the 271 homicides in which discharged guns were recovered and 6.5 percent of the 169 homicides in which ballistics evidence positively linked a recovered gun to the crime.

Koper (1995) also summarizes findings which suggest that criminal self-reporting of assault weapon ownership or use may have become "trendy" in recent years, especially among young offenders. The percentages of offenders who reported ever using weapons in categories that may have included assault weapons was generally around 4 percent in studies conducted during the 1980s, but rose to the 20- to 30-percent range in surveys of youth reported since 1993, when publicity about such weapons was high (see, e.g., Knox et al., 1994; Sheley and Wright, 1993).

2.4. MARKETS FOR ASSAULT WEAPONS AND OTHER FIREARMS

Predicting effects of the bans on assault weapons and large-capacity magazines requires some basic knowledge of firearms markets. The Federal Bureau of Alcohol, Tobacco and Firearms (BATF) licenses persons to sell or repair firearms, or accept them as a pawnbroker under the Gun Control Act of 1968. Cook et al. (1995, p.73) summarized the relevant characteristics of a Federal firearms licensee (FFL) as follows. Licenses are issued for three years renewable, and they allow Federal Firearm licensees to buy guns mail-order across state lines without a background check or a waiting period. Starting well before the 1994 Crime Act, applicants had to state that they were at least 21 years old and provide a Social Security number, proposed business name and location, and hours of operation. Since the 1968 Omnibus Crime Control and Safe Streets Act, FFL applicants have had to state that they were not felons, fugitives, illegal immigrants, or substance abusers, and that they had never renounced their American citizenship, been committed to a mental institution, or dishonorably discharged from the military.

The Gun Control Act of 1968 made these same categories of persons ineligible to purchase a gun from a licensee and required would-be purchasers to sign statements that they were not ineligible purchasers. The 1968

Act also requires FFLs to retain the records of each sale and a running log of acquisitions and dispositions of all guns that come into their possession. In 1993, the Brady Handgun Violence Prevention Act added several more requirements on handgun sales by FFLs; the focus on handguns reflected their disproportionate involvement in crime. Under the Brady Act, licensed dealers⁵ became required to obtain a photo ID from each would-be handgun purchaser, to verify that the ID described the purchaser, to notify the chief law enforcement officer (CLEO) of the purchaser's home of the attempt to purchase, and to wait five business days before completing the sale, allowing the CLEO to verify eligibility and notify the seller if the purchaser is ineligible. The Brady Act also raised the fee for the most common license, Type 1 (retail), from \$10.00 per year to \$200.00 for the first three years and \$90.00 for each three-year renewal.

Subtitle C of Title XI which took effect simultaneously with the 1994 assault weapons ban strengthened the requirements on FFLs and their customers in several ways, including the following. To facilitate fingerprint-based criminal history checks and to deter applicants who feared such checks, Subtitle C required FFL applicants to submit fingerprints and photographs; this ratified BATF practice that had begun in early 1994. To make FFLs more visible to local authorities, Subtitle C required applicants to certify that within 30 days they would comply with applicable local laws and required the Secretary of the Treasury to notify state and local authorities of the names and addresses of all new licensees. To help local law enforcement agencies recover stolen guns and to discourage licensees from retroactively classifying firearms they had sold without following Federally required procedures as "stolen," Subtitle C introduced requirements for FFLs to report the theft or loss of a firearm to BATF and to local authorities within 48 hours.

Assault weapons and other firearms are sold in primary and secondary markets whose structure was described by Cook et al. (1995). Primary markets include transactions by FFLs. At the wholesale level, licensed importers and distributors purchase firearms directly from manufacturers and advertise them through catalogs and display ads in nationally distributed publications such as *Shotgun News*. Under the law, purchasers may include walk-ins who reside in the distributor's state and FFLs from anywhere who can order guns by telephone, fax, or mail. Primary-market retailers include both large discount stores and smaller-volume independent firearms specialists who offer advice, gun service, sometimes shooting ranges, and other professional services of interest to gun enthusiasts. Some 25,000 independent dealers are organized as the National Alliance of Stocking Gun Dealers. At both the wholesale and retail level, primary-market sellers are legally required to verify that the purchaser is eligible under Federal laws, to maintain records of sales for possible future use in BATF traces of guns used in crime, and, since the effective date of the Crime Act, to report thefts of guns to BATF.

Cook et al. (1995, p.68) also designated "secondary markets," in which non-licensed persons sell or give firearms to others. Sellers other than FFLs include collectors or hobbyists who typically resell used guns through classified ads in newspapers or "consumer classified sheets," through newsletters oriented toward gun enthusiasts, or through word of mouth to family and friends. The secondary market also includes gun shows, "street sales", and gifts or sales to family, friends, or acquaintances. Secondary transfers are not subject to the record-keeping requirements placed on FFLs.

Gun prices in the primary markets are widely publicized, and barriers to entry are few, so that the market for legal purchasers is fairly competitive. For new guns, distributors' catalogs and publications such as *Shotgun News* disseminate wholesale prices. Prices of used guns are reported annually in a *Blue Book* catalog (Fjestad, 1996). Based on interviews with gun market experts, Cook et al. (1995, p.71) report that retail prices track

⁵ The Brady Act exempted sellers in states that already had similar requirements to verify the eligibility of would-be gun purchasers.

wholesale prices quite closely. They estimate that retail prices to eligible purchasers generally exceed wholesale (or original-purchase) prices by 3–5 percent in the large chain stores, by about 15 percent in independent dealerships, and by about 10 percent at gun shows because overhead costs are lower.

In contrast, purchasers who wish to avoid creating a record of the transaction and ineligible purchasers, including convicted felons who lack convincing false identification and wish to avoid the Brady Act eligibility check or waiting period, must buy assault weapons and other guns in the secondary markets, which are much less perfect. Prices for banned guns with accurate and complete descriptions are rarely advertised, for obvious reasons. Sellers do not supply catalogues and reference books that would help an untrained buyer sort out the bewildering array of model designations, serial numbers, and detachable features that distinguish legal from illegal guns. And competition is limited because sellers who are wary of possible undercover purchases by law enforcement agencies prefer to limit “off-the-books” sales either to persons known or personally referred to them, or to settings such as gun shows and streets away from home, where they themselves can remain anonymous.

In general, ineligible purchasers face premium prices some 3 to 5 times legal retail prices.⁶ Moreover, geographic differentials persist that make interstate arbitrage, or trafficking, profitable from “loose regulation” states to “tight regulation” states. Among the banned assault weapons, for example, Cook et al. (1995, p.72, note 56) report TEC-9s with an advertised 1991 price of \$200 in the Ohio legal retail market selling for \$500 on the streets of Philadelphia. By 1995, they report a legal North Carolina price of \$300 compared to a street price of \$1,000 in New York City. In 1992 interviews with Roth (1992), local and state police officers reported even higher premiums in secondary submarkets in which ineligible purchasers bartered drugs for guns: prices in terms of the street value of drugs reportedly exceeded street cash prices by a factor of about 5.

The attraction that the higher premiums hold for FFLs as sellers has been noted by both researchers and market participants. Cook et al. (1995, p.72) note that licensed dealers willing to sell to ineligible purchasers or without Federal paperwork offer buyers the combined advantages of the primary and secondary markets: “they have the ability to choose any new gun in the catalog, but without the paperwork, delays, fees, and restrictions on who can buy.” Their data raise the possibility that up to 78 percent of FFLs in the Raleigh/Durham/Chapel Hill area of North Carolina may operate primarily or exclusively in secondary markets, since 40 percent had not given BATF a business name on their application, and an additional 38 percent provided “business” numbers that turned out to be home numbers (Cook et al., 1995:75). They note the consistency of their findings with a national estimate by the Violence Policy Center (1992 — More Gun Dealers than Gas Stations) that 80 percent of dealers nationwide do not have storefront retail firearms businesses. Jacobs and Potter (1995, p.106) note that because resource constraints have restricted BATF inspections to storefronts, dealers without storefronts may operate without regard to the Brady Act requirements, or presumably to other requirements as well.

The opportunities for FFLs, whether operating from storefronts or not, to sell firearms in both the primary and secondary markets, were colorfully described in the 1993 statement of the National Alliance of Stocking Gun Dealers (NASGD) to the House and Senate Judiciary Committees regarding Subtitle C. After noting the substantial price premium for selling guns directly felons to and others on the street, the statement continues:

Should you feel a little queasy about the late night hours and the face-to-face negotiations with the street folk, then you can become a “gun-show cowboy.” Simply drive by your friendly “distributor”..., load up 250 handguns, and hit the weekend circuit of gun shows...If you choose

⁶ There are exceptions. Guns fired in crimes may sell at substantial discounts on the street because ballistic “fingerprints” may incriminate the subsequent owner. Drug addicts who find and steal guns during burglaries may sell or trade them for drugs at prices far below market.

to do the “cash and carry” routine then you will command higher prices than those who insist on selling lawfully with all the attendant ID and paperwork. However, since you will most probably be selling at gun shows in states other than where you are licensed, it is unlawful for you to sell and deliver on the spot, so you will not want to identify yourself either. Attendees (purchasers) at gun shows include the entire spectrum of the criminal element — felons, gangs who don’t have their own armorer, underage youth, buyers for underage youth, multistate gun runners and such...Though the gun show cowboy won’t achieve quite as high a profit as the street seller, he can sell in very high volume and easily earn the same dollar amount and feel a lot safer. (NASGD, 1993:2-3).

Pierce et al. (1995) made an initial effort to investigate the extent and distribution of FFLs’ transactions in secondary submarkets through which firearms flow to criminal uses. Using the automated Firearms Tracing System (FTS) recently developed by BATF’s National Tracing Center, they explored several covariates of the distribution of traces in which a given FFL holder is named. They reported the highest mean number of traces for dealers in Maryland, Vermont, and Virginia. Other cross-tabulations indicated that currently active dealers operating at the addresses previously used by out-of-business dealers were more likely than average to be named in traces, which suggests that dealers who are active in secondary markets tend to reapply for licenses under new names. Finally, they reported a very high concentration of dealers in trace requests. While 91.6 percent of the dealers in the FTS database had never been named in a trace, 2,133 dealers, 0.8 percent of the total, had been named in 10 or more traces. Together, they were named in 65.7 percent of all traces conducted. An even smaller handful of 145 dealers’ names surfaced in 30,850 traces — 25.5 percent of the entire trace database. These findings indicated that the channels through which guns flow from FFLs to criminal users are more heavily concentrated than previously recognized.

The channels described above through which firearms flow from licensed dealers (FFLs) and eligible purchasers to ineligible purchasers vary in terms of visibility.⁷ In primary markets, ineligible purchasers may buy guns from FFLs using fake identification themselves or using “straw purchasers” (eligible buyers acting as agents for ineligible buyers, unbeknownst to the FFL). In Cook and Leitzel’s (1996) terminology, these are “formal” transactions that create official records, but the records do not identify the actual consumer.

We use the term “leakage” to designate channels through which guns flow from legal primary and secondary markets to ineligible purchasers. No leakage channel creates valid sales records; however, at least since 1994, all are likely to generate stolen gun reports to BATF. Ineligible purchasers may buy guns informally (i.e., without paperwork) from unethical FFLs at gun shows or through “street” or “back door” sales. To prevent informal sales from creating discrepancies between actual inventories and the acquisition/disposition records, the FFL may report them as stolen. Such transactions are indistinguishable from actual thefts, the other leakage channel.

Guns may also leak from eligible non-FFL gun owners to ineligible owners through direct sales on the street or at gun shows, or through thefts. While non-FFL owners are not required to record sales or transfers of their guns, they may also wish to report a gun that they sell to an ineligible purchaser as stolen if they suspect it may be recovered in a future crime. Therefore, leakage in secondary markets may also be reflected in theft reports.

⁷ While the law presumes ineligible purchasers to be more likely than eligible purchasers to use guns during crimes, eligible purchasers have, in fact, committed viable crimes with large-capacity firearms.

3. ANALYSIS PLAN

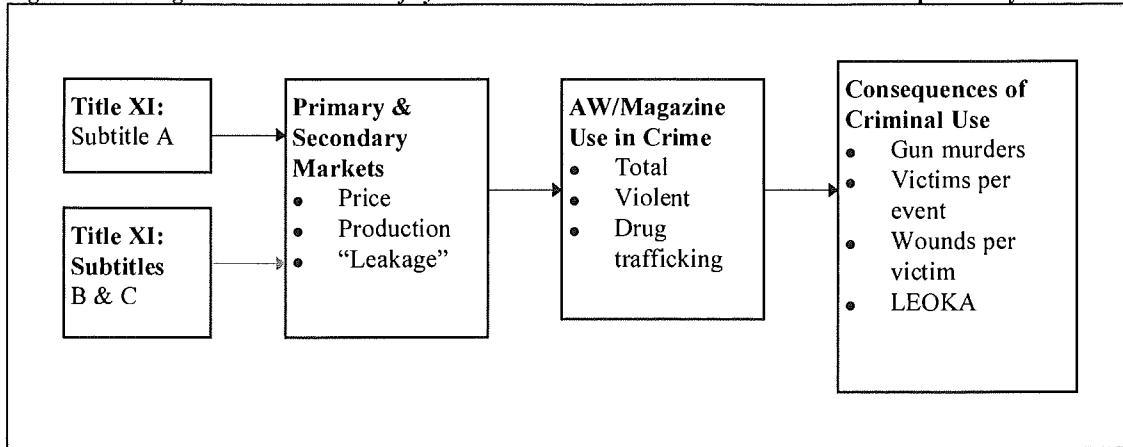
Subtitle A of Title XI banned the manufacture, transfer, and possession of assault weapons and large-capacity magazines. We hypothesized that the ban would produce direct effects in the primary markets for these weapons, that related indirect effects in secondary markets would reduce the frequency of their criminal use, and that the decrease in use would reduce such consequences as gun homicides, especially incidents involving multiple victims, multiple wounds, and killings of law enforcement officers. In this chapter, we explain our general strategy testing these hypotheses.

3.1. POTENTIAL BAN EFFECTS

Figure 3-1 displays the ban effects that we hypothesized and the measures that we used to test those effects. As shown there, we anticipated potential effects on primary and secondary markets for the banned guns and magazines, potential reductions in their use in crime, and subsequent reductions in the consequences of criminal use. Although the available measures of any single effect are problematic, the problems differ by measure. Therefore, our approach was to conduct several small studies, each subject to different error sources, and then to integrate the findings of the separate studies.

As shown in Figure 3-1, the **market effects** of interest included indicators of price, production, and “leakage” between primary and secondary markets. If the Subtitle A bans are to be effective in reducing criminal uses of the banned weapons and magazines, they must increase the prices of those items. Our **price** indicators were collected for banned guns, selected legal substitutes, large-capacity magazines, and, as comparison groups, comparable guns that should not have been directly affected by the ban. The data were the nationally advertised prices of distributors who ran display ads in *Shotgun News* continuously from January 1992 through mid-1996. Because these distributors sell guns simultaneously at the wholesale and retail levels, and because primary-market retail margins are small, we believe these prices offer a useful index of primary-market prices. We used hedonic price analysis to study trends. Annual **production** data were obtained from the Violence Policy Research Project, an organization that compiles BATF manufacturing data. We lacked post-ban data because release of the production statistics is delayed two years by law. Also, we had to make certain approximations because production statistics are not reported for specific models. Therefore, findings from our tabular analyses of production are less complete and more tentative than those about price. Finally, as discussed in Section 3.2, we defined “**leakage**” as the transfer of firearms to ineligible purchasers from licensed dealers and eligible purchasers. Because we argued there that leakage is likely to generate theft reports (either because the guns were transferred by theft or because a false theft report was used to conceal a sale to an ineligible purchaser), we measured leakage using counts of stolen gun reports to the FBI’s National Crime Information Center (NCIC).

Our primary indicator of assault weapon **use in crime** is the volume of requests for BATF traces of guns recovered in crime. **Trace request** data have the advantage of providing a national picture, and they allow us to focus on two of the Congressional priorities for this study, violent crime and drug trafficking crime. They require special caution in interpretation, however, since trace requests are a small and unrepresentative sample of guns recovered in crime. We believe that our tabular analyses provide a defensible estimate of the short-term effects of Title XI on criminal use of the banned weapons. We attempted to supplement the national analysis with analyses of **local trends in recovered assault weapons** in representative samples of recovered guns from a number of law enforcement agencies, but could obtain the necessary data for only a few cities.

Figure 3-1. Logic model for *Public Safety and Recreational Firearms Use Protection Act* impact study

Finally, as shown in Figure 3-1, we used four indicators of the **consequences** of criminal use of assault weapons and semiautomatic weapons with large-capacity magazines: total gun murders by state, victims per criminal event involving gun murder, entry wounds per gunshot wound victim, and law enforcement officers killed in action. While these indicators all have logical relationships to use of the banned items, all have difficulties. Total gun murders is an insensitive indicator because attacks with assault weapons and other semiautomatics with large-capacity magazines account for only a fraction of all murders. Other consequences such as victims per event and wounds per victim are more specific to the banned weapons and magazines, as supporters argued during the ban debates, and assault weapons are more disproportionately used in killings of law enforcement officers than in other murders. However, available databases for measuring those impacts are difficult to analyze because they contain such small numbers of cases. And, for all the indicators, the existence of only one full post-ban year in available data may make the estimates too imprecise to discern short-run impacts even if they are large enough to be of policy interest. As a result, our findings about ban effects on consequences are especially tentative.

We anticipated that market effects during the short-term period allowed for this study would be heavily influenced by expectations. Enactment of the ban was preceded by extensive publicity and debate, which afforded time for manufacturers, distributors, retailers, and collectors to speculate that the firearms being considered for ban coverage would eventually become expensive collectors' items. Analogous experience from 1989 seemed instructive, because that year saw both a Federal ban on importation of assault rifles and a California ban analogous to Title XI. During the three months leading up to the importation ban, import license requests for assault rifles, which had numbered 40,000 in 1987 and 44,000 in 1988, swelled 10-fold to an annual rate of 456,000 (AMA Council, 1992). It is not clear how rapidly the import surge flowed through the distribution chain from importers to consumers in the primary and secondary markets. Yet six months later, during the period leading up to a California ban and sentence enhancement, several police agencies reported sharp decreases in criminal use of assault rifles. At the time, observers attributed this seeming paradox to advance publicity that may have left the misimpression that the ban took effect when enacted, judicial anticipation of the enhancements in setting bond and imposing sentence, tips to police from law-abiding gun dealers sensitive to the criminal gun use that motivated the ban, and owners' reluctance to risk confiscation for misuse of their assault weapons, which had become more valuable in anticipation of the ban (Mathews, 1989). However, it is equally plausible that the speculative price increases for the banned weapons in formal markets at least temporarily bid assault weapons

away from ineligible purchasers who would more probably have used them in crimes (Cook and Leitzel, 1996).⁸ Whether these short-run conditions would hold for the long run would depend on the extent to which grandfathered guns in the banned categories leaked into secondary markets over time through gun shows, “back door” sales, and thefts.

Therefore, our objectives became to estimate ban-related effects on price, supply responses, and leakage from formal to informal markets; to estimate how these market effects influenced criminal assault weapon use; and to estimate trends in the consequences of that use. In accordance with the statutory study requirement, we placed special emphasis on the use of assault weapons in violent crime and drug trafficking crime wherever available data permitted.

3.2. GENERAL DESIGN STRATEGY

Our general design strategies are to test whether the assault weapon and magazine bans interrupted trends over time in the outcome measures listed above. A variety of techniques exist for this general problem. They differ in terms of desirable qualities such as statistical power, robustness against various threats to the validity of findings, and precision; unfortunately, the techniques with more desirable properties are generally more demanding in terms of data requirements. Because of different data constraints, we employed a variety of methods, including various forms of time series and multiple regression analysis (i.e., pooled, cross-sectional time series analysis, hedonic price analysis, and Box-Jenkins interrupted time series models), simple before and after comparisons, and graphical displays. As a result, our conclusions about some measures are stronger than about others.

Because we anticipated these circumstances, our approach to the Congressional mandate was to conduct a number of small-scale analyses of more-or-less readily available data, then to synthesize the results into our best judgment concerning the impacts of Title XI.⁹ We carried out three kinds of analyses of market effects:

- Hedonic price analyses of 1992–96 primary-market price trends for banned semiautomatic firearms, comparable unbanned firearms, and large-capacity magazines, using national distributors’ prices;
- Tabular analyses of gun production data through 1994, the latest available year;
- Pre-ban/post-ban comparisons and time series analyses of 1992–96 trends in “leakage” to illegal markets, as measured by guns reported stolen to FBI/NCIC.

We carried out two kinds of analyses of assault weapon use:

- Graphical and tabular analyses of 1992–96 trends in requests for BATF traces of assault weapons recovered in crime, in both absolute terms and as a percentage of all requests;

⁸ While unbanned, widely available, inexpensive semiautomatic pistols made by Lorcin, Davis, and other manufacturers are good (and perhaps superior) substitutes for the banned assault weapons in most criminal uses, they are not substitutes for speculative purposes.

⁹ During the project, we abandoned early plans for several additional impact studies that we had contemplated. It proved impossible to analyze trends in enforcement of the ban because of the small numbers of matters referred to U.S. Attorneys and cases filed in U.S. District Court. We were forced to abandon plans to measure secondary-market prices of banned weapons from classified advertisements for two reasons: back issues of consumer classifieds proved unavailable, and the ads describe the weapons too imprecisely for consistent classification. Finally, we dropped plans to analyze multi-city assault weapon use data from the gun module of the Drug Use Forecasting (DUF) program for two reasons. Data exist only for the post-ban period, and we had concerns about the validity of respondents’ reports of assault weapon ownership and use.

- Pre-ban/post-ban comparisons and time series analyses of 1992–96 trends in counts of guns recovered in crime by selected local law enforcement agencies.

We carried out the following analyses of the consequences of using assault weapons and semiautomatics with large-capacity magazines in crime:

- An analysis of state-level time-series data on gun murders which controls for potential influences of legal, demographic, and criminological importance;
- Pre-ban/post-ban comparisons and time series analyses of 1980–95 trends in victims per gun-homicide incident as measured nationally from Supplementary Homicide Reports;
- Descriptive analysis of the use of assault weapons in mass murders in the U.S. from 1992-present (see Appendix A);
- Graphical analyses and pre-ban/post-ban comparisons of 1992–96 trends in the number of wounds per gunshot victim using medical data from medical examiners and one hospital emergency department in selected cities, following Webster et al. (1992) and McGonigal et al. (1993);
- A tabular analysis of 1992–96 trends in law enforcement officers killed in action (LEOKA) with assault weapons.

3.2.1. Threats to Validity and Use of Comparison Groups

The validity of the techniques we applied depends on comparisons of trends between meaningful treatment and comparison groups, and we used two approaches to defining comparison groups. In general, to estimate ban effects on markets and uses, we compared trends between types of guns and magazines that were differentially affected by the ban. To estimate effects on the consequences of assault weapon use, we used pre-existing state-level bans on assault weapons and juvenile handgun possession to define comparison groups, because we assumed that such laws would attenuate the effects of the Federal ban.¹⁰

Table 3-1 describes our general classification scheme for types of guns affected by the ban and the corresponding comparison groups.¹¹ The comparisons are not always precise, and, as later chapters will make clear, they differ from measure to measure depending on the gun descriptors used in available databases.

¹⁰ Although in theory, comparisons of markets and uses could be made simultaneously by weapon and jurisdiction, the disaggregation often leaves too little data for meaningful analysis.

¹¹ To be considered a potential comparison gun, we had to have at least anecdotal evidence that it had appeal beyond the community of sportsmen and collectors and/or evidence that it was among the 50 guns most commonly submitted for BATF traces. Without that constraint, it would have been unreasonable to consider it as being functionally similar to any banned gun, and data on prices and uses would have involved numbers too small to analyze. The trade-off is that the comparison guns may well have been subject to indirect substitution effects from the ban.

Table 3-1. Banned weapons and examples of unbanned comparison weapons

<i>Banned weapon</i>	<i>Examples of Comparison weapon</i>
<u>Named Domestic Assault Pistols</u> -SWD M-10, M-11, M-11/9, M-12, exact copies under other names, legal substitutes -TEC-9, TEC-DC9, TEC-22, exact copies by AA Arms, legal substitutes	-Lorcin, Davis semiautomatic pistols (less expensive) -Glock, Ruger semiautomatic pistols (more expensive)
<u>Named Domestic Assault Rifles</u> -Colt AR-15, exact copies and legal substitutes	-Ruger Mini-14 (unbanned domestic) -Maadi (legal import)
<u>Named Foreign Assault Weapons</u> -UZI carbines and pistols -AK models	-SKS (recently restricted, widely available import)
<u>"Features Test" Guns</u> Calico Light Weapons pistols and rifles Feather rifles	See pistols and rifles above.
<u>Rare Banned Weapons</u> Beretta Ar-70, FN models, Steyr AUG, revolving cylinder shotguns	No comparisons defined.

Of the banned weapons named in Table 3-1, the named domestic assault pistols are of greatest interest because they are more widely used in crime than rifles. We used two categories of pistols as comparison groups: the cheap small-caliber pistols by Lorcin and Davis that are among the most widely used guns in crime, and the more expensive Glock and Ruger pistols. The Glock and Ruger models took on additional significance by serving as indicators of non-banned handguns capable of accepting large-capacity magazines. For the AR-15 family of assault rifles, we used the Ruger Mini-14, SKS, and/or Maadi rifles in various comparisons. All are legally and widely available.

We performed relatively few comparative analyses of named foreign assault weapons, the UZI, Galil, and AK weapons, because the 1989 import ban limited their availability during our observation period, and their legal status was unchanged by the Title XI ban. Nevertheless, because these guns remain in criminal use, we performed price analyses for their large-capacity magazines, which are also widely available from foreign military surplus. The SKS semiautomatic rifle, which was imported from China and Russia in fairly large numbers¹² until recently, served as an unbanned comparison weapon for the banned foreign rifles. We carried out no analyses concerning the rarest assault weapons shown in Table 3-1.

Because few available databases relate the consequences of assault weapon use to the make and model of weapon, most of our analyses of consequences are based on treatment and comparison jurisdictions defined in terms of their legal environments. Four states — California, Connecticut, Hawaii, and New Jersey — already

¹² Although a 1994 ban on Chinese imports of many goods including firearms nominally covered SKS rifles, large numbers continued to enter the country under Craig Amendment exemptions for goods already "on the water" at the time of the import ban.

banned assault weapons before the Federal ban was enacted. Although state bans can be circumvented by interstate traffickers, we hypothesized that their existence would reduce the effects of the Federal ban in their respective states.

The following chapters report findings of the analyses described here. Each chapter also explains in detail the tailoring of this general analysis plan to data constraints associated with each comparison.

4. GUN AND MAGAZINE MARKET EFFECTS

The discussion of gun markets in Chapter 2 led us to several hypotheses. First, assuming that the primary and secondary markets were in equilibrium before Congress took up serious discussion of a ban on assault weapons and large-capacity magazines, we hypothesized that the opening of debate would stimulate speculative demand for the banned guns and magazines, leading to price increases in primary markets well in advance of the effective date of the ban. Second, we hypothesized that for the makes and models of assault weapons whose prices increased, quantities produced would also increase before the ban took effect. These “grandfathered guns” were exempted from the ban.

Having been advised by a gun market expert¹³ that legal substitutes for many of the banned weapons appeared in primary markets around the effective date of the ban, it seemed doubtful that the speculative pre-ban price increases could hold under the combined weight of stockpiled grandfathered guns and the flows of new legal substitute models. Therefore, our third hypothesis was that the post-ban prices of banned guns and their legal substitutes would return to their pre-debate equilibrium levels.

We presumed that assault weapons and large-capacity magazines are economic complements, so that, like bread and butter, an increase in the supply of either one should decrease its price and increase the price of the other. Therefore, our fourth hypothesis was that, for the oversupplied assault weapons and legal substitutes whose prices fell from their speculative peaks, their magazine prices¹⁴ should rise over time, as the stock of grandfathered magazines dwindled.

Finally, we believed that for banned makes and models whose prices experienced a speculative price bubble around the time of the ban and then returned to pre-ban levels, speculative demand would fall eventually in both primary and secondary markets as expectations receded for a price “rebound” in primary markets. In contrast, demand by ineligible purchasers intending to use the banned weapons in crime should be relatively unaffected. Therefore, at least in the short run, relative prices should rise in secondary markets, where such “crime demand” is concentrated. We could not directly observe secondary-market prices. However, a price rise in secondary relative to primary markets should cause increased “leakage” to secondary markets, reflected in rising theft reports of assault weapons during post-ban periods of low prices in primary markets.

The following sections report the methods we used to test these hypotheses about market effects of the ban, and our findings.

4.1. FINDINGS OF PRICE ANALYSIS

4.1.1. Collection of Price Data

To test our hypotheses about price trends, we sought to approximate the prices at which the banned items could be legally purchased throughout the country. After considering available data sources, we decided that monthly data would be sufficient and that the distributors’ prices advertised in national publications would offer a

¹³ William R. Bridgewater, personal communication, September 1995.

¹⁴ Magazines are make and model-specific, so that in general a magazine made for a specific rifle will not fit other rifles. However, a magazine made for a banned assault rifle like the Colt AR-15 will fit an exact copy like the Olympic Arms AR-15 and a legal substitute like the Colt AR-15 Sporter, which has the same receiver.

suitable index. Those prices are available to any FFL, and, as discussed in Chapter 2, primary-market FFLs generally re-sell within 15 percent of the distributors' price.

To collect the necessary data, we developed two forms. The first was designed to collect data on base price and accessorized price on 47 makes and models of guns. These included all guns named in Subtitle A along with selected legal substitutes and functional substitutes (e.g., low-capacity semiautomatic pistols that are commonly used in crimes). The second form recorded make, model, capacity, and price of any advertised large-capacity magazines. Both forms also recorded the distributors' names and, for verification purposes, a citation to the location of the advertisements.

We selected twelve gun and magazine distributors that had display ads on a monthly basis in *Shotgun News* throughout the entire period from April 1992 through June 1996. This period was selected to permit observation of rumored "Clinton election" price effects (i.e., increased speculative demand based on concern over possible new gun controls under a Democratic administration) as well as the entire period of debate over Subtitle XI and as long a post-ban period as possible. Display ad prices were coded on a monthly basis throughout the period except immediately around the ban, from August 1994 to October 1994, when prices were coded on a weekly basis to maximize statistical power during the period when we expected the largest price variances. The *Shotgun News* issue to be coded for each month was selected randomly, to avoid any biases that might have occurred if a particular part of the month was coded throughout the period. The number of advertised-price observations for any given gun varied from month to month over the period, as distributors chose to feature different makes and models. The number of price observations for a given make and model bears an unknown relationship to the number of transactions occurring at that price. The advertised prices should be considered approximations for at least three reasons. Advertised prices simultaneously represent wholesale prices to retail dealers and retail prices to "convenience dealers" who hold licenses primarily to receive guns for personal use by mail from out-of-state sources. There is anecdotal evidence of discounts from advertised prices for purchases in large quantities or by long-time friends of the distributors. Finally, the ads did not permit us to accurately record such price-relevant features as finish, included gun cases, and included magazines.

4.1.2. Analysis

Price trends for a number of firearms and large-capacity magazines were analyzed using hedonic price analysis (Berndt 1990, pp.102-149; also see Chow 1967). This form of analysis examines changes over time in the price of a product while controlling for changes over time in the characteristics (i.e., quality) of the product. Hedonic analysis employs a model of the form:

$$Y = a + b * X + c_1 * T_1 + \dots c_n * T_n + e$$

where Y is the logarithmic price of the product, X represents one or more quality characteristics affecting the price of the product, T_1 through T_n are dummy variables for the time periods of interest, a is an intercept term, and e is an error term with standard properties. The coefficients c_1 through c_n provide quality-adjusted estimates of changes over time in the price of the product.

In the analysis that follows, all price data were first divided by quarterly values of the gross domestic product price deflator as provided in *Economic Indicators* (August 1996). This quantity was then logged. In all models, we have omitted the time dummy for the period when the ban went into effect. Thus, the time coefficients are interpreted relative to the prices at the time of ban implementation. Because the outcome variable is logged, the coefficients on the time period indicators can be interpreted as multiplier effects (we illustrate this in more

detail below). Whenever possible, we examined quarterly price trends. In a number of instances, however, sample size considerations required us to use semi-annual or annual periods.

Our quality variables correspond to factors such as manufacturer, model, distributor, and, in some cases, weapon caliber. In addition, some of the models include an indicator variable denoting whether the firearm had special features or enhancements or was a special edition of any sort.¹⁵ We have used these variables as proxy variables for quality characteristics in the absence of more detailed measures of weapon characteristics. Further, we cannot fully account for the meaning of significant distributor effects. Distributor effects may represent unmeasured quality differentials in the merchandise of different distributors, or they may represent other differences in stock volume or selling or service practices between the distributors.¹⁶ Nevertheless, we included distributor because it was often a significant predictor of price. Thus, our models provide price trends after controlling for the mix of products and distributors advertised during each time period. Finally, the models presented below are parsimonious models in which we have retained only those quality indicators which proved meaningful in preliminary analyses.¹⁷

4.1.2.1. Gun Prices

For the analysis of firearm prices, we chose groups of weapons based on both theoretical importance and data availability (a number of the guns included on our coding form appeared infrequently in the ads examined by project staff). We examined price trends in banned assault pistols and compared them to price trends for unbanned semiautomatic handguns commonly used in crime. In addition, we analyzed the price trend for the banned AR-15 assault rifle and its variations and compared it to trends for a number of similar semiautomatic rifles not subject to the ban.

Our findings for handguns were consistent with our hypotheses. For the banned SWD group of assault pistols, the average advertised price peaked at the time the ban took effect, having risen from 68 percent of the peak a year earlier; within a year, the mean price fell to about 79 percent of peak. In contrast, advertised prices of unbanned Davis and Lorcin semiautomatic pistols commonly used in crime were essentially constant over the entire period.

Rifle price trends were only partially consistent with our hypotheses. For semiautomatic rifles, prices of both the banned AR-15 family of assault rifles and a comparison group of unbanned semiautomatic rifles showed evidence of speculative peaks around the time the ban took effect, followed by a decrease to approximately pre-speculation levels.

We interpret these findings as evidence of substantial speculative pre-ban demand for guns that were expected to be banned as assault weapons, while the underlying primary market for guns more commonly used in crime remained stable. While no plausible definition of assault weapon was ever likely to include the Davis and

¹⁵ We note, however, that recording special features of the weapons was a secondary priority in the data collection effort; for this reason, and because the ads do not follow a consistent format, this information may not have been recorded as consistently as other data elements.

¹⁶ We have heard speculations but have no evidence that distributors' prices for a given quantity of a specific gun may be inversely related to the rigor of their verification of purchasers' eligibility.

¹⁷ We eliminated control variables that had t values less than one in absolute value. This generally improved the standard errors for the coefficients of interest (i.e., the coefficients for the time period indicators).

Lorcin pistols, Lenett (1995) describes considerable uncertainty during the Crime Act debate over precisely which rifles were to be covered.

Assault pistols: The analysis of assault pistol prices focused on the family of SWD M10/M11/M11-9/M12 weapons.^{18 19} Our coders did not find enough ads for these weapons to conduct a quarterly price trend analysis; therefore, we examined semi-annual prices. Results are shown in Table 4-1. In general, the M10, M11, and M11/9 models were significantly more expensive than the M12 model and the new PM11 and PM12 models. Models with the Cobray trademark name had lower prices, while weapons made in .380 caliber commanded higher prices. Finally, two distributors selling these weapons had significantly lower prices than did the other distributors.

¹⁸ Over the years, this class of weapons has been manufactured under a number of different names (i.e., Military Armaments Corp., RPB Industries, Cobray, SWD, and FMJ).

¹⁹ Initially, we had also wished to analyze the prices of banned Intratec weapons and their copies. However, project staff found few ads for these guns among the chosen distributors, particularly in the years prior to the ban's implementation.

Table 4-1. Regression of SWD handgun prices on time indicators, controlling for product characteristics and distributors

Analysis of Variance					
<i>Source</i>	<i>DF</i>	<i>Sum of squares</i>	<i>Mean square</i>	<i>F value</i>	<i>Prob>F</i>
Model	16	16.26086	1.01630	13.376	0.0001
Error	132	10.02900	0.07598		
C Total	148	26.28986			
Root MSE		0.27564		R-square	0.6185
Dep Mean		0.87282		Adj R-square	0.5723
Parameter Estimates					
<i>Variable</i>	<i>DF</i>	<i>Parameter estimate</i>	<i>Standard error</i>	<i>T for H0 parameter = 0</i>	<i>Prob>|T|</i>
INTERCEP	1	1.00876	0.073205	13.78	0.0001
T1	1	-0.17097	0.130798	-1.307	0.1935
T2	1	-0.29236	0.109943	-2.659	0.0088
T3	1	-0.26949	0.078477	-3.434	0.0008
T4	1	-0.38309	0.086909	-4.408	0.0001
T5	1	-0.1881	0.12957	-1.452	0.1489
T7	1	-0.04368	0.076185	-0.573	0.5674
T8	1	-0.23376	0.108602	-2.152	0.0332
T9	1	0.108787	0.205848	0.528	0.5981
CAL380	1	0.200609	0.06946	2.888	0.0045
DIST 3	1	-0.26216	0.128954	-2.033	0.0441
DIST 5	1	0.331378	0.224065	1.479	0.1415
DIST 6	1	-0.18987	0.059367	-3.198	0.0017
COBRAY	1	-0.18832	0.053756	-3.503	0.0006
M10	1	0.771313	0.131932	5.846	0.0001
M11	1	0.308675	0.057351	5.382	0.0001
M119	1	0.110174	0.077347	1.424	0.1567

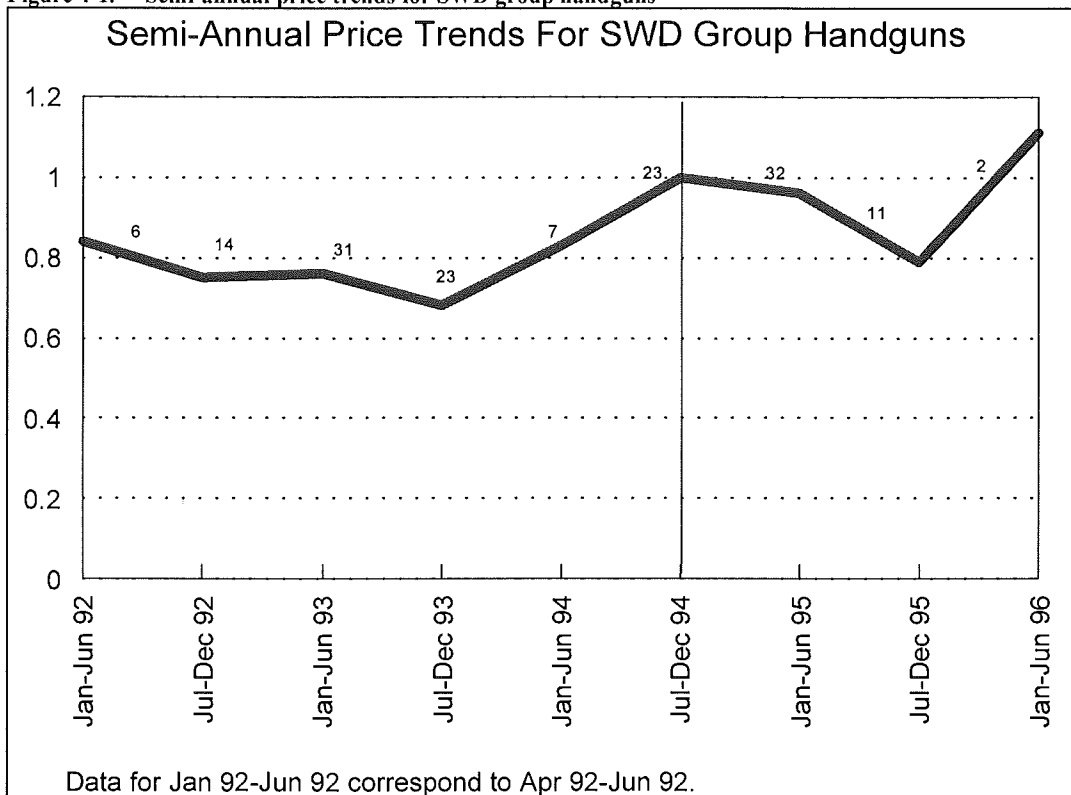
The coefficients for the time indicator variables provide quality-adjusted price trends. The time indicator t6 has been omitted from the equation.²⁰ This indicator corresponds to the period of July 1994 through December 1994 which encompasses the ban implementation date of September 13, 1994. The coefficients on the time dummy variables are all negative and most are significant, indicating that prices for these weapons were at their highest during the six month period when the ban took effect. To interpret the time variables, we exponentiate the coefficients (i.e., take their antilogs). To illustrate, the coefficient for the first time period (January 1992 through June 1992) is -0.170966.²¹ Exponentiating this coefficient yields approximately 0.84, indicating that the average price of these weapons at time 1 (January 1992 through June 1992) was 84 percent of the average price at time 6

²⁰ In this and all other price analyses, time dummies are defined to omit the time period that includes the effective date of the ban. This restricts the coefficient to 0 and $\exp(0) = 1$. Therefore, the effective date is the reference period for prices in all other periods.

²¹ Data collection began with April 1992 issues of Shotgun News. Consequently, the first data point is based on data for April through June of 1992 rather than a full six-month period.

(July 1994 through December 1994). Conversely, the average quality-adjusted price of these firearms was 17 percent less during the January 1992-June 1992 period than during the July 1994-December 1994 period.

Figure 4-1. Semi-annual price trends for SWD group handguns



The time effects are displayed graphically in Figure 4-1 (sample sizes are shown for each time period).²² During the semi-annual periods prior to the ban's implementation, prices of these weapons ranged from 68 to 83 percent of their price during the period of the ban's implementation. Prices peaked when the ban became effective in the latter part of 1994 and remained high through the first half of 1995. In the second half of 1995, however, the prices dropped off dramatically, falling to levels comparable to the pre-ban period. Prices may have rebounded again during the first half of 1996, but the apparent "rebound" was based on only two advertisements and should be treated very cautiously. If one assumes that wholesale markets were in equilibrium before debates about the ban started, then these data reflect a ban-related, speculative peak of up to 47 percent in price, followed by a decline of about 20 percent. Parenthetically, we note that contrary to some anecdotes, we found no evidence of speculation related to the 1992 election.

Comparison handguns: For comparison, we also examined price trends for a number of unbanned semiautomatic handgun models: the Davis P32 and P380 and the Lorcin L25 and L380. By a number of accounts, these models are among the guns most frequently used in crime (BATF 1995; Kennedy et al. 1996; Wintemute 1994, Chapter 2 *supra*). Because of small sample size, this model was estimated using semi-annual data spanning from 1992 through 1995. Referring to Table 4-2, two of the handgun models were significantly less expensive than the others, and one distributor offered statistically significant discounts for these guns.

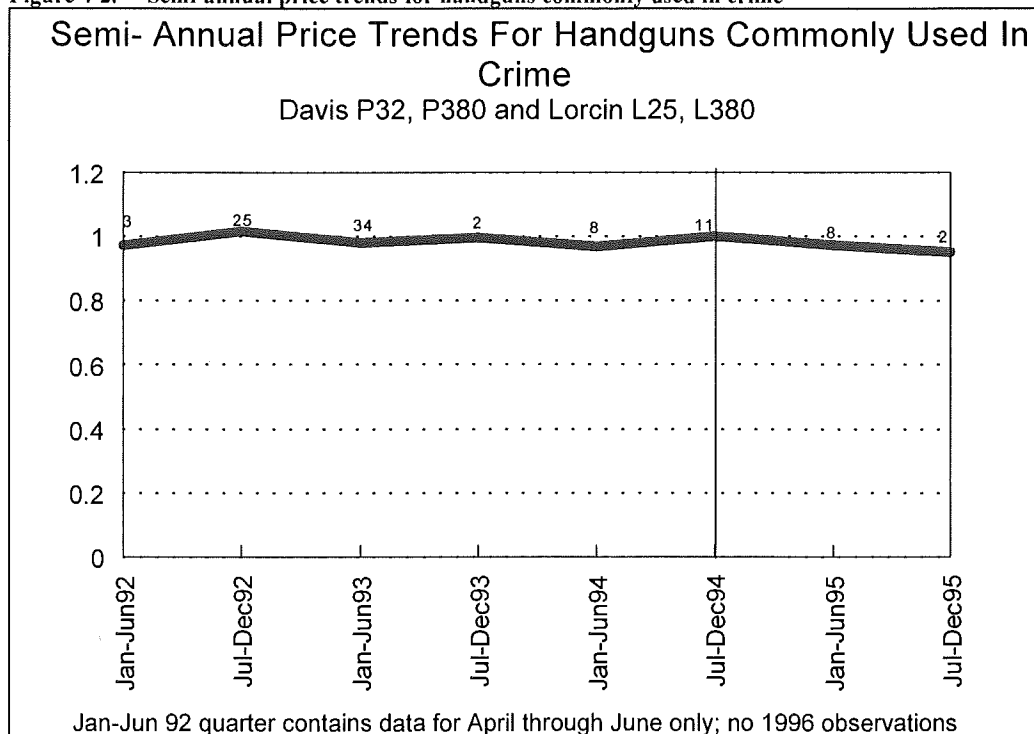
²² Sample sizes are defined in terms of number of price observations available during the period. The number of transactions that took place at each recorded price is, of course, unavailable to us.

Table 4-2. Regression of Lorcin and Davis handgun prices on time indicators, controlling for product characteristics and distributors

Analysis of Variance					
<i>Source</i>	<i>DF</i>	<i>Sum of squares</i>	<i>Mean square</i>	<i>F value</i>	<i>Prob>F</i>
Model	11	3.60246	0.32750	30.678	0.0001
Error	81	0.86469	0.01068		
C Total	92	4.46716			
Root MSE		0.10332		R-square	0.8064
Dep Mean		-0.60396		Adj R-square	0.7801
C.V.		-17.10713			
Parameter Estimates					
<i>Variable</i>	<i>DF</i>	<i>Parameter estimate</i>	<i>Standard error</i>	<i>T for H0 parameter = 0</i>	<i>Prob>|T|</i>
INTERCEP	1	-0.44243	0.034043	-12.996	0.0001
T1	1	-0.03004	0.069877	-0.43	0.6684
T2	1	0.014817	0.040258	0.368	0.7138
T3	1	-0.0198	0.037239	-0.532	0.5964
T4	1	-0.00259	0.082314	-0.031	0.975
T5	1	-0.03162	0.048582	-0.651	0.517
T7	1	-0.02753	0.048576	-0.567	0.5724
T8	1	-0.05041	0.082314	-0.612	0.542
P32	1	-0.22559	0.033404	-6.753	0.0001
L25	1	-0.55562	0.034119	-16.285	0.0001
DIST 2	1	-0.06434	0.030256	-2.127	0.0365
DIST 6	1	-0.05723	0.042414	-1.349	0.181

The time period coefficients indicate that prices for these weapons were unaffected by the assault weapons ban. Most of the time dummies have negative signs, but their t score values are very small, indicating that prices during these periods did not differ meaningfully from those at the time when the ban was implemented. This is underscored graphically in Figure 4-2.

Figure 4-2. Semi-annual price trends for handguns commonly used in crime



Assault rifles: To investigate the ban's effect on assault rifle prices, we examined quarterly price trends for the Colt AR15 family, which includes the AR15 as well as Colt's Sporter, H-Bar, and Target models.²³ Referring to Table 4-3, the AR15 model was more expensive than other models. Further, guns which had special features/enhancements or a special designation of some sort had somewhat higher prices. Models in 7.62mm caliber were lower in price than other models, though this effect was not quite statistically significant. Finally, one distributor stood out as having lower prices than other distributors.

²³ A number of other manufacturers also made exact copies of the Colt AR15 (e.g., Essential Arms, Olympic Arms, and SGW Enterprises). We included a number of these copies on our price coding form before the ban and legal substitutes thereafter, but we did not find advertisements for these non-Colt versions in *Shotgun News*.

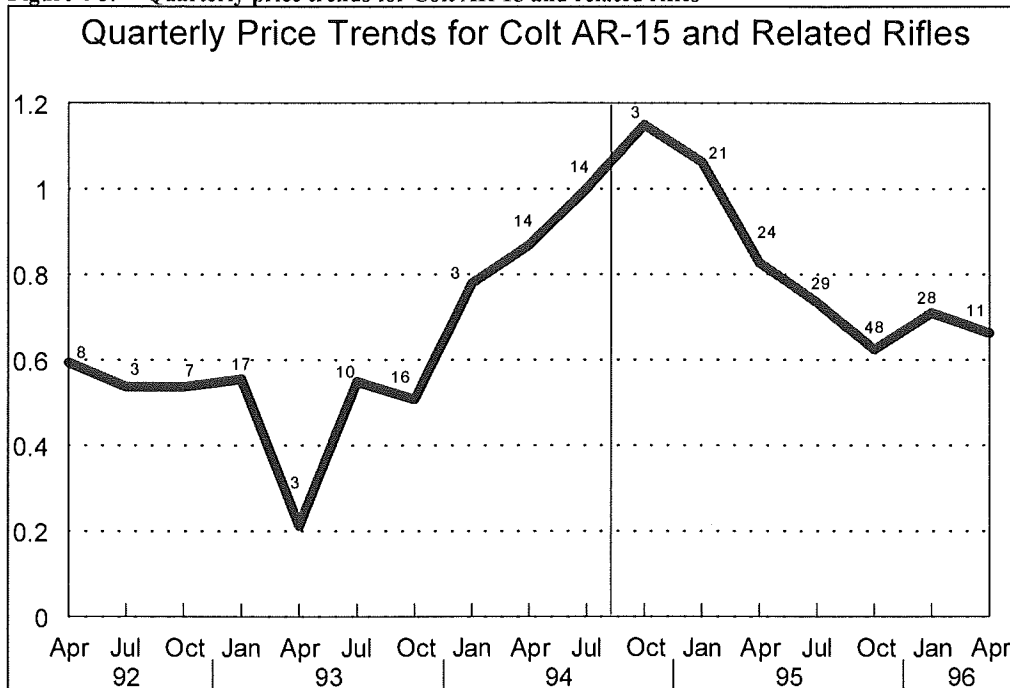
Table 4-3. Regression of Colt AR15 group prices on time indicators, controlling for product characteristics and distributors

Analysis of Variance					
<i>Source</i>	<i>DF</i>	<i>Sum of squares</i>	<i>Mean square</i>	<i>F value</i>	<i>Prob>F</i>
Model	23	21.67729	0.94249	18.161	0.0001
Error	235	12.19537	0.05190		
C Total	258	33.87266			
Root MSE		0.22781		R-square	0.6400
Dep Mean		2.13335		Adj R-square	0.6047
C.V.		10.67826			
Parameter Estimates					
<i>Variable</i>	<i>DF</i>	<i>Parameter estimate</i>	<i>Standard error</i>	<i>T for H0 parameter = 0</i>	<i>Prob>|T|</i>
INTERCEP	1	2.714668	0.066599	40.762	0.0001
Q1	1	-0.52079	0.107749	-4.833	0.0001
Q2	1	-0.62023	0.149137	-4.159	0.0001
Q3	1	-0.62368	0.116786	-5.34	0.0001
Q4	1	-0.58506	0.083154	-7.036	0.0001
Q5	1	-1.54569	0.150793	-10.25	0.0001
Q6	1	-0.60339	0.095035	-6.349	0.0001
Q7	1	-0.68488	0.084707	-8.085	0.0001
Q8	1	-0.25158	0.14673	-1.715	0.0877
Q9	1	-0.14066	0.087217	-1.613	0.1081
Q11	1	0.143282	0.148951	0.962	0.3371
Q12	1	0.059189	0.082263	0.72	0.4725
Q13	1	-0.18904	0.07715	-2.45	0.015
Q14	1	-0.3144	0.075984	-4.138	0.0001
Q15	1	-0.46528	0.069595	-6.686	0.0001
Q16	1	-0.33741	0.079461	-4.246	0.0001
Q17	1	-0.40788	0.093078	-4.382	0.0001
DIST 5	1	-0.16586	0.044717	-3.709	0.0003
SPORTERL	1	-0.26691	0.042783	-6.239	0.0001
SPORTERC	1	-0.27709	0.057987	-4.778	0.0001
MATCH H-BAR	1	-0.28594	0.041454	-6.898	0.0001
TARGET	1	-0.30664	0.05565	-5.51	0.0001
FEATURE	1	0.1039	0.040315	2.577	0.0106
CAL762	1	-0.14924	0.092373	-1.616	0.1075

Turning to the quarterly indicator variables, the omitted period is quarter ten (July 1994 through September 1994). Most of the quarterly dummy variables have coefficients which are negative and significant, indicating that prices rose significantly at the time of the ban's implementation. Indeed, prices during the 1992–93 period were 41 to 79 percent lower than those at the time of the ban. The prices then began rising during 1994 and peaked during the quarter after the ban's implementation (however, prices during the latter period were not significantly different from those when the ban went into effect). These data reflect price increase of 69 to 100 percent over typical quarters during the 1992–93 period, and a 376 percent increase over the lowest price quarter during that period.

Quality-adjusted prices began to fall significantly during the second quarter of 1995. During the first two quarters of 1996, prices were 29 to 33 percent less than at the time of the ban.²⁴ These trends are illustrated in Figure 4-3.²⁵

Figure 4-3. Quarterly price trends for Colt AR-15 and related rifles



Other Semiautomatic Rifles: A comparison price series was constructed for a small number of semiautomatic rifles not prohibited by the ban. The rifles selected for this analysis, the Ruger Mini-14 and Maadi rifles are arguably useful substitutes for the banned rifles for many purposes. The Mini-14 is a semiautomatic rifle which is relatively common among guns submitted to ATF for tracing.²⁶ The Maadi is an Egyptian semiautomatic rifle which is loosely patterned after the AK-47, but it is a legal gun, according to BATF experts.

²⁴ Colt has discontinued its AR15 models, but the company has continued to make post-ban, modified versions of other weapons in the AR15 family (e.g., the Sporter). We considered the possibility that the AR15 model would follow a different pre/post ban trend from the other Colt models. Based on the number of available observations, we estimated a yearly model for the AR15. Yearly prices for the AR15 followed the same basic pattern as did the entire AR15 group. Relative to 1994, prices for the AR15 were 57 percent lower in 1993 ($p < .01$), 39 percent lower in 1995 ($p = .02$), and 37 percent lower in 1996 ($p = .06$). In addition, we estimated a model containing dummy variables for the AR15 and the post-ban period and an interaction term between these dummy variables (no other time period dummies were included in the model). The interaction term was very small and insignificant, leading us to include that the price differential between the AR15 model and the other Colt models remained constant throughout the period under study.

²⁵ Because some quarterly estimates were based on very small numbers of advertisements, the exact values of the quarterly coefficients should be treated cautiously. Nevertheless, a semi-annual model produced the same pattern of results.

²⁶ Based upon figures provided by ATF, the Mini-14 ranked as the 23rd most common firearm submitted to ATF for tracing in 1992 and the 36th most common firearm submitted in 1993. The Ruger Mini-14 was also featured as a common assault weapon in an early study of assault weapons published by *Cox Newspapers* (1989). However, the Crime Act specifically exempts Mini-14's without folding stocks from assault weapons status.

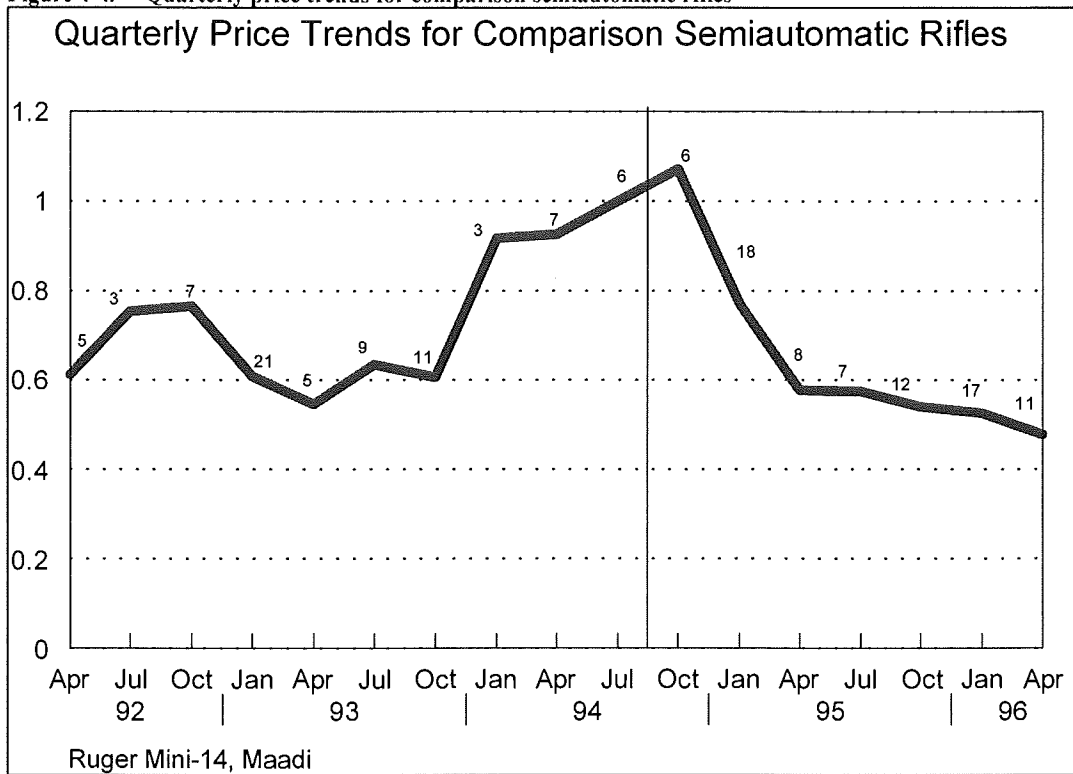
Further, the Maadi rifle has not been affected by import restrictions as have a number of other potential substitute rifles.

Table 4-4 and Figure 4-4 present trends for prices of these rifles (N=156) measured on a quarterly basis. The Ruger Mini-14 was significantly more expensive than was the Maadi, and a number of distributors had substantially lower or higher prices for these weapons. Guns having some sort of special feature or classification were somewhat less expensive than were other weapons.

Table 4-4. Regression of Ruger Mini-14 and Maadi rifle prices on time indicators, controlling for product characteristics and distributors

Analysis of Variance					
<i>Source</i>	<i>DF</i>	<i>Sum of squares</i>	<i>Mean square</i>	<i>F value</i>	<i>Prob>F</i>
Model	23	15.72251	0.68359	12.468	0.0001
Error	132	7.23741	0.05483		
C Total	155	22.95993			
Root MSE		0.23416		R-square	0.6848
Dep Mean		1.11132		Adj R-square	0.6299
C.V.		21.06999			
Parameter Estimates					
<i>Variable</i>	<i>DF</i>	<i>Parameter estimate</i>	<i>Standard error</i>	<i>T for H0 parameter = 0</i>	<i>Prob>|T|</i>
INTERCEP	1	1.348039	0.096025	14.038	0.0001
Q1	1	-0.49339	0.150985	-3.268	0.0014
Q2	1	-0.28143	0.170394	-1.652	0.101
Q3	1	-0.26618	0.145198	-1.833	0.069
Q4	1	-0.49586	0.1189	-4.17	0.0001
Q5	1	-0.60429	0.149813	-4.034	0.0001
Q6	1	-0.45337	0.12651	-3.584	0.0005
Q7	1	-0.50108	0.123093	-4.071	0.0001
Q8	1	-0.08801	0.166538	-0.528	0.598
Q9	1	-0.07736	0.131103	-0.59	0.5561
Q11	1	0.06801	0.139693	0.487	0.6272
Q12	1	-0.26056	0.114103	-2.284	0.024
Q13	1	-0.55108	0.128193	-4.299	0.0001
Q14	1	-0.5565	0.137519	-4.047	0.0001
Q15	1	-0.61763	0.120067	-5.144	0.0001
Q16	1	-0.64124	0.119303	-5.375	0.0001
Q17	1	-0.73806	0.123765	-5.963	0.0001
RUGER	1	0.672197	0.055061	12.208	0.0001
DIST 2	1	-0.17779	0.079666	-2.232	0.0273
DIST 3	1	-0.08717	0.054575	-1.597	0.1126
DIST 4	1	-1.66399	0.242712	-6.856	0.0001
DIST 5	1	-0.19243	0.0727	-2.647	0.0091
DIST 7	1	0.235402	0.131826	1.786	0.0764
FEATURES	1	-0.08813	0.047131	-1.87	0.0637

Figure 4-4. Quarterly price trends for comparison semiautomatic rifles



The temporal price trends for these weapons mirror those found for the AR15 family rifles. Relative to the period of the ban's implementation, prices were significantly lower during periods before and after the ban's implementation. During 1992 and 1993, prices ranged from 23 to 45 percent lower than during the reference period. Prices were at their highest during 1994, with the peak occurring during the quarter following the ban's effective date, reflecting an increase of 82 percent from the 1992–93 low point to the immediate post-ban period. However, prices for the first, second, and fourth quarters of 1994 were not discernibly different from those during the third quarter. Prices began to fall significantly in 1995, and by the second quarter of 1996, prices were approximately 52 percent lower than during the quarter when the ban took effect.²⁷

Alternative Comparison for Semiautomatic Rifles: As a final test of price trends for potential substitute semiautomatic rifles, we added the SKS rifle to the semiautomatic rifles model. The SKS rifle is imported (there are Russian and Chinese versions) and is occasionally mistaken for an AK-47. The SKS was not covered by either the 1989 import ban or the Crime Act. We initially excluded it as a comparison semiautomatic rifle because importation was nominally restricted in 1994 as part of U.S. trade sanctions directed against China. However, SKS rifles have continued to enter the U.S. under the Craig Amendment exemption for goods already “on the water” when the trade sanctions were imposed. We added it to subsequent analysis because it has been relatively

²⁷ Because some of the quarterly periods yielded few observations, we also estimated a semi-annual model for these gun prices. The results of this model paralleled those of the quarterly model; prices were at their highest during the latter half of 1994 and were significantly lower throughout 1992, 1993, 1995, and early 1996.

common among gun traces submitted to BATF²⁸ and because our coders found over 550 ads for SKS rifles, making that gun the most frequently advertised weapon in *Shotgun News* from among those guns chosen for the analysis.

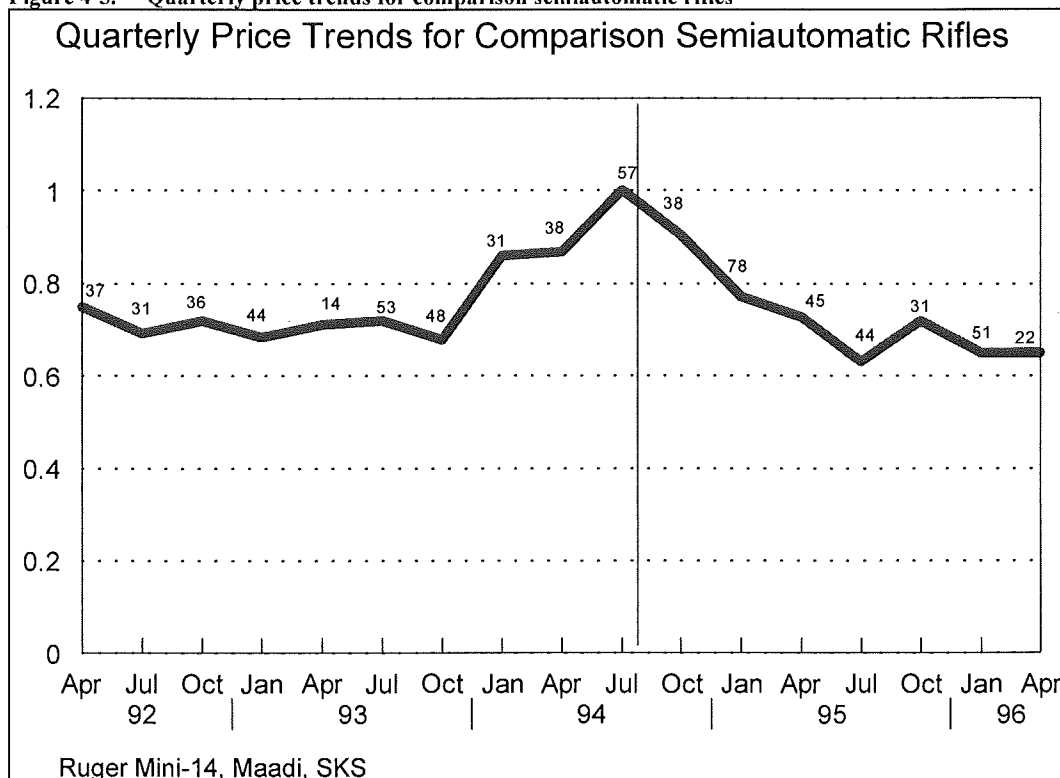
Results from a quarterly price trend model for 698 SKS, Ruger Mini-14, and Maadi AK-type advertisements are presented in Table 4-5 and Figure 4-5. Again, the results indicate that prices were highest during 1994 and peaked during the quarter of the ban's implementation (quarter ten). Prices during the 1992–93 period were generally 32 to 25 percent less than they were during the quarter of the ban's implementation. Following the ban, however, prices fell rather quickly, and by 1996 they were approximately 35 percent less than they had been at the time of the ban.

²⁸ Figures provided to us by BATF show that the SKS was the 10th most common firearm traced in 1992 and the 4th most common in 1993.

Table 4-5. Regression of Ruger Mini-14, Maadi, and SKS rifle prices on time indicators, controlling for product characteristics and distributors

Analysis of Variance					
<i>Source</i>	<i>DF</i>	<i>Sum of squares</i>	<i>Mean square</i>	<i>F value</i>	<i>Prob>F</i>
Model	19	145.53206	7.65958	105.960	0.0001
Error	678	49.01094	0.07229		
C Total	697	194.54300			
Root MSE		0.26886		R-square	0.7481
Dep Mean		0.32139		Adj R-square	0.7410
C.V.		83.65546			
Parameter Estimates					
<i>Variable</i>	<i>DF</i>	<i>Parameter estimate</i>	<i>Standard error</i>	<i>T for H0 parameter = 0</i>	<i>Prob>|T|</i>
INTERCEP	1	0.320571	0.037047	8.653	0.0001
Q1	1	-0.29288	0.056985	-5.14	0.0001
Q2	1	-0.36758	0.060234	-6.103	0.0001
Q3	1	-0.32732	0.057937	-5.65	0.0001
Q4	1	-0.37657	0.056037	-6.72	0.0001
Q5	1	-0.33581	0.08099	-4.146	0.0001
Q6	1	-0.32629	0.051373	-6.351	0.0001
Q7	1	-0.39266	0.052767	-7.441	0.0001
Q8	1	-0.15306	0.060298	-2.538	0.0114
Q9	1	-0.13647	0.056349	-2.422	0.0157
Q11	1	-0.09587	0.056591	-1.694	0.0907
Q12	1	-0.25553	0.047168	-5.417	0.0001
Q13	1	-0.32473	0.053753	-6.041	0.0001
Q14	1	-0.457	0.054492	-8.387	0.0001
Q15	1	-0.32702	0.06053	-5.403	0.0001
Q16	1	-0.43303	0.052708	-8.216	0.0001
Q17	1	-0.42588	0.068581	-6.21	0.0001
MAADI	1	0.855348	0.032324	26.462	0.0001
RUGER	1	1.363013	0.036904	36.934	0.0001
FEATURES	1	0.093431	0.02203	4.241	0.0001

Figure 4-5. Quarterly price trends for comparison semiautomatic rifles



4.1.3. Magazine Prices

Since the Crime Act permanently capped the stock of large-capacity magazines at the number produced before September 13, 1994, our long-run expectations about price trends for the banned magazines depend on whether or not the ban prevented increases in the supply of “compatible” guns that accept the magazine. For compatible guns whose supply continued to increase — such as the unbanned Ruger Mini-14 rifle and Glock pistols and the AR-15 family of rifles, for which legal substitutes emerged — we expect a gradual long-run increase in the price of the large-capacity magazines. Only for compatible guns such as Uzi models, whose supply was capped because legal substitutes did not emerge, do we expect stable or declining long-run magazine prices as the operational stock of banned guns gradually declines.

In the short run, which is all we can observe at this time, we expect at least three confounding factors to divert large-capacity magazine prices from these trends. First, as with the banned guns, speculative demand for the banned magazines may have caused prices to rise and then fall around the time of the ban. Second, because guns and magazines are economic complements, their prices may be likely to move in opposite directions. Third, for banned guns such as the AR-15 and Uzi models, which are mechanically identical to military weapons, there are military surplus supplies that we believe are huge relative to civilian demand. For these reasons, short-run price trends are a poor guide to long-run price trends for large-capacity magazines.

With these reservations in mind, we examined price trends for large-capacity magazines (i.e., magazines holding more than 10 rounds) manufactured for use with banned firearms and compared them to trends for large-capacity magazines made for unbanned semiautomatic weapons. Selection of firearm models was based on both theoretical relevance and available sample sizes. To improve the generalizeability of the results, we attempted to

analyze magazine prices for both handguns and long guns and for both banned and non-banned weapons. The methodology for the magazine price analysis was essentially the same as that used in the firearm price analysis.²⁹ As in the firearm price analysis, our quality control variables consisted primarily of indicator variables corresponding to manufacturers and distributors. An additional key variable for the magazine analysis was the number of rounds held by the magazine (logged).³⁰

Assault weapon handgun magazines—Uzi: Our analysis of large-capacity magazines prices for assault weapons focused upon the 9mm Uzi handgun.³¹ Though importation of the Uzi handgun had been discontinued in 1993 (Fjestad 1996, p.1049), our coders found ads for Uzi magazines (N=117) more frequently than for other assault weapon handguns.³² Even so, the number of observations was as low as 1-2 for some quarterly periods, and we therefore grouped the data into semi-annual time periods. There is no legal substitute for the banned Uzis that accepts the same magazine.

Regression results for Uzi magazine prices are presented in Table 4-6 and price trends are displayed in Figure 4-6. Controlling for the number of rounds held by the magazine, semi-annual prices during the January 1992 through June 1994 period ranged from approximately 52 to 62 percent of their value during the latter half of 1994. Prices peaked in the first half of 1995, rising another 56 percent, to a tripling of their 1992–94 lowest prices. Prices began to fall in the latter half of 1995 and the first half of 1996, but they did not differ significantly from prices during the latter half of 1994.

²⁹ Project staff recorded information on all advertisements for magazines holding more than 10 rounds which appeared in the selected issues of *Shotgun News*. However, the volume of collected data required us to pursue a data reduction strategy. Based on informal inspection of the hardcopy data, therefore, we chose a group of magazines which appeared relatively more frequently and which had relevance as a banned weapon or legal substitute.

³⁰ Other potentially important characteristics are whether the magazine was new or used and the type of metal from which the magazine was made. Ads often did not state whether magazines were new or used, and our research staff did not record this information. Our working assumption is that the magazines were new or in good working condition. If an ad featured the same magazine manufactured with different types of metals, we used the base price magazine. If the coding form indicated that the advertisement featured only magazines made from special materials (e.g., stainless steel), we made note of this characteristic. There were very few such cases, and preliminary analyses using an indicator variable for the presence of a special metal showed the variable to have no impact in any of the models discussed in the main text.

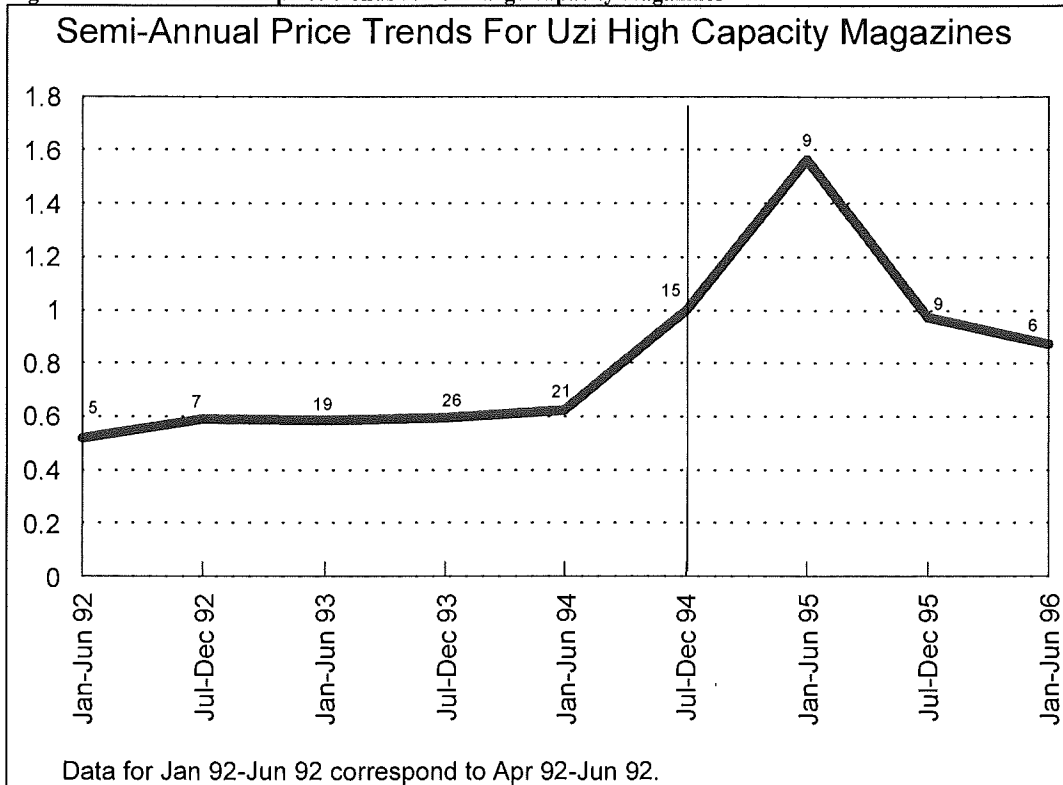
³¹ The Uzi was previously manufactured and imported to the U.S. in both carbine and handgun versions, but the carbine versions were banned from importation in 1989.

³² The relative frequency of Uzi magazine advertisements is probably due to the fact that the Uzi is a military weapon. Firearms experts have informed us that good quality, military surplus magazines are commonly available and are often sold cheaply.

Table 4-6. Regression of Uzi large-capacity magazine prices on time indicators, controlling for product characteristics and distributors

Analysis of Variance					
<i>Source</i>	<i>DF</i>	<i>Sum of squares</i>	<i>Mean square</i>	<i>F value</i>	<i>Prob>F</i>
Model	9	12.80484	1.42276	9.670	0.0001
Error	107	15.74298	0.14713		
C Total	116	28.54782			
Root MSE		0.38358		R-square	0.4485
Dep Mean		-1.65739		Adj R-square	0.4022
C.V.		-23.14337			
Parameter Estimates					
<i>Variable</i>	<i>DF</i>	<i>Parameter estimate</i>	<i>Standard error</i>	<i>T for H0 parameter = 0</i>	<i>Prob>|T|</i>
INTERCEP	1	-3.835055	0.54716949	-7.009	0.0001
ROUNDS	1	0.729783	0.15350538	4.754	0.0001
T1	1	-0.661263	0.19914123	-3.321	0.0012
T2	1	-0.525479	0.17560540	-2.992	0.0034
T3	1	-0.536934	0.13325422	-4.029	0.0001
T4	1	-0.515880	0.12659037	-4.075	0.0001
T5	1	-0.474834	0.12970256	-3.661	0.0004
T7	1	0.447430	0.16646042	2.688	0.0083
T8	1	-0.027967	0.16286070	-0.172	0.8640
T9	1	-0.137577	0.18908164	-0.728	0.4684

Figure 4-6. Semi-annual price trends for Uzi large-capacity magazines



Other Handgun Magazines: To provide price trends for large-capacity magazines manufactured for non-banned handguns, we examined large-capacity magazines for Glock 9mm handguns. Prior to the Crime Act, Glock sold several handgun models with large-capacity magazines. The most common, the Glock 17, was among the ten firearm models submitted most frequently to ATF for tracing in 1994 (BATF 1995a). Guns currently manufactured by Glock are capable of accepting Glock's pre-ban large-capacity magazines, but the supply is limited to magazines made before the ban.

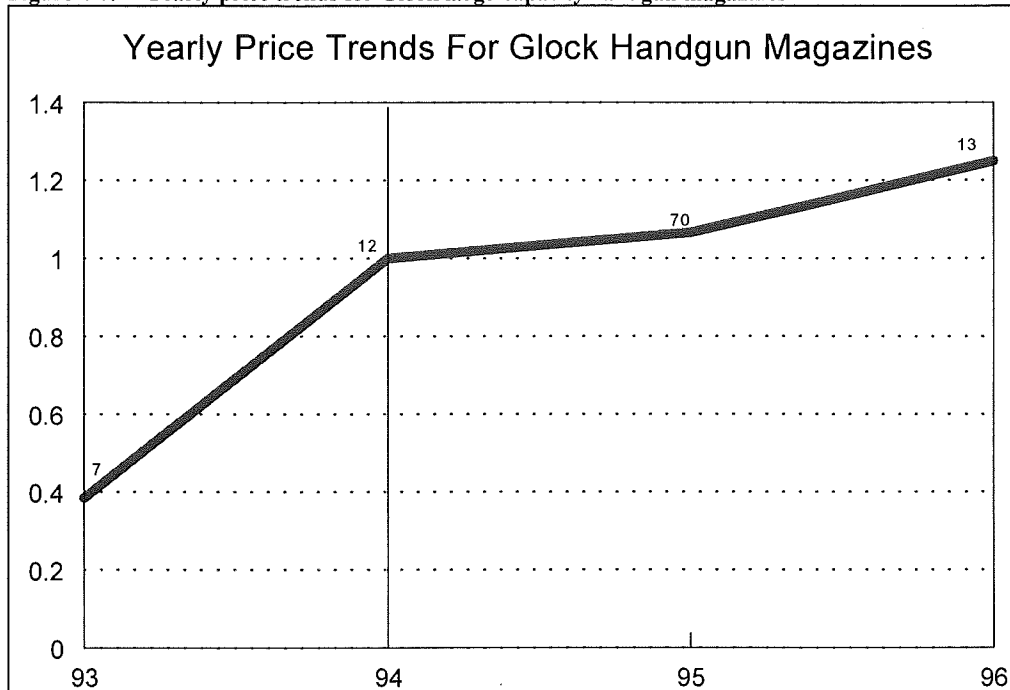
Project staff found 74 advertisements for Glock magazines, but the large majority of these ads were placed after the ban (only nine ads were pre-ban) and there were no ads for 1992. It was therefore necessary to group the advertisements into yearly periods rather than quarterly or semi-annual periods. Regression results and price trends for 1993 through 1996 are shown in Table 4-7 and Figure 4-7 respectively. In general, magazines with greater numbers of rounds were more expensive. In addition, a number of distributors had higher prices for these magazines, and magazines for one particular model were more expensive at a moderate level of statistical significance.³³

³³ For the model dummy variables, the excluded category included magazines for which no model was indicated.

Table 4-7. Regression of Glock large-capacity handgun magazine prices on time indicators, controlling for product characteristics and distributors

Analysis of Variance					
<i>Source</i>	<i>DF</i>	<i>Sum of squares</i>	<i>Mean square</i>	<i>F value</i>	<i>Prob>F</i>
Model	10	29.85755	2.98575	28.020	0.0001
Error	91	9.69680	0.10656		
C Total	101	39.55434			
Root MSE		0.32643		R-square	0.7548
Dep Mean		-0.86656		Adj R-square	0.7279
C.V.		-37.66991			
Parameter Estimates					
<i>Variable</i>	<i>DF</i>	<i>Parameter estimate</i>	<i>Standard error</i>	<i>T for H0 parameter = 0</i>	<i>Prob>|T|</i>
INTERCEP	1	-3.37422	0.56384	-5.984	0.0001
ROUNDS	1	0.618327	0.197724	3.127	0.0024
Y93	1	-0.95884	0.17246	-5.56	0.0001
Y95	1	0.064606	0.108817	0.594	0.5542
Y96	1	0.2227	0.143595	1.551	0.1244
DIST 10	1	0.529244	0.279526	1.893	0.0615
DIST 12	1	0.601322	0.162505	3.7	0.0004
DIST 3	1	0.37606	0.17071	2.203	0.0301
DIST 5	1	0.980483	0.101626	9.648	0.0001
M17	1	0.198804	0.108878	1.826	0.0711
M19	1	0.169323	0.112614	1.504	0.1362

Figure 4-7. Yearly price trends for Glock large-capacity handgun magazines



Most importantly, prices for large-capacity Glock magazines were 62 percent lower in 1993 than they were in 1994. Prices remained high through 1995, and they increased another 25 percent in 1996 (relative to 1994), though this increase was not statistically significant by conventional standards.

Assault rifle magazines — AR15 Family: Pre-ban large-capacity magazines manufactured by Colt for their AR15's and related rifles can be utilized with the post-ban, modified versions of these rifles. Consequently, we expected that there would be a continuing demand for these magazines.

Project staff recorded 364 ads for large-capacity magazines (.223 caliber) made to fit the AR15 and related rifles. Results from our analysis of quarterly price trends for these magazines are shown in Table 4-8 and Figure 4-8. Magazines having larger ammunition capacities were more expensive as were those magazines for which Colt was listed explicitly as the manufacturer.³⁴ In addition, prices tended to differ significantly between distributors.

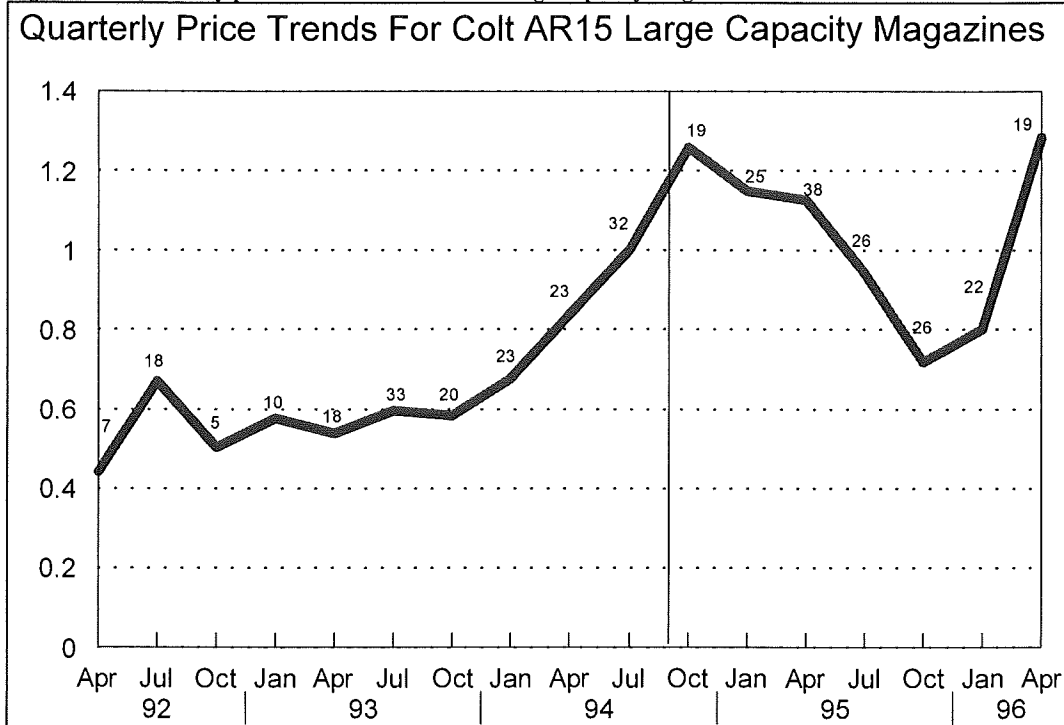
During the quarters of 1992 and 1993, prices were anywhere from 33 to 56 percent lower than during the third quarter of 1994. Prices rose further during the last quarter of 1994 and remained high through the first three quarters of 1995. In the last quarter of 1995 and the first quarter of 1996, prices fell though they remained higher than their pre-ban levels. Prices then rebounded in the second quarter of 1996, reaching a peak value comparable to the last quarter of 1995 (prices were approximately 29 percent higher than during the quarter when the ban took effect). Gun market experts have suggested to us that these short-run fluctuations reflect intermittent availability of military surplus M-16 magazines, which are compatible with the AR-15 family of rifles.

³⁴ Though firearms usually require magazines made by the same manufacturer, a number of manufacturers other than Colt make magazines which can fit Colt rifles.

Table 4-8. Regression of Colt AR15 group large-capacity magazine prices on time indicators, controlling for product characteristics and distributors

Analysis of Variance					
<i>Source</i>	<i>DF</i>	<i>Sum of squares</i>	<i>Mean square</i>	<i>F value</i>	<i>Prob>F</i>
Model	26	122.28012	4.70308	33.836	0.0001
Error	337	46.84153	0.13900		
C Total	363	169.12165			
Root MSE		0.37282		R-square	0.7230
Dep Mean		-1.65183		Adj R-square	0.7017
C.V.		-22.57021			
Parameter Estimates					
<i>Variable</i>	<i>DF</i>	<i>Parameter estimate</i>	<i>Standard error</i>	<i>T for H0 parameter = 0</i>	<i>Prob>|T|</i>
INTERCEP	1	-5.34744	0.194896	-27.437	0.0001
ROUNDS	1	1.025757	0.046243	22.182	0.0001
CLT	1	0.184123	0.063507	2.899	0.004
DIST 2	1	0.385288	0.283893	1.357	0.1756
DIST 3	1	0.10778	0.078807	1.368	0.1723
DIST 4	1	-0.40188	0.129797	-3.096	0.0021
DIST 5	1	0.134623	0.068759	1.958	0.0511
DIST 7	1	-0.41214	0.13435	-3.068	0.0023
DIST 10	1	0.137861	0.080196	1.719	0.0865
DIST 11	1	-0.36298	0.168942	-2.149	0.0324
DIST 12	1	0.215247	0.085722	2.511	0.0125
Q1	1	-0.82099	0.158248	-5.188	0.0001
Q2	1	-0.39767	0.115668	-3.438	0.0007
Q3	1	-0.68998	0.181038	-3.811	0.0002
Q4	1	-0.55199	0.137727	-4.008	0.0001
Q5	1	-0.61893	0.115858	-5.342	0.0001
Q6	1	-0.52304	0.093025	-5.623	0.0001
Q7	1	-0.54396	0.107619	-5.055	0.0001
Q8	1	-0.38921	0.102709	-3.789	0.0002
Q9	1	-0.17713	0.104247	-1.699	0.0902
Q11	1	0.229259	0.11575	1.981	0.0484
Q12	1	0.13716	0.107928	1.271	0.2047
Q13	1	0.115077	0.099774	1.153	0.2496
Q14	1	-0.05869	0.106556	-0.551	0.5821
Q15	1	-0.32639	0.107409	-3.039	0.0026
Q16	1	-0.21758	0.109759	-1.982	0.0482
Q17	1	0.252132	0.117683	2.142	0.0329

Figure 4-8. Quarterly price trends for Colt AR15 large-capacity magazines



Comparison Semiautomatic Rifle Magazines — Ruger Mini-14: Quarterly price regression results for large-capacity magazines made for the Ruger Mini-14 rifle are shown in Table 4-9. Magazines with the Ruger name and larger magazines were more expensive than other magazines.³⁵ Further, prices differed significantly among distributors.

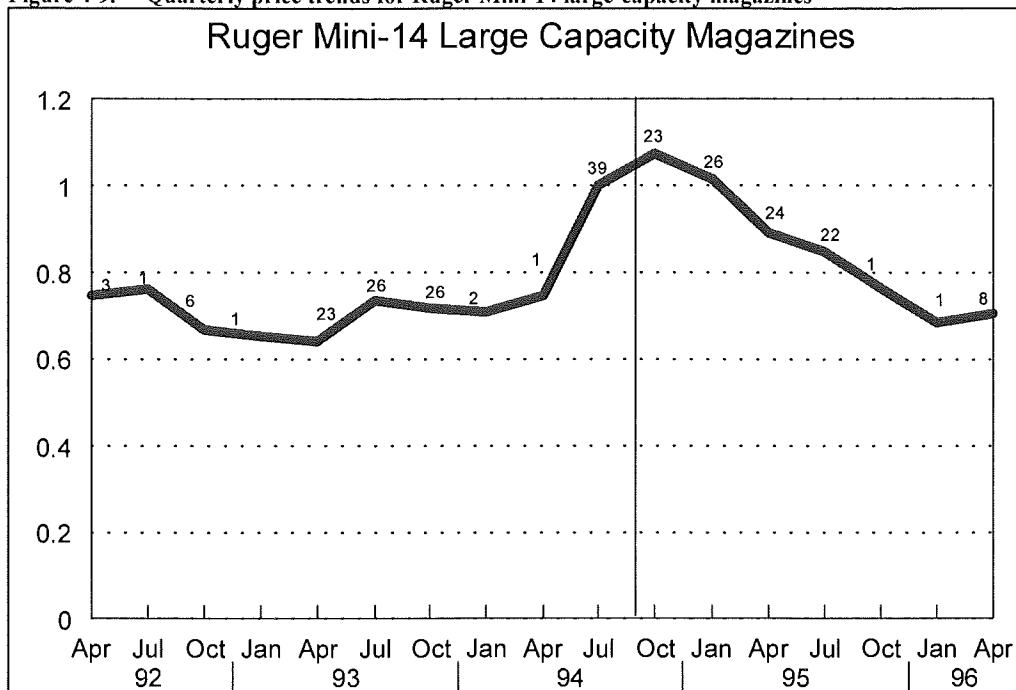
³⁵ A number of manufacturers besides Ruger made large-capacity magazines to fit the Mini-14.

Table 4-9. Regression of Ruger Mini-14 large-capacity magazine prices on time indicators, controlling for product characteristics and distributors

Analysis of Variance					
<i>Source</i>	<i>DF</i>	<i>Sum of squares</i>	<i>Mean square</i>	<i>F value</i>	<i>Prob>F</i>
Model	26	64.39474	2.4672	34.029	0.0001
Error	303	22.05342	0.07278		
C Total	329	86.44816			
Root MSE		0.26978		R-square	0.7449
Dep Mean		-1.72827		Adj R-square	0.7230
C.V.		-15.61009			
Parameter Estimates					
<i>Variable</i>	<i>DF</i>	<i>Parameter estimate</i>	<i>Standard error</i>	<i>T for H0 parameter = 0</i>	<i>Prob>|T|</i>
INTERCEP	1	-4.41607	0.145547	-30.341	0.0001
ROUNDS	1	0.836435	0.036639	22.829	0.0001
RUG	1	0.264903	0.061061	4.338	0.0001
DIST 2	1	-0.3889	0.17264	-2.253	0.025
DIST 3	1	-0.13012	0.072105	-1.805	0.0721
DIST 4	1	-0.57328	0.126483	-4.532	0.0001
DIST 5	1	-0.40885	0.066235	-6.173	0.0001
DIST 7	1	-0.5319	0.278193	-1.912	0.0568
DIST 10	1	-0.26988	0.074589	-3.618	0.0003
DIST 11	1	-0.1793	0.164002	-1.093	0.2751
DIST 12	1	0.324892	0.094116	3.452	0.0006
Q1	1	-0.29169	0.178205	-1.637	0.1027
Q2	1	-0.27167	0.08733	-3.111	0.002
Q3	1	-0.40486	0.122507	-3.305	0.0011
Q4	1	-0.425	0.082811	-5.132	0.0001
Q5	1	-0.44577	0.073027	-6.104	0.0001
Q6	1	-0.30726	0.070368	-4.366	0.0001
Q7	1	-0.33086	0.069189	-4.782	0.0001
Q8	1	-0.34428	0.074365	-4.63	0.0001
Q9	1	-0.29213	0.078927	-3.701	0.0003
Q11	1	0.071176	0.074263	0.958	0.3386
Q12	1	0.013922	0.07447	0.187	0.8518
Q13	1	-0.11436	0.073432	-1.557	0.1204
Q14	1	-0.1658	0.075341	-2.201	0.0285
Q15	1	-0.26924	0.081055	-3.322	0.001
Q16	1	-0.37783	0.084169	-4.489	0.0001
Q17	1	-0.34628	0.111216	-3.114	0.002

The quarterly indicators in Table 4-9 and the graphic illustration in Figure 4-9 show that quarterly prices prior to the ban were 64 to 76 percent of their level at the time of the ban. By late 1995, prices of these magazines were falling significantly, and by 1996 they had fallen to levels comparable to pre-ban prices.

Figure 4-9. Quarterly price trends for Ruger Mini-14 large-capacity magazines



4.1.4. Summary of Large-Capacity Magazine Price Trends

In summary, short-run price trends for four examples of banned large-capacity magazines appeared to depend on the legal status of the guns they fit, speculative demand for the guns and magazines, and the availability of military surplus magazines. All four magazine prices rose substantially during the period of debate over the ban, reflecting anticipatory demand. However, their price trends diverged substantially after that point. For a banned assault pistol (the 9mm Uzi) for which no legal substitute emerged, the post-ban magazine price fell to a level between its peak and its pre-speculation level and remained there. For a banned rifle (Colt AR-15) for which legal substitutes emerged and the gun price fell sharply after the ban, post-ban magazine prices fluctuated dramatically, apparently because of variations in the availability of military surplus M-16 magazines. For unbanned Glock pistols, whose supply continued to grow, the post-ban magazine price continued to rise throughout the post-ban period, though at a slower rate than during the pre-ban speculation; this is consistent with the expected long-term price trend. Finally, prices for large-capacity Ruger Mini-14 magazines appear to have followed speculative trends similar to those for the rifles themselves.

4.2. PRODUCTION TRENDS

Analyses reported in Section 4.1 found substantial pre-ban price increases for two major categories of assault weapons that were examined: SWD and related handguns (+47 percent), the AR-15 assault rifle family (+69 percent to +100 percent, at minimum). A comparison group of unbanned semiautomatic rifles including the domestically produced Ruger Mini-14 showed a pre-ban price increase of 82 percent. But strikingly, a comparison group of inexpensive Davis and Lorcin semiautomatic handguns showed no discernible price change during the 4-year period that included the effective date of the ban.

In the introduction to this chapter, we hypothesized that weapons whose prices increased during the pre-ban period would also show increases in production. To test that hypothesis, we were able to obtain annual

production data from the Violence Policy Center for three of the four weapon categories above: the SWD, AR-15, and Davis/Lorcin groups.³⁶ The data extend through 1994, the year of the ban and the last year for which production data are available.

The production data for these three groups are shown in Figure 4-10, Figure 4-11, and Figure 4-12, and they strongly support the hypothesis that pre-ban price speculation was associated with increases in production. As shown there, the SWD and AR-15 groups show substantial increases in production in 1993 and 1994, the years when prices were increasing in advance of the ban. Production increases of similar magnitude appear for two other categories of banned assault weapons that could not be included in the price analysis: the Intratec/AA Arms group, and Calico and Feather Industries rifles, which are banned by the features test.³⁷ In contrast, the Davis/Lorcin handgun group showed decreased production relative to both 1993 and their 1989–93 average.

Table 4-10 summarizes production data for five typical groups of banned assault weapons and the Lorcin/Davis comparison group of small-caliber semiautomatic pistols. For each weapon type, the table reports 1994 production, average 1989–93 production, and the ratio of 1994 production to the average over the period. On average, 1994 assault weapon production exceeded the 1989–93 average by a ratio of 2.233 during the nine months before the ban took effect. In contrast, 1994 production for the Lorcin/Davis comparison group was only 65.2 percent of the 1989–93 average.

Table 4-10. Production trends for banned assault weapons and comparison guns

<i>Firearm type</i>	(1) <i>1994 production</i>	(2) <i>1989–93 average production</i>	(3) <i>Ratio [(1)/(2)]</i>	(4) <i>"Excess" production [(1)-(2)]</i>
AR-15 group	66,042	38,511	1.714	27,531
Intratec 9mm, 22	102,682	33,578	3.058	69,104
SWD family (all) & MAC (all)	14,380	10,508	1.368	3,872
AA Arms	17,280	6,561	2.633	10,719
Calico 9mm, 22	3,194	1,979	1.613	1,215
Lorcin, Davis	184,139	282,603	0.652	
Assault Weapon Total*	203,578	91,137	2.233	112,441

*Assault weapon total excludes Lorcin/Davis group

Table 4-10 also displays "excess" production, the difference between 1994 production and 1989–93 average production. Excess 1994 production for the five assault weapon types shown in the table was approximately 112,000, which were added to the stock of grandfathered assault weapons eligible for resale after the ban took effect.

³⁶ BATF production data for rifles are not disaggregated by model or caliber. While we could be confident that nearly all Colt's rifles belong to the AR-15 family and could therefore use Colt's rifle production data as an index of AR-15 production, Sturm, Ruger produces too many rifles besides the Mini-14 for us to have a reliable index of Mini-14 production.

³⁷ It may be of interest that the Intratec, SWD, and Calico/Feather groups, but not the AR-15 group, also had production peaks in 1989, the year of the assault weapon import ban.

Figure 4-10. Annual production data, Colt and Olympic Arms AR-15 type (years with complete data only)

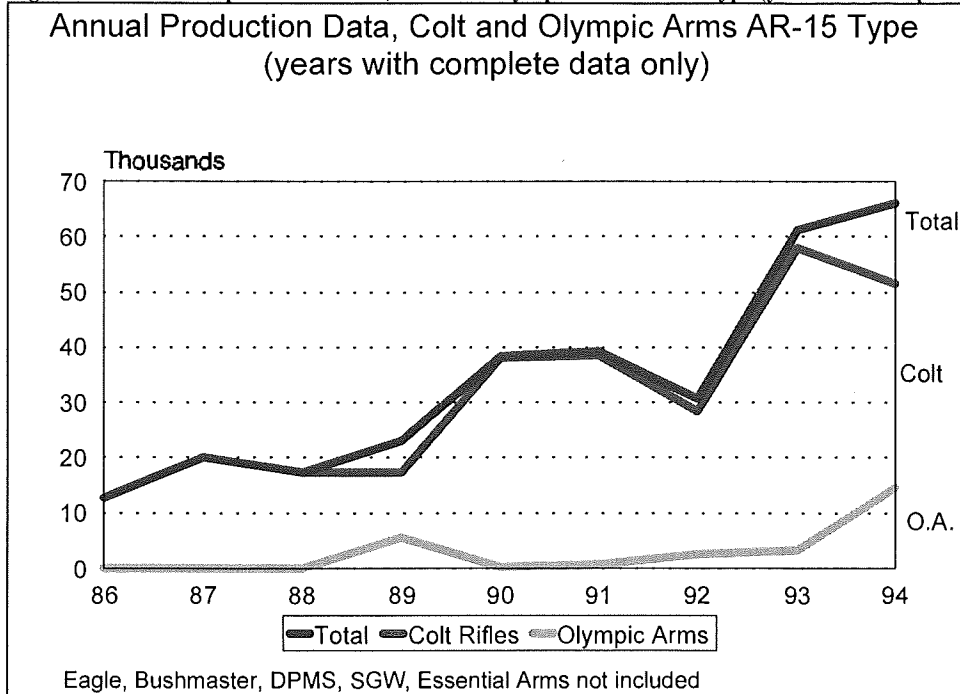


Figure 4-11. Annual production data, SWD group (missing data in some early years)

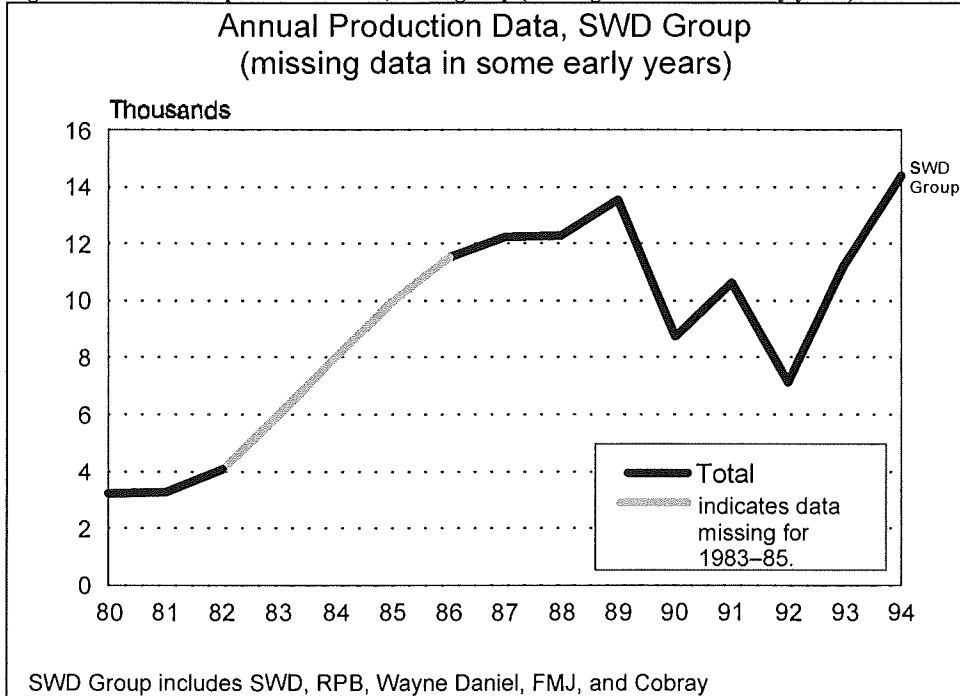
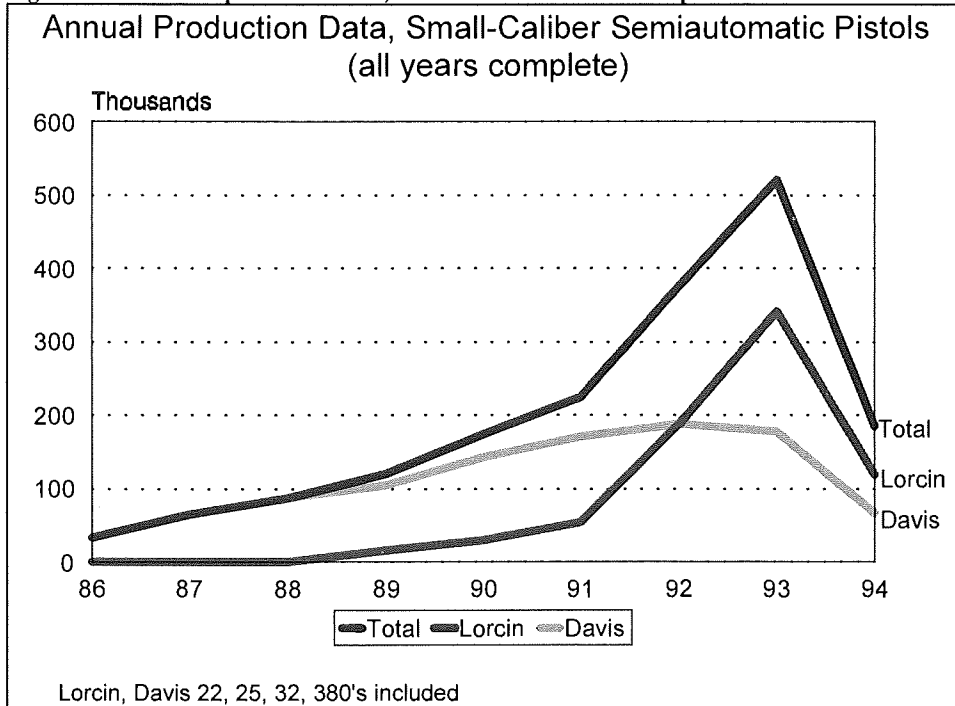


Figure 4-12. Annual production data, small-caliber semiautomatic pistols



4.3. UNINTENDED CONSEQUENCES: GUN THEFTS AND "LEAKAGE"

4.3.1. Introduction

As a final consideration of the ban's impact on gun markets, we investigated trends in stolen firearms. Given the boom in production of the banned weapons prior to the assault weapon ban, there would appear to be a substantial stockpile of banned weapons, some of which may "leak" from gun dealers and carriers into the hands of criminals and other violence-prone individuals after the ban through a combination of recorded transfers, unrecorded transfers, and thefts.

Indeed, we hypothesized that the Crime Act might have the unintended consequence of increasing reported thefts of the banned weapons for two reasons. Short-term price increases in primary markets might temporarily keep assault weapons from entering the sales distribution channels to criminals, who might be tempted to steal them instead. In addition, dealers who had paid high speculative prices for grandfathered assault weapons around the time of the ban but then suffered the post-ban price decline prices might be encouraged to sell their to ineligible purchases and then report the weapons as stolen to BATF, who in turn would enter them into the Federal Bureau of Investigation's national database on stolen firearms. Our tests of these hypotheses had to recognize that any observed rise in assault weapon thefts could be due, at least in part, to new theft reporting requirements established for firearm dealers by Subtitle C of Title XI. In the sections below, we describe the tests and findings.

4.3.2. Data and Analysis Strategy

Since 1967, the Federal Bureau of Investigation has stored law enforcement agency reports of stolen and recovered guns in a database maintained by the National Crime Information Center (NCIC). This database contains records on guns which have been reported stolen to participating agencies. It also includes a relatively small number of guns which have been recovered by law enforcement agencies but which have not been reported stolen to the FBI. The latter category of guns accounts for about 6 percent of the guns in the database, and we removed them from our analysis. Weapons which are stolen and later recovered are removed from the database by the NCIC. Thus, the file contains only guns which have been stolen and not recovered. Among other items, the database contains entries for the following: the date the gun was reported stolen ; the weapon type, make, model, caliber, and serial number of the gun; and the agency to which the weapon owner reported the theft.

For our analysis, we utilized data on guns stolen between January 1992 and May 1996. Our analysis of assault weapon thefts focused upon our select group of domestic assault weapons. Unfortunately, weapon model is missing for the majority of the records in the file. Therefore we used the following operational definitions to approximate thefts of assault weapons and other guns:³⁸

- 1) Colt AR15 group: all .223 caliber firearms made by Colt, Eagle, Olympic/SGW, Essential Arms, Bushmaster, and Sendra.
- 2) Intratec group: all 9mm and .22 caliber semiautomatic weapons made by Intratec and all 9mm semiautomatic handguns made by AA Arms.
- 3) SWD group: all 9mm, .380, and .45 caliber semiautomatic weapons made by SWD, Ingram, Military Armaments Corp., and RPB Industries.
- 4) Features test group: all semiautomatic handguns and rifles made by Calico and all 9mm and .22 caliber semiautomatic rifles made by Feather.
- 5) Non-banned large-capacity handguns: Based on the relative frequency of the Glock 17 and Ruger P89 among guns traced by BATF (see Chapter 2), we used Glock and Ruger 9mm semiautomatic handguns to operationalize this count.

4.3.3. Trends in Stolen Assault Weapons

Statistics in Table 4-11 show that the number of assault weapons reported stolen per month was higher during the post-ban period than during the pre-ban period. These figures combine all of the assault weapons in our select group. As is shown in

³⁸ We arrived at these operational definitions by examining the varieties of gun types, makes, models, and calibers contained in the *Blue Book of Gun Values* (Fjestad 1996). The largest approximation error is probably that Group 2 includes the Protect .22, which is not banned and does not accept large-capacity magazines.

Figure 4-13, this post-ban increase continued an upward trend which began before the assault weapon ban. Interpreting the raw numbers of assault weapons thefts is problematic even with time series methods, however, because the Subtitle C theft reporting requirement for FFL's may have caused an artificial increase in reported thefts. The monthly average of total reported gun thefts did increase from approximately 11,602 for the January 1992 through August 1994 period to 12,806 during the September 1994 through May 1996 period, although we did not make systematic attempts to explain the increase.

Table 4-11. Pre-ban (Jan. 1992-Aug. 1994) to post-ban (Sept. 1994-May 1996) changes in counts of stolen assault weapons and unbanned semiautomatic handguns capable of accepting large-capacity magazines

<i>Stolen gun type</i>	<i>Pre-ban monthly mean</i>	<i>Post-ban monthly mean</i>
Assault weapons	2,334	2,642
Unbanned large-capacity semiautomatic handguns	235	343

Table 4-12. Pre-ban (Jan. 1992-Aug. 1994) to post-ban (Sept. 1994-May 1996) changes in ratios of stolen assault weapons and unbanned semiautomatic handguns capable of accepting large-capacity magazines

	<i>Pre-ban</i>	<i>Post-ban</i>	<i>Change</i>
Ratio: Assault weapons ÷ automatic and semiautomatic guns	.449	.463	+3%
Ratio: Unbanned large-capacity semiautomatic handguns ÷ All semiautomatic handguns	.054	.073	+35%

To control for possible confounding effects of the Subtitle C reporting requirement, we examined assault weapon thefts as a proportion of all reported thefts of semiautomatic and automatic weapons. A post-ban increase in this proportion would suggest a rise in assault weapon thefts which occurred independently of any Subtitle C effect. We used semiautomatic and automatic weapons as our baseline rather than all reported thefts in order to control for changes in the composition of the gun stock; semiautomatic firearms, of which assault weapons are a subset, have grown dramatically since the late 1980s as a share of the firearms market. Relatedly, some law enforcement personnel have suggested to us that gun theft victims are more likely to report thefts of recently purchased firearms because it is easier for victims to assemble information necessary for a theft report (such as serial numbers) when dealing with a newer firearm. Finally, expressing assault weapons as a proportion of semiautomatic/automatic weaponry may correct potential bias stemming from the NCIC's removal of recovered weapons from their data system. Some evidence suggests that semiautomatic handguns tend to move more quickly from retail sale to crime than do other firearms (Kennedy et al. 1996). If this process works the same way for the time from theft to use in crime and recovery by police, then assault weapons and other semiautomatic firearms may tend to drop out of the system at a faster rate than other firearms.

Figures in Table 4-12 reveal that between 1992 and 1996 automatic and semiautomatic assault weapon thefts increased only very slightly (about 3%) as a proportion of thefts of rapid fire weapons. A contingency table chi-square test indicated that this was a statistically significant increase ($p < .01$).³⁹ However, an interrupted time series analysis of monthly trends (see Figure 4-14) failed to provide any strong evidence that the ban caused a change in the proportion of semiautomatic/automatic firearm thefts involving assault weapons.⁴⁰ Either way, the relative increase in assault weapon thefts appears to have been very modest.

³⁹ The proportion of semiautomatic/automatic gun thefts accounted for by assault weapons is strikingly large in light of the generally low prevalence of these guns among confiscated and traced weapons. Due to the manner in which we approximated assault weapon thefts, our figures probably overstate assault weapon thefts to some degree. In addition, BATF agents have suggested to us that assault weapon thefts may be more likely to be reported to NCIC than thefts of other firearms due to owners' insurance claims on assault weapons and owners' concerns about how stolen assault weapons may be used.

Errors in the data submitted by law enforcement agencies may also be relevant. The NCIC uses character and numeric codes to identify manufacturers, weapon types, and calibers. To assess coding error in the data, we ran a number of crude reliability tests with guns made by selected manufacturers. To illustrate, if a particular handgun manufacturer makes only semiautomatic handguns, one can examine all guns made by that company which appear in the database and determine what percentage were coded as weapon types other than semiautomatic handguns. If 5% of the guns produced by this manufacturer have other weapon type codes, then the manufacturer and/or weapon type must be incorrect for that 5% of cases.

We chose guns made by Davis Industries and Intratec for our tests. Davis Industries makes only derringers and semiautomatic pistols (Fjestad 1996, pp.412-413). Davis derringers are made in .22, .25, .32, .38, and 9mm calibers. The company's semiautomatic pistols are produced in calibers .32 and .380. Of the several thousand guns in the data coded as Davis Industries firearms, about 10% were coded as weapon types other than derringers or semiautomatic handguns (most of these were coded as revolvers). Virtually 100% of the Davis Industries derringers had calibers in the proper range, as did 95% of the semiautomatic handguns.

Intratec, a prominent maker of assault weapons, makes derringers in .38 caliber and produces semiautomatic handguns in .22, .25, .380, .40, .45, and 9mm calibers (Fjestad 1996, pp.577-579). Approximately 89% of the several thousand guns coded as Intratecs were coded as semiautomatic handguns or derringers. Nearly 100% of the Intratec semiautomatic handguns had caliber codes in the proper range, while 97% of the derringers had the proper caliber.

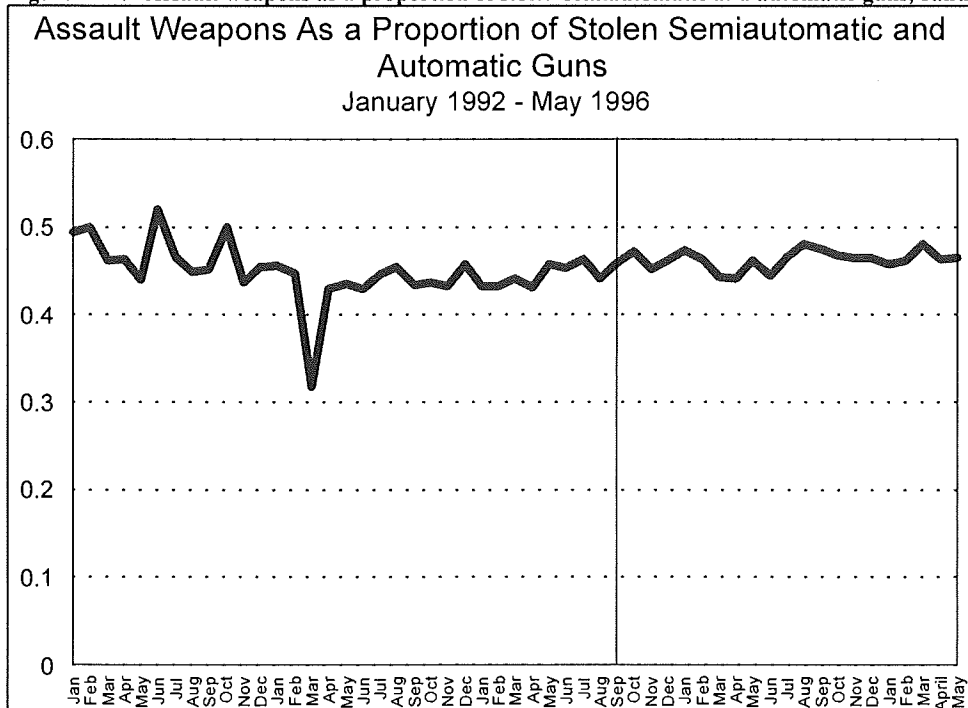
In light of the various coding errors which are present in the NCIC data, we constructed our counts of assault weapons and semiautomatic/automatic guns using a broad array of weapon type codes corresponding to various semiautomatic and fully automatic weapon types. The analyses described above seem to indicate that errors in the numerator and denominator of our assault weapon measure are roughly proportional. Finally, our analysis assumes that any biases in the data resulting from the various issues discussed above have remained relatively constant from the pre-ban to post-ban periods.

⁴⁰ Due to ambiguity regarding the form of the ban's hypothesized impact on assault weapon thefts, we tested a number of impact models (see McCleary and Hay 1980). The temporary increase in assault weapon prices which occurred around the time of the ban may have raised the incentive for criminals to steal assault weapons, thereby creating an abrupt, temporary impact on thefts of assault weapons. However, an abrupt temporary impact was inconsistent with the data.

The eventual fall in assault weapon prices, on the other hand, could have increased the incentive for dealers to "leak" the guns to illegitimate buyers. The gradual decline of assault weapon prices documented in the price analysis would suggest a gradual, permanent impact on assault weapon thefts. However, an abrupt, permanent impact also seems plausible. Further, abrupt, permanent impact models are less demanding on the data and sometimes provide a better fit and more accurate results even when the true form of the impact is not of this type (see McDowall et al. 1996). In this case, a gradual, permanent impact model yielded insignificant results and provided a worse fit to the data than did an abrupt, permanent impact model.

Assessment of the abrupt, permanent impact model was complicated by the presence of an outlier observation corresponding to March 1993, during which time there was an unusually low proportion of thefts involving assault weapons (see Figure 4-14). We therefore estimated models with and without this observation. In the first model, we retained the outlier observation and logged the data series. This model suggested that the ban produced a moderately significant ($p < .10$) positive impact on the proportion of semiautomatic/automatic gun thefts that involved assault weapons. (After adding the intervention component, this model did not require any autoregressive or moving average parameters for the noise component). When the outlier observation was removed, however, the model failed to yield evidence of an impact from the ban. (The noise

component for this model included a fourth order autoregressive subset model [see SAS Institute 1993] in which all parameters except the fourth were set to zero).

Figure 4-13. Stolen assault weapons count, January 1992–May 1996**Figure 4-14. Assault weapons as a proportion of stolen semiautomatic and automatic guns, January 1992–June 1996**

Additional analyses (not shown) revealed that the assault weapon trends were driven entirely by assault pistols. Thefts of the AR15 group weapons, for example, were rather few in number both before and after the ban, and they decreased both in numbers and as a proportion of stolen weapons during the post-ban months.

4.3.4. Trends in Thefts of Non-Banned Semiautomatic Handguns Capable of Accepting Large-capacity Magazines

In another set of analyses, we investigated whether the ban affected thefts of non-banned semiautomatic handguns capable of handling banned, large-capacity magazines. A number of effects seem plausible. If the magazine ban has been effective in decreasing the availability of large-capacity magazines, one might hypothesize a decrease in offenders' demand for handguns capable of accepting these magazines and a decrease in thefts of these weapons from primary-market dealers and eligible owners. Alternatively, if a similar decrease in the demand for these guns drove down their prices in the primary market, it might increase the incentive for dealers to leak the guns to the illegal market and report the guns as stolen or missing. However, recent years' Blue Book values for Glock pistols suggest that their primary-market prices have been quite stable, when adjusted for inflation. Therefore, if these magazines are still widely available in secondary markets, some offenders might desire to substitute unbanned large-capacity handguns for banned assault weapons. In that case, we might also expect to see a rise in thefts of these guns.

Average monthly thefts of these weapons were higher in the months following the ban (Table 4-11). Moreover, thefts of these guns increased by about a third during the post ban period as a fraction of all semiautomatic handgun thefts (Table 4-12). However, Figure 4-15 and Figure 4-16 show that thefts of these guns were trending upwards in both numbers and as a proportion of semiautomatic handgun thefts both before and after the ban. A time series analysis did not provide conclusive evidence that handguns accepting large-capacity magazines increased significantly after the ban as a fraction of semiautomatic handgun thefts.⁴¹ (We did not employ contingency table chi-square tests due to the clear upward trend in this variable.) At any rate, the Crime Act does not appear to have decreased criminal demand for these guns, as approximated by theft reports.

⁴¹ We tested a variety of potential impact forms for this time series, though we considered an abrupt, permanent impact or a gradual, permanent impact to be most plausible in light of the steadily increasing prices for Glock magazines documented in the price analysis. A model with an abrupt, permanent intervention component and a first order autoregressive process for the noise component provided an adequate fit to the data. However, this model yielded an impact estimate virtually identical to the change in the proportion measure shown in Table 4-12 (an increase of approximately one third). In light of the clear pre-ban upward trend in this measure shown in Figure 4-16, we find this effect to be implausible and suspect that the data series is too short to provide a rigorous test of the ban's impact using this methodology.

We ran a crude alternative test in which we regressed the proportion measure on a time trend and a pre-ban/post-ban indicator variable. The time trend variable was significant, while the post ban variable suggested a positive, but statistically insignificant, increase of about 7% in the proportion measure.

Figure 4-15. Stolen unbanned large-capacity semiautomatic handgun counts, January 1992–May 1996

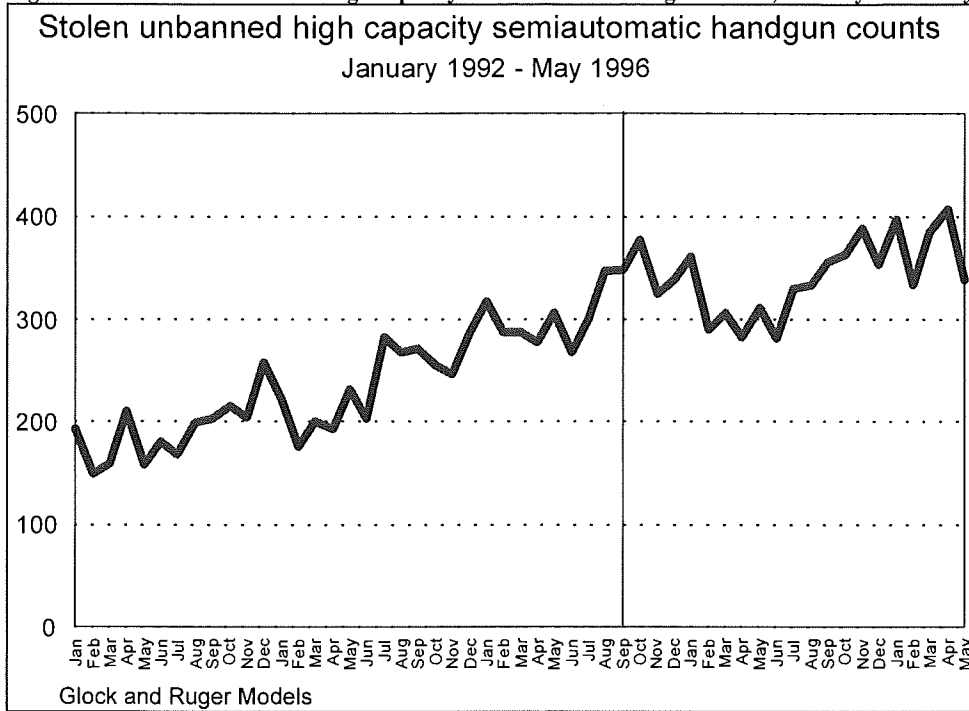
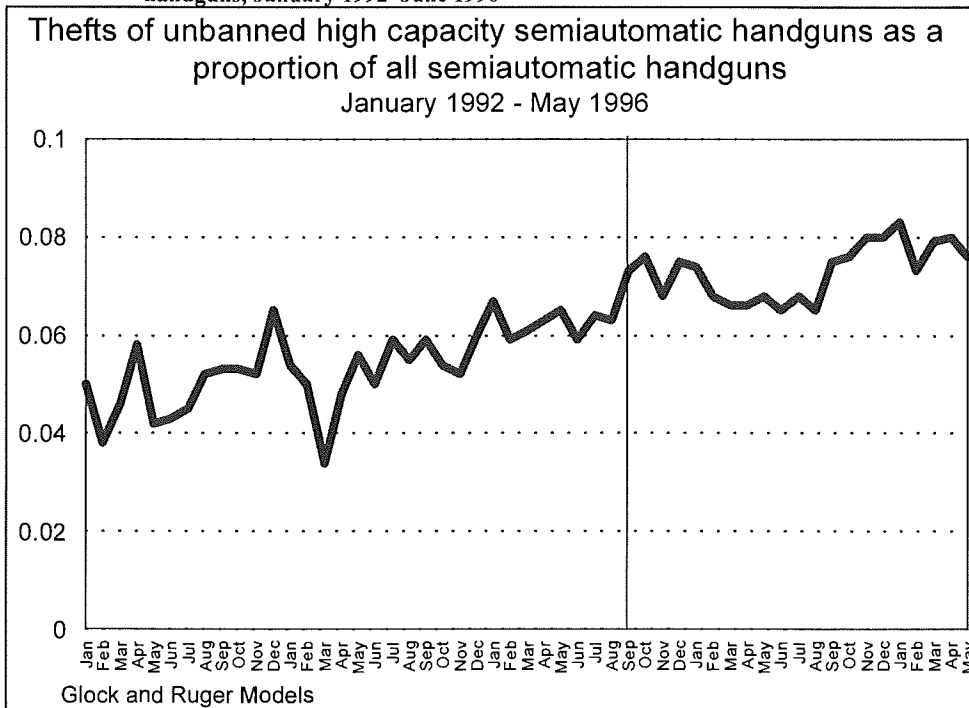


Figure 4-16. Thefts of unbanned large-capacity semiautomatic handguns as a proportion of all semiautomatic handguns, January 1992–June 1996



5. UTILIZATION EFFECTS

5.1. BATF NATIONAL FIREARM TRACE DATA

5.1.1. Introduction: Data and Limitations

To provide national level estimates of the use of assault weapons, we obtained data on firearm trace requests submitted to the U.S. Bureau of Alcohol, Tobacco and Firearms (BATF) by Federal, State, and local law enforcement personnel throughout the nation from January 1993 through May 1996. BATF maintains a firearm tracing center in West Virginia. Upon request, personnel at this center can trace firearms to their last point of recorded sale in a primary market. BATF makes this service available to police departments throughout the country to assist in criminal investigations.

The assault weapon trace file provided by BATF contains the make, model, and caliber of all models subject to the assault weapons ban (the designations are discussed in more detail below). Further, the file includes the month and year when BATF received the request, the state from which the request originated, and type of crime with which the firearm was associated. Our data for total traces consist of aggregate counts of traces broken down by month, year, state, weapon type,⁴² and offense.

BATF trace data are the only available national-level sample of guns used in crime. Nevertheless, BATF trace data have significant limitations for research purposes. As Zawitz (1995, p.4) has noted, trace requests represent an unknown fraction of all guns used in crime. In terms of general limitations, BATF cannot trace military surplus weapons, imported guns without the importer name, stolen guns, or guns without a legible serial number (Zawitz 1995, p.4). Tracing guns manufactured before 1968 is also difficult because FFL's were not required to keep records of their transactions prior to that time. BATF does not generally trace guns having a manufacturing date more than six years old (such guns are likely to be many transfers removed from the original retail purchaser), though BATF can and does trace these guns in response to special requests.

Moreover, trace data are based on requests from law enforcement agencies; yet not all guns used in crime are seized by authorities, and agencies, particularly local ones, do not submit all guns they seize for tracing. Consequently, firearms submitted to BATF for tracing may not be a representative sample of firearms used in crime. Previous studies of trace data have suggested that only about 10 percent of gun crimes and 2 percent of violent crimes result in trace requests to BATF (Cox Newspapers 1989, p.3; Kleck 1991, p.75).⁴³

The vast majority of weapons submitted to BATF for tracing are associated with weapons offenses, drug offenses, or violent crimes. In 1994, 72% of traces were for weapons offenses, 12% were for drug-related offenses, 12% were for the combined violent crimes of homicide, assault, and robbery, and 2% were for burglary

⁴² The weapon categories consist of revolver, pistol, derringer, rifle, shotgun, combination rifle/shotgun, and a few other miscellaneous categories.

⁴³ A prior study of BATF trace data by *Cox Newspapers* (1989) suggested that police are more likely to request gun traces for organized crime and drug trafficking. Further, the study indicated that these were the types of crimes with which assault weapons were most likely to be associated. Nearly 30 percent of the gun traces tied to organized crime were for assault weapons as defined by the Cox study (their definition did not match that in the 1994 Crime Act), and 12.4 percent of gun traces for drug crimes involved these guns. In contrast, assault weapons accounted for only 8 percent of gun trace requests for assaults and homicides.

(BATF 1995a, p.43). The high representation of weapons offenses was probably due to the fact that 57% of the trace requests were made by BATF field offices (BATF 1995a, p.45).

Because of the predominance of weapons offenses, BATF trace data might not appear to be a good indicator of guns used in violent and/or drug-related crime. However, the fact that a gun was not seized in association with a specific violent crime does not rule out the possibility that it had been used or would have been used in violent crime. Substantial percentages of adult and juvenile offenders carry firearms on a regular basis for protection and to be prepared for criminal opportunities (Sheley and Wright 1993; Wright and Rossi 1986). In Kansas City, Missouri, for example, about 60% of the guns seized as a result of regular police enforcement activity in high crime beats in 1992 were seized in conjunction with pedestrian checks, car checks, and other traffic violations (Shaw 1994, p.263).⁴⁴ Moreover, drug offenders tend to be disproportionately involved in violence and illegal gun traffic (National Institute of Justice 1995; Sheley and Wright 1993). Thus, guns seized in association with weapons offenses and violent offenses — in addition to those seized for drug-related crimes — may serve as a good indicator of guns possessed by drug offenders.

Despite their limitations, guns confiscated by law enforcement agencies are a reasonable index of guns used in violent and drug-related crime, and they are the best available indicator of changes over time in the types of guns used in crime and possessed and/or carried by criminal and otherwise deviant or high risk persons. BATF trace data are the only such national sample.

Yet, another important limitation to national trace data is that the process by which state and local law enforcement agencies decide to submit guns for tracing is largely unknown, and there are undoubtedly important sources of variation between agencies in different states and localities (and perhaps regions). For instance, a state or local agency may be less likely to need the tracing services of BATF if its state or city maintains its own firearms registration system. Knowledge of BATF's tracing capabilities and participation in federal/state/local law enforcement task forces are some additional factors that can affect an agency's tracing practices. Further, these conditions will vary over time; for example, BATF has been actively trying to spread this knowledge and encourage trace requests since 1994. For all of these reasons, BATF trace data should be interpreted cautiously.

Finally, prior studies have suggested that assault weapons are more likely than other guns to be submitted for tracing.⁴⁵ However, this generalization may no longer be valid, for, as is discussed below, police appear to be requesting traces for increasing proportions of confiscated firearms.

5.1.2. Trends in Total Trace Requests

Table 5-1 presents yearly changes in trace requests for all firearms for 1993 through early 1996. Total traces grew 57 percent from 1993 to 1994, decreased 11 percent from 1994 to 1995, and then increased 56 percent from 1995 to 1996. In contrast, Table 5-2 indicates that gun crimes declined throughout the 1993–95 period (national gun crime figures are not yet available for 1996). The increase in gun trace requests that occurred in 1994 was not attributable to an increase in gun crime and thus appears to have reflected a change in police trace request behavior and/or BATF initiatives. The large growth in traces in early 1996 also seems to be unrelated to gun crime (national gun crime figures for 1996 are not yet available, but we are not aware of any data suggesting

⁴⁴ This calculation excludes guns seized by special crime hot spots patrols which were proactively targeting guns. Thus, the figure reflects normal police activity.

⁴⁵ Prior estimates have indicated that approximately 5 to 11 percent of trace requests are for assault weapons (Cox Newspapers 1989; Lenett 1995; Zawitz 1995), though these estimates have not all been based on the 1994 Crime Act definition of assault weapons.

that gun crime has increased over 50 percent since 1995). On the other hand, the decline in trace requests in 1994 mirrored the decline in gun crime, particularly gun homicides (the most accurately measured gun crime category), suggesting that tracing practices were fairly stable from 1994 to 1995.

Table 5-1. Total traces, January 1993–May 1996

<i>Year</i>	<i>Total</i>	<i>Monthly average</i>	<i>Percent change from previous year</i>
1993	55,089	4,591	N/A
1994	86,216	7,185	+ 57
1995	76,924	6,410	- 11
1996 (Jan.-May)	54,254	10,851	+56*

* Change is expressed relative to January through May of 1995.

Table 5-2. National trends in gun crime, 1993–95

<i>Year</i>	<i>Offense</i>	<i>Number</i>	<i>Percent change from previous year</i>
1993	Gun murders	16,136	N/A
1994	Gun murders	15,463	- 4
1995	Gun murders	13,673	- 12
1993	Gun robberies	279,737	N/A
1994	Gun robberies	257,428	- 8
1995	Gun robberies	238,023	- 8
1993	Gun aggrav. assaults	284,910	N/A
1994	Gun aggrav. assaults	268,788	- 6
1995	Gun aggrav. assaults	251,712	- 6

Sources: FBI Uniform Crime Reports, *Crime in the United States* (1996, pp.18, 26-29, 31-32; 1995, pp.18, 26-29, 31; 1994, pp.27-29, 31-32).

As a comparison to national trends, Table 5-3 presents gun confiscation figures for the cities of Boston and St. Louis, two cities for which we have data on all confiscated firearms.⁴⁶ The Boston data are consistent with national trends in gun violence in that they show decreases in gun seizures for each year.⁴⁷ In St. Louis, gun confiscations increased slightly in 1994, but in 1995, they decreased by an amount comparable to the nationwide

⁴⁶ These Boston data were provided to us by the Boston Police Department via researchers at Harvard University. The St. Louis data are from the St. Louis Police Department and were provided by researchers at the University of Missouri, St. Louis.

⁴⁷ The sharp decrease in gun confiscations from 1995 to 1996 may be due in part to recent youth gun violence initiatives being undertaken by the Boston Police Department in collaboration with a number of other agencies and researchers from Harvard University (Kennedy et al. 1996; Kennedy 1996).

decreases in gun murders and gun robberies. Of course, trends in Boston and St. Louis may not be indicative of those in the rest of the nation. Nevertheless, the contrast between the Boston and St. Louis figures and the national tracing figures provide further evidence that changes in national gun traces in 1994 and early 1996 were driven largely by police practices and BATF initiatives rather than changes in gun crime.

Table 5-3. Gun confiscations/traces, January 1993–May 1996

<i>Year</i>	<i>Total</i>	<i>Monthly average</i>	<i>Percent change from previous year</i>
<u>Gun confiscations/traces for Boston, MA, January 1993–May 1996</u>			
1993	866	72	N/A
1994	762	64	- 12%
1995	712	59	- 7%
1996 (Jan.-May)	241	48	- 28%*
<u>Gun confiscations in St. Louis, MO, 1993–95</u>			
1993	3,544	295	N/A
1994	3,729	311	5%
1995	3,349	279	-10%

*Change is expressed relative to January-May of 1995.

In sum, the changes in national trace requests which occurred in 1994 and early 1996 appear to have stemmed from BATF initiatives. Although we have little documentation of these changes, our consultations with BATF agents have suggested that the surge in trace requests from 1993 to 1994 was due largely to internal BATF initiatives that now require agents to submit all confiscated firearms for tracing. In addition, BATF has made efforts to encourage more police departments to submit trace requests and to encourage police departments to request traces for greater fractions of their confiscated weapons. One example is BATF's national juvenile firearms tracing initiative launched in late 1993 (BATF 1995b, p.21). Greater cooperation between BATF and local agencies (through, for example, special task forces) has also resulted in more trace requests according to BATF officials, and a few states and localities have recently reached 100 percent tracing. Beginning in the fall of 1995, moreover, agents from the tracing center began visiting BATF's field divisions to inform federal, state, and local law enforcement personnel about the tracing center's services and capabilities, including the implementation of computerized on-line tracing services. This would appear to be a major factor behind the growth in trace requests from 1995 to 1996.

For the 1994–95 period, however, tracing practices seem to have remained steady. The decline in traces in 1995 matched a real decrease in gun crimes. These developments have important ramifications for the analysis of assault weapon traces.⁴⁸

⁴⁸ We made limited efforts to further disentangle federal and state/local trends by obtaining annual data on traces from a number of states broken down by requesting agency. We examined trace requests from a number of cities where, according to informal judgments by BATF agents, cooperative efforts between local law enforcement agencies and BATF had resulted in the submission of trace requests for a relatively high percentage of confiscated firearms over an extended period. We anticipated that trace requests from BATF field offices in these locations would show substantial increases from 1993 to

5.1.3. Total Assault Weapon Traces

During the period from January 1993 through May 1996, BATF received 12,701 trace requests for assault weapons. This count covers specific makes and models listed in the 1994 Crime Act, exact copies of those makes and models, and other firearms failing the Crime Act's features test for assault weapons.⁴⁹ The requests include all states, Washington, D.C., Puerto Rico, and Guam.⁵⁰

Table 5-4 shows the number, monthly averages, and percentage changes of assault weapon traces for each year. Assault weapon traces increased 9 percent from 1993 to 1994, declined 20 percent from 1994 to 1995, and then increased 7 percent from 1995 to 1996. While one cannot entirely dismiss the possibility that the use of assault weapons rose in 1994 and 1996, it seems likely that these increases were due partially or entirely to the general increase in police trace requests which occurred during those years. Yet assault weapon traces increased by amounts much smaller than did total traces in 1994 and 1996, a finding which supports the conjecture that police have been more consistently diligent over time in requesting traces for confiscated assault weapons.⁵¹

1994, and that requests from the local law enforcement agencies would rise from 1995 to 1996. However, the figures from these locations did not reveal any clearly interpretable patterns. Any patterns which might have existed may be obscured by the fact that local agencies may submit traces directly to the tracing center or submit them indirectly through local ATF field offices. In 1994, for example, 17% of trace requests were from outside (i.e., non-BATF) agencies directly, while 26% were from outside agencies through BATF offices (BATF 1995, p.45). Our judgment is that analyzing trace requests according to submitting agency will not necessarily illuminate the ambiguities in interpreting trace request trends without extensive research into both the processes by which guns are selected for tracing and submitted by local agencies and BATF field offices and the impact of special BATF/local initiatives on these processes.

⁴⁹ The guns designated as "features test" guns consist of makes and models that fail the features test based on manufacturer specifications. The file does not generally include guns which were legal as manufactured but were later modified in ways which made them illegal. (Firearms which are traced by BATF are not actually sent to BATF for inspection). Further, firearms are often manufactured and sold with various options, and the legal/illegal status of some models is contingent upon the particular features with which the gun was manufactured. For example, a Franchi Spas 12 shotgun may or may not be an assault weapon depending upon the size of its ammunition magazine (prior to the ban, the gun was sold with 5 shot and 8 shot tube magazines - see Fjestad [1996, p.471]). Unfortunately, this level of detail is not available in the BATF data. Potential assault weapon models like the Franchi Spas 12 were included in the assault weapon file, but, as is discussed later in the text, we did not utilize them in all analyses.

⁵⁰ It should be noted that the firearm make and model designations in BATF trace data are made by the law enforcement officers who submit the requests. Undoubtedly, there exists some level of error in these designations, though we do not have any data with which to estimate the error rate.

⁵¹ The 1996 assault weapon traces include 89 observations identified as "duplicate traces." Although these trace requests can sometimes represent instances in which the same gun was used in multiple crimes, they usually represent instances in which, for various administrative reasons, a particular trace request was entered into the computer system more than once. Unfortunately, it is not possible to identify duplicate trace requests for years prior to 1996. In order to treat data from all years in a consistent manner, we therefore retained all of the 1996 trace requests for the analysis. Consequently, the total and assault weapon trace numbers presented in this report overstate the true numbers of trace requests. Our analysis of the trace data rests on the assumption that the rate of duplicate tracing has remained relatively constant over the 1993-96 period.

Table 5-4. Assault weapons traces, January 1993–May 1996

<i>Year</i>	<i>Total</i>	<i>Monthly average</i>	<i>Percent change from previous Year</i>
1993	3,748	312	N/A
1994	4,077	340	+ 9%
1995	3,268	272	- 20%
1996 (Jan.-May)	1,608	322	+ 7%*

*Change is expressed relative to January through May of 1995.

Traces for assault weapons dropped more markedly from 1994 to 1995 (20 percent) than did overall traces (11 percent). In a t-test of 1994 and 1995 monthly means, the drop in assault weapon traces was statistically significant ($p=.01$, two-tailed test), while the drop in total traces was not ($p=.22$, two-tailed test). Moreover, the drop in assault weapon traces was substantially greater than the declines in gun murder (12 percent), gun robbery (8 percent), and gun assault (6 percent) for the same period. This suggests that criminal use of assault weapons decreased from 1994 to 1995, both in absolute terms and relative to crime trends generally. In addition, utilization of assault weapons in crime was less in 1995 than in 1993.

5.1.4. Analysis of Select Assault Weapons

As noted in Chapter 2, many of the foreign makes and models banned by Title XI were banned from importation prior to the passage of that legislation. Thus, any recent decrease in the use of those weapons cannot be attributed unambiguously to the effects of the Crime Act. For this reason, we concentrated our analyses below on a select group of domestic assault weapons whose availability was not affected by legislation or regulations predating the 1994 Crime Act. These guns include the AR15 family (including the various non-Colt copies), the Intratec family (including the AA Arms AP-9), and the SWD handgun family.

In addition, we selected a small number of firearm models which, as manufactured, fail the features test of the assault weapons legislation. These weapons had to meet three selection criteria: 1) the weapon had to be in production at the time of the Crime Act (if the weapon was a foreign weapon, its importation could not have been discontinued prior to the Crime Act);⁵² 2) there had to be 30 or more trace requests for assault weapons made by that manufacturer during the period January 1993 through April 1994; and 3) the weapon had to have an unambiguous assault weapon designation as it was manufactured prior to the ban (i.e., its status could not be conditional on optional features).⁵³ These criteria ensured that we would capture the most prevalent assault weapons that were still being sold in primary markets just prior to the effective date of Title XI. We used January 1993 through April 1994 as the selection period in order to minimize effects on the gun market which may have resulted from the passage of the assault weapons legislation by the U.S. House of Representatives in May of 1994.

⁵² Heckler and Koch, for example, manufactured a number of rifle and handgun models which were relatively common among assault weapon traces (i.e., the HK91, HK93, HK94, and SP89). However, these models were all discontinued between 1991 and 1993 (Fjestad 1996, p.531).

⁵³ BATF officials assisted us in these designations. The only weapon which passed the first two criteria but not the third was the Franchi Spas 12 shotgun. The assault weapon trace file contained 53 trace requests for this model prior to May 1994.

The features test weapons selected for the analysis were: Calico M950 and M110 model handguns; Calico M100, M900, and M951 model rifles; and Feather AT9 and AT22 model rifles.

This select group of assault weapons accounted for 82 percent of assault weapon traces submitted to BATF during the study period. Yearly trends in trace requests for these weapons (see Table 5-5) were virtually identical to those for all assault weapons. Most importantly, average monthly traces were 20 percent lower in 1995 than in 1994 ($p=.01$, two-tailed test). Figure 5-1 displays the trend in monthly traces for these firearms.

Figure 5-1. National ATF trace data: Traces for select assault weapons, January 1993–May 1996

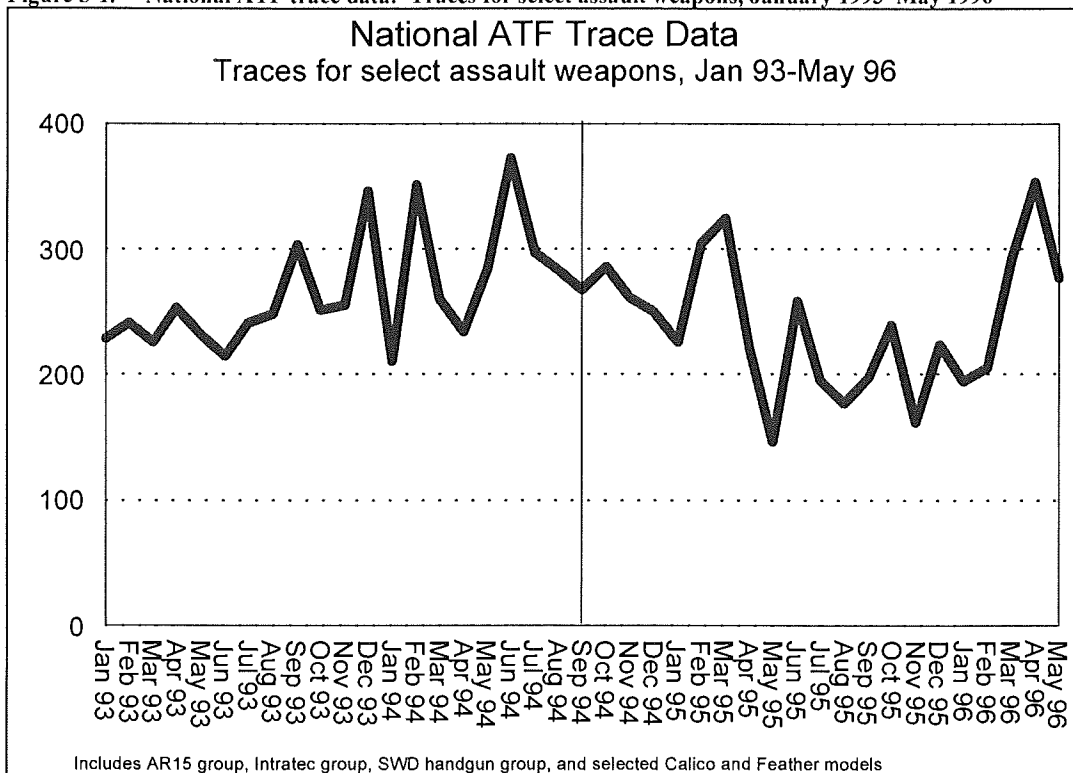


Table 5-5. Traces for select assault weapons,[†] January 1993–May 1996

<i>Year</i>	<i>Total</i>	<i>Monthly average</i>	<i>Percent change from previous year</i>
1993	3,040	253	N/A
1994	3,358	280	+ 10%
1995	2,673	223	- 20%
1996 (Jan.-May)	1,323	265	+ 8%*

*Change is expressed relative to January through May of 1995.

[†]Includes traces for AR15 group, Intratec group, SWD handgun group, and selected Calico and Feather models.

5.1.5. Assault Weapon Traces for Violent Crimes and Drug-Related Crimes

To fulfill Title XI's mandate to assess the effects of the ban on violent and drug-related crime, we also analyzed assault weapon traces associated with violent crimes (murder, assault, and robbery) and drug-related crimes. We used our select group of assault weapons for this analysis. Yearly trends for these traces are presented in Table 5-6. Monthly trends are graphed in Figure 5-2 and Figure 5-3. A striking feature of these numbers is their small magnitude. On average, the monthly number of assault weapon traces associated with violent crimes across the entire nation ranged from approximately 30 in 1995 to 44 in 1996. For drug crimes, the monthly averages ranged from 34 in 1995 to 50 in 1994.

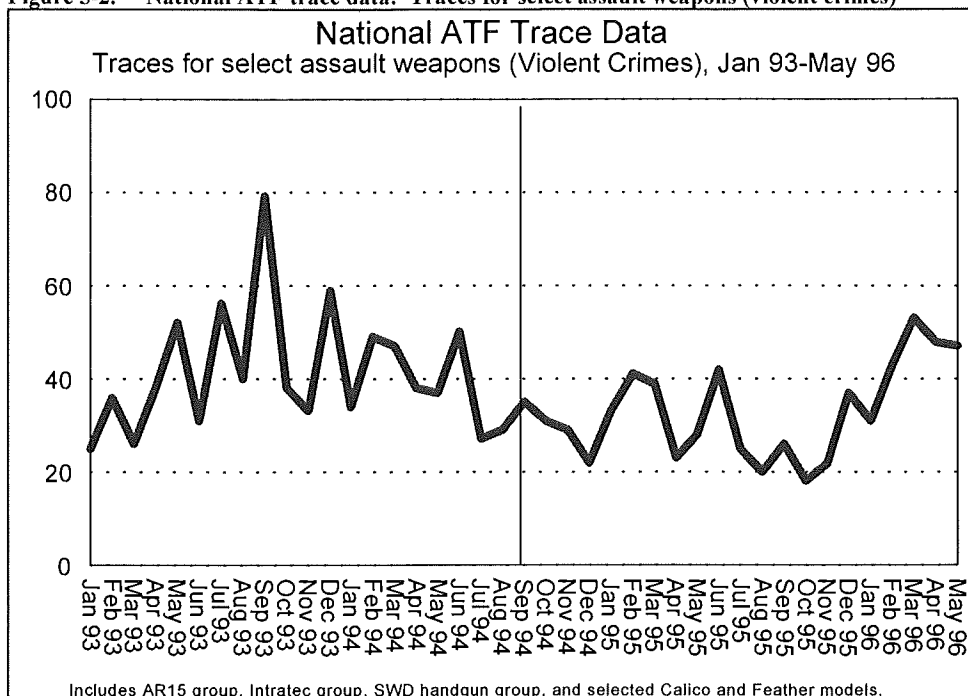
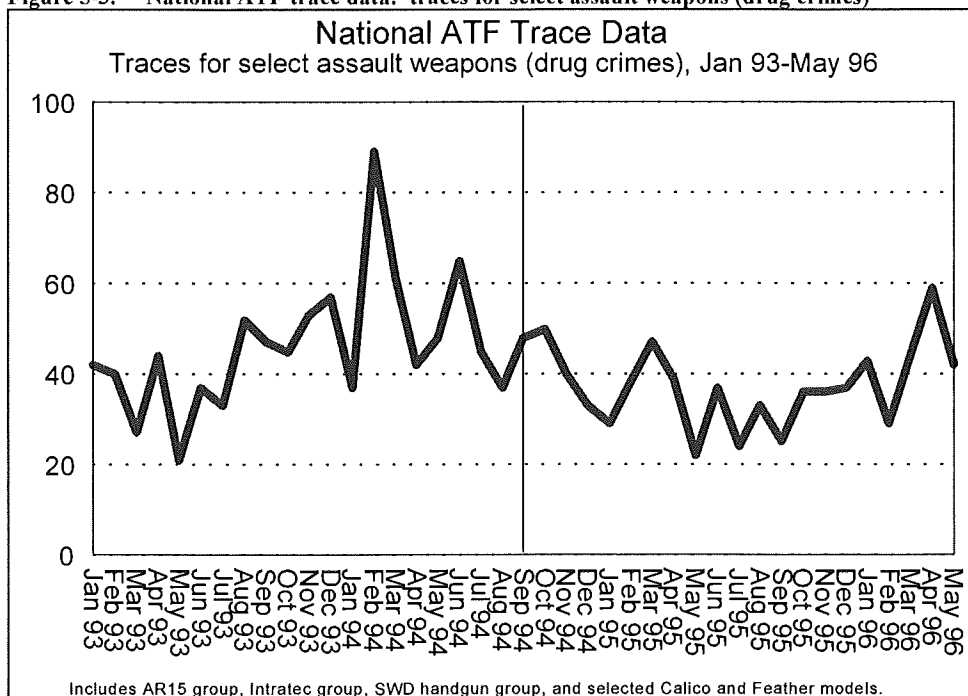
Figure 5-2. National ATF trace data: Traces for select assault weapons (violent crimes)**Figure 5-3. National ATF trace data: traces for select assault weapons (drug crimes)**

Table 5-6. Traces for select assault weapons,[†] January 1993–May 1996 (violent and drug-related crimes)**Violent Crimes:**

<i>Year</i>	<i>Total</i>	<i>Monthly average</i>	<i>Percent change from previous year</i>
1993	513	43	N/A
1994	428	36	- 17%
1995	354	30	- 17%
1996 (Jan.-May)	222	44	+ 35%*

Drug-Related Crimes:

<i>Year</i>	<i>Total</i>	<i>Monthly average</i>	<i>Percent change from previous year</i>
1993	498	42	N/A
1994	595	50	+ 19%
1995	403	34	- 32%
1996 (Jan.-May)	217	43	+ 24%*

*Change is expressed relative to January through May of 1995.

[†]Includes AR15 group, Intratec group, SWD handgun group, and selected Calico and Feather models.

Traces for assault weapons associated with violent crimes dropped 17 percent in both 1994 and 1995. Both decreases were greater than the decreases which occurred for violent gun crimes in each of those years. However, assault weapon traces for violent crime rebounded 35 percent in 1996 to a level comparable with that in 1993.

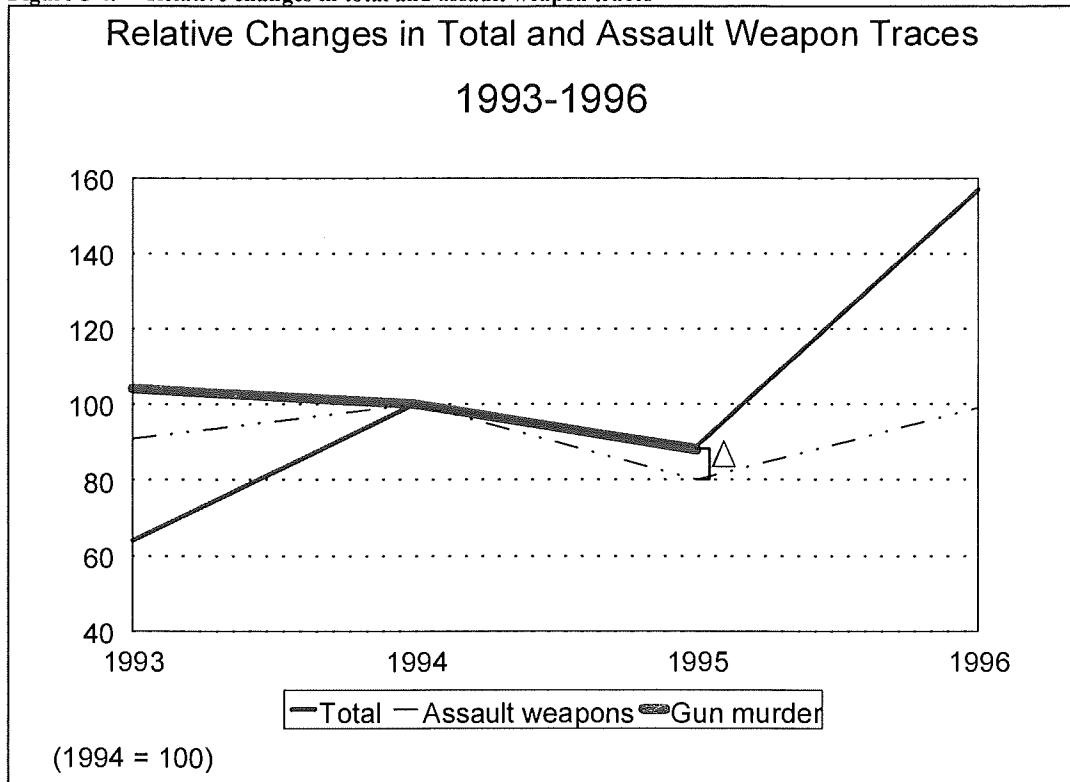
Assault weapon traces for drug crimes followed patterns similar to those for all assault weapons. Assault weapon traces increased 19 percent from 1993 to 1994, decreased 32 percent from 1994 to 1995, and then increased 24 percent from 1995 to 1996. The yearly fluctuations of these traces were greater than those for all assault weapons, but the drug trace numbers may be relatively more unstable due to the small number of weapons under consideration.

5.1.6. Conclusions on National Trends in the Use of Assault Weapons

National-level data suggest that the use of assault weapons, as measured by trace requests to BATF, declined in 1995 in the wake of the Crime Act. The 20 percent decrease in assault weapon trace requests from 1994 to 1995 was greater than occurred overall, and it was greater than the 6 to 12 percent national drop in violent gun crime. This is demonstrated graphically in Figure 5-4. Assault weapon traces for violent crimes and drug-related crimes also decreased in 1995 by amounts comparable to or greater than the overall drop in assault weapon

traces. Further, there were approximately 13 percent fewer assault weapon trace requests in 1995 than during the pre-ban year of 1993.⁵⁴

Figure 5-4. Relative changes in total and assault weapon traces



Another indication that this was an effect from the ban is that assault weapon traces declined less in 1995 in states which had their own bans prior to the Federal legislation. Table 5-7 presents combined yearly traces for our select assault pistol group in the four states with assault weapon bans: California, New Jersey, Connecticut, and Hawaii. In general, assault weapon traces in these states followed the same pattern as did the national figures. The increases in 1994 and 1996 were larger than the national increases which occurred during those years, but the 1995 decrease was smaller than the national assault weapon decrease. Further, the decline in these ban states was consistent in magnitude with the national drop in gun crime.⁵⁵

⁵⁴ The data also do not show any obvious substitution of non-banned long guns for assault weapons. Trace requests for shotguns decreased 10 percent in 1995. Total rifle traces increased 3.5 percent in 1995, but our select group of assault weapon rifles (AR15 group and selected Calico and Feather models) also increased 3 percent. Thus, banned and non-banned rifles did not follow divergent trends. With currently available data, we have not been able to assess whether the assault weapon ban led to displacement to other categories of weapons, such as non-banned semiautomatic handguns capable of carrying pre-ban large-capacity magazines.

⁵⁵ We chose to examine only assault weapon pistols because assault rifles are rarely used in crime and Hawaii's assault weapons legislation covers only handguns. Maryland passed an assault pistol ban in 1994, but the legislation was passed only a few months prior to the Federal ban, so we did not include Maryland as a ban state.

All of the assault pistol ban states outlawed one or more of the handguns in our select group of assault pistols. However, the coverage of these state laws varied, and our select assault pistols were not banned in all of these states. We therefore conducted a supplemental analysis focusing on the Intratec TEC-9 series and the M10/M11 series made by SWD and others. As far as we can determine, these guns were covered by all of the state assault pistol bans. Trace requests for TEC-9's,

Table 5-7. Assault pistol traces, ban states (CA, NJ, CT, and HI), January 1993–May 1996

<i>Year</i>	<i>Total</i>	<i>Monthly mean</i>	<i>Percent change from previous year</i>
1993	204	17	N/A
1994	228	19	+12%
1995	210	18	- 8%
1996 (Jan.-May)	106	21	+15%

*Change is expressed relative to January through May of 1995.

Nationally, traces for assault weapons rebounded in 1996 to a level higher than that of 1993 but lower than that of 1994. This could represent leakage into illegal channels from the stockpile of legal, grandfathered assault weapons manufactured prior to the implementation of Title XI. Production of assault weapons increased considerably in 1994, and prices of these weapons fell to pre-ban levels in late 1995 and early 1996 (see Chapter 3). Over the next few years, it is possible that more, rather than fewer, of the grandfathered weapons will make their way into the hands of criminals through secondary markets.

On the other hand, the increase for 1996 may be an artifact of recent BATF initiatives to increase trace requests from local police. The rebound in assault weapon traces might also reflect an as yet undocumented rebound in gun crime in 1996. Unfortunately, we cannot disentangle these possibilities with data available at this time, and it is not yet clear whether the 1995 decrease in our indicator of assault weapon use was temporary or permanent.⁵⁶

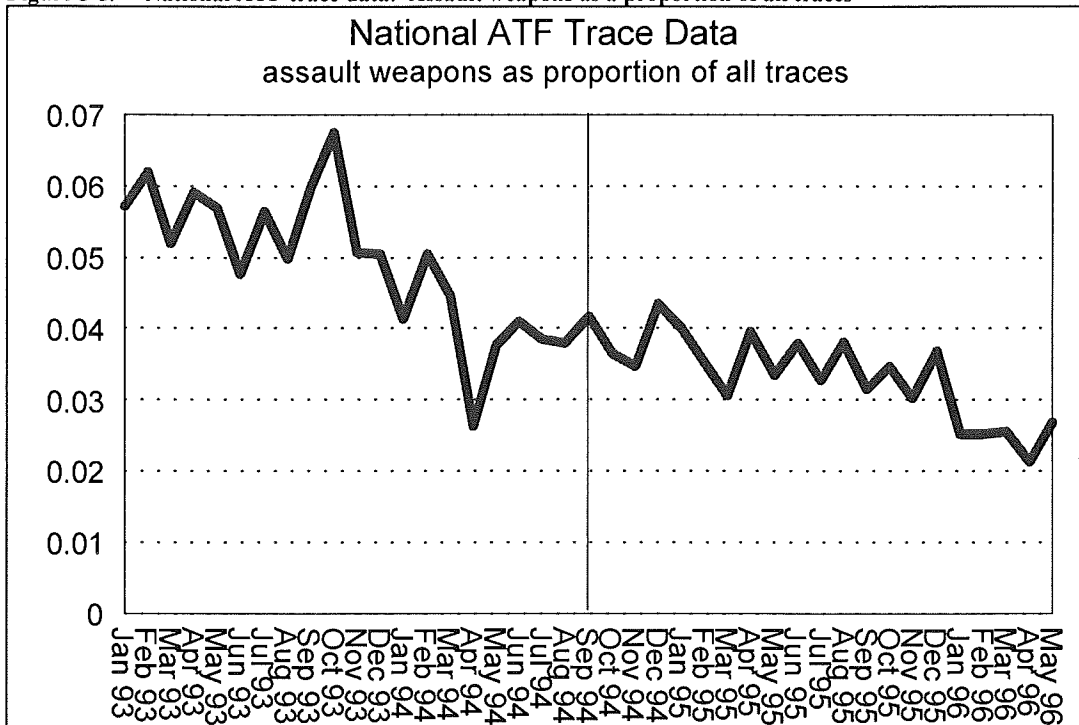
5.1.7. The Prevalence of Assault Weapons Among Crime Guns

As is shown in Figure 5-5, assault weapon traces decreased as a proportion of all traces throughout the entire study period. While Title XI may have contributed to this trend, it is apparent that the trend began before implementation of Title XI, and, to a large degree, must reflect the disproportionate growth in trace requests for non-assault weapons rather than a continual decline in the prevalence of assault weapons.

M10's, and M11's from the ban states rose 1% from 1993 to 1994, decreased 6% from 1994 to 1995, and remained steady from 1995 to early 1996. The 6% drop in 1995 seems to confirm that assault weapon trace requests dropped in the ban states after implementation of the federal law but by smaller percentages than assault weapon trace requests nationwide.

⁵⁶ In light of the substantial instrumentation problems with these data and the threat which such problems pose to quasi-experimental time series designs (Campbell and Stanley 1963, pp.40-41), we elected not to pursue more sophisticated methods, such as an interrupted time series analysis, with these data.

Figure 5-5. National ATF trace data: Assault weapons as a proportion of all traces



Despite this problem with interpreting trends in the prevalence of assault weapon traces, the 1996 trace figures arguably provide the best available estimate of the prevalence of assault weapons among crime guns. Firearm tracing should now be more complete and less biased than at any time previously. For January through May of 1996, assault weapons accounted for 3 percent of all trace requests. Our group of select domestic assault weapons represented 2.5 percent of all traces. Traces for the select assault weapon group accounted for 2.6 percent of traces for guns associated with violent crimes and 3.5 percent of traces for guns associated with drug crimes. This is consistent with previous research indicating that assault weapons are more likely to be associated with drug crimes than with violent crime (Cox Newspapers 1989; Kleck 1991). At the same time, these numbers reinforce the conclusion that assault weapons are rare among crime guns.

5.1.8. Crime Types Associated with Assault Weapons

Table 5-8 displays the types of offenses with which assault weapons were associated. For each year, approximately two-thirds of assault weapons were tied to weapons offenses. Drug offenses were the next most common, accounting for 16 to 18 percent of assault weapon traces for each year. Violent offenses ranged from 13 to 17 percent of assault weapon traces. For comparison, the percentage of total traces associated with drug offenses varied between 12 and 13 percent during this period. Violent offenses accounted for 12 to 16 percent of total traces. Hence, assault weapons were more likely to be associated with drug offenses than were other traces.

Table 5-8. Assault weapon trace requests to BATF by crime type

Offense type*	1993 (N=3,725)	1994 (N=4,048)	1995 (N=3,226)	1996 (Jan-May) (N=1,500)
Murder/Homicide	.097	.069	.063	.072
Aggravated assaults	.048	.040	.051	.076
Robbery	.027	.018	.020	.022
Drug abuse violations	.167	.182	.161	.174
Weapons; carrying, possessing, etc.	.647	.665	.661	.581
Other offenses	.015	.025	.046	.075

*Offense type could not be determined for 1 percent of assault weapon traces in 1993, 1994, and 1995. Offense type could not be determined for 7 percent of assault weapon traces in 1996.

5.2. ASSAULT WEAPON UTILIZATION: LOCAL POLICE DATA SOURCES

5.2.1. *Introduction and Data Collection Effort.*

Because of our concerns over the validity of national BATF trace data for measuring the distribution of guns used in crime, we attempted to collect and analyze data from a number of police departments around the country. We sought to acquire data on all firearms confiscated in these jurisdictions, rather than just firearms for which BATF trace requests were made. Analyzing all guns confiscated in a jurisdiction provides a more complete and less biased picture of weapons used in crime than does analysis of guns selected for BATF traces. The disadvantage of using local agency gun seizure data is that trends in any given jurisdiction may not be indicative of those elsewhere in the nation. Of course, local agency data are still subject to general limitations regarding police gun confiscation data which were raised in the last section (i.e., not all guns confiscated by police are used in violent or drug-related crime and not all guns used in crime are seized by police).

Unfortunately, the attempt to collect local gun data fell short of our expectations. Our intention was to collect data from cities in states both with and without their own assault weapon bans. Further, we concentrated our data collection effort on cities in states which had relatively high rates of gun violence. To this end, we contacted several police departments around the country. However, most of the departments that we contacted either did not have their property records computerized or had only computerized their records a few months prior to the implementation of the Crime Act, thus precluding the collection of meaningful pre-ban baseline data.⁵⁷

Ultimately, we obtained data from two cities, St. Louis and Boston, neither of which is subject to a State assault weapon ban. From St. Louis, we acquired a database on all firearms confiscated by police from 1992 through 1995 (N=13,863). Our Boston data consist of monthly counts of various categories of firearms confiscated by Boston police from 1992 through August of 1996 (total confiscations numbered 3,840 for this period). For both locations, we examined trends in confiscations of our select domestic assault weapon group (i.e., the AR15, Intratec, and SWD families and selected Calico and Feather models). In addition, we approximated trends in confiscations of semiautomatic handguns capable of accepting large-capacity magazines by analyzing confiscations of selected Glock and Ruger pistols.

⁵⁷ Time, cost, and personnel considerations limited our ability to implement on-site data collection efforts.

The patterns we discovered were relatively consistent in both cities. Assault weapon confiscations were rare both before and after the ban. In both cities, the data were suggestive of a decrease in assault weapon confiscations after the ban. As a fraction of all confiscated guns, assault weapons decreased roughly 25% in these cities. Thus, these data sources provide some confirmation of our inferences regarding assault weapon trends from the national trace data. Further, we were able to examine the crimes with which assault weapons were associated in St. Louis and found that, as in the national data, assault weapons are overrepresented in drug offenses but not in violent offenses. Finally, confiscations of non-banned semiautomatic handguns capable of accepting large-capacity magazines increased or remained stable after the ban as a fraction of all confiscated handguns in both St. Louis and Boston.⁵⁸

5.2.2. Assault Weapons in St. Louis and Boston

St. Louis police confiscated 180 weapons in the select assault weapon group between 1992 and 1995.⁵⁹ The vast majority of these weapons were from the Intratec and SWD assault pistol groups. Average monthly confiscations of assault weapons dropped from 4 to 3 after the ban's implementation (see Table 5-9). Total gun seizures also dropped during the post-ban months. In order to control for the general downward trend in gun confiscations, we examined assault weapons as a fraction of all confiscated guns. Prior to the ban, assault weapons accounted for about 1.4% of all guns. After the ban they decreased to 1% of confiscated guns, a relative decrease of approximately 29%. A contingency table chi-square test indicated that this was a statistically meaningful drop ($p=.05$). In addition, assault weapons represented a lower fraction of all guns confiscated during 1995 (.009) than

Table 5-9. Summary data on guns confiscated in St. Louis, January 1992 – December 1995

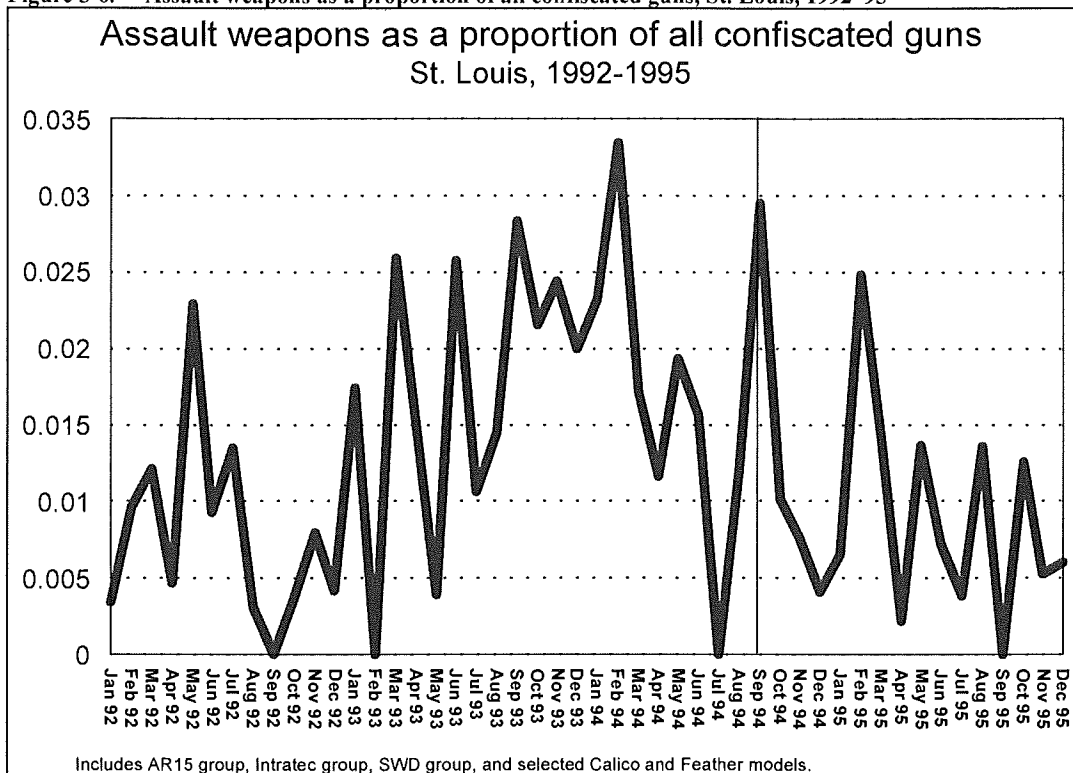
	<i>Pre-ban (Jan. '92–Aug. '94)</i>	<i>Post-ban (Sept. '94–Dec. '95)</i>	<i>Change</i>
<u>Total guns confiscated</u>			
Total	9,372	4,491	
Monthly mean	293	281	-4%
<u>Assault guns</u>			
Total	134	46	
Monthly mean	4	3	-25%
Proportion of confiscated guns	.014	.010	-29%
<u>Large-capacity handguns (Ruger and Glock)</u>			
Total	118	93	
Monthly mean	4	6	+50%
Proportion of all handguns	.018	.031	+72%

⁵⁸ As stated above, analyses of local data sources have the limitation that they are not necessarily indicative of those elsewhere in the nation. We cannot address the various local conditions which may have impacted recent gun trends in the selected cities. However, we should note that youth gun violence initiatives sponsored by the National Institute of Justice have been ongoing in each city during recent years. It is not clear at this time what impact, if any, these initiatives have had upon the gun trends that are the subjects of our investigation.

⁵⁹ The St. Louis data contain a few SWD streetsweeper shotguns in addition to SWD assault pistols.

during 1993 (.018), the last full calendar year prior to the passage and implementation of the ban. A monthly trend line for assault weapons as a fraction of all guns is shown in Figure 5-6.^{60 61}

Figure 5-6. Assault weapons as a proportion of all confiscated guns, St. Louis, 1992–95



A similar picture emerged from Boston. From 1992 through August of 1996, Boston police seized only 74 of these weapons. As in St. Louis, the vast majority were Intratec and SWD assault pistols. Table 5-10 shows

⁶⁰ We also estimated interrupted time series models to test the post intervention change in the monthly trend for the assault weapons proportion measure. As in the NCIC analysis reported in Section 4.3 (p.50) we considered various models of impact. An abrupt, temporary impact model might seem appropriate, for example, based on the price trends presented in Section 4.1 (p.24). Both abrupt, permanent and gradual, permanent impacts are also plausible and seem to better match the pattern displayed in the St. Louis data. At any rate, these analyses failed to confirm that there was a significant change in assault weapons as a fraction of all guns. (The best fitting model was an abrupt, permanent impact model with an autoregressive parameter at the third lag).

However, we have emphasized the chi-square proportions test because the monthly series is rather short (N=48) for interrupted time series analysis (McCleary and Hay 1980) and because the monthly trend line provides no strong indication that the post ban drop was due to a preexisting trend.

⁶¹ Average monthly confiscations of long guns (rifles and shotguns) increased somewhat from 88 in the pre-ban months to 92 after the ban. As a proportion of all confiscated guns, long guns rose from .299 before the ban to .326 after the ban. Thus, the decrease in assault weapons may have been offset by an increase in the use of long guns. However, we did not have the opportunity to investigate the circumstances under which long guns were seized. The post-ban increase could have been due, for example, to an increase in the proportion of confiscated guns turned in voluntarily by citizens. In addition, the ramifications of a long gun substitution effect are somewhat unclear. If, for instance, the substituted long guns were .22 caliber, rimfire (i.e., low velocity) rifles (and in addition did not accept large-capacity magazines), then a substitution effect would be less likely to have demonstrably negative consequences. If, on the other hand, offenders substituted shotguns for assault weapons, there could be negative consequences for gun violence mortality.

the respective numbers of total firearms and assault weapons seized before and after the Crime Act. The average number of assault weapons seized per month dropped from approximately 2 before the ban to about 1 after the ban, but total gun seizures were also falling. As a fraction of all guns, assault weapons decreased from .021 before the ban to .016 after the ban, a relative decrease of about 24%. A contingency table chi-square test indicated that this change was not statistically meaningful ($p=.38$), but the numbers provide some weak indication that assault weapons were dropping at a faster rate than were other guns. Quarterly trends for the proportions variable shown in Figure 5-7 suggest that assault weapons were relatively high as a proportion of confiscated guns during the quarters immediately following the ban, but then dropped off notably starting in the latter part of 1995.^{62 63}

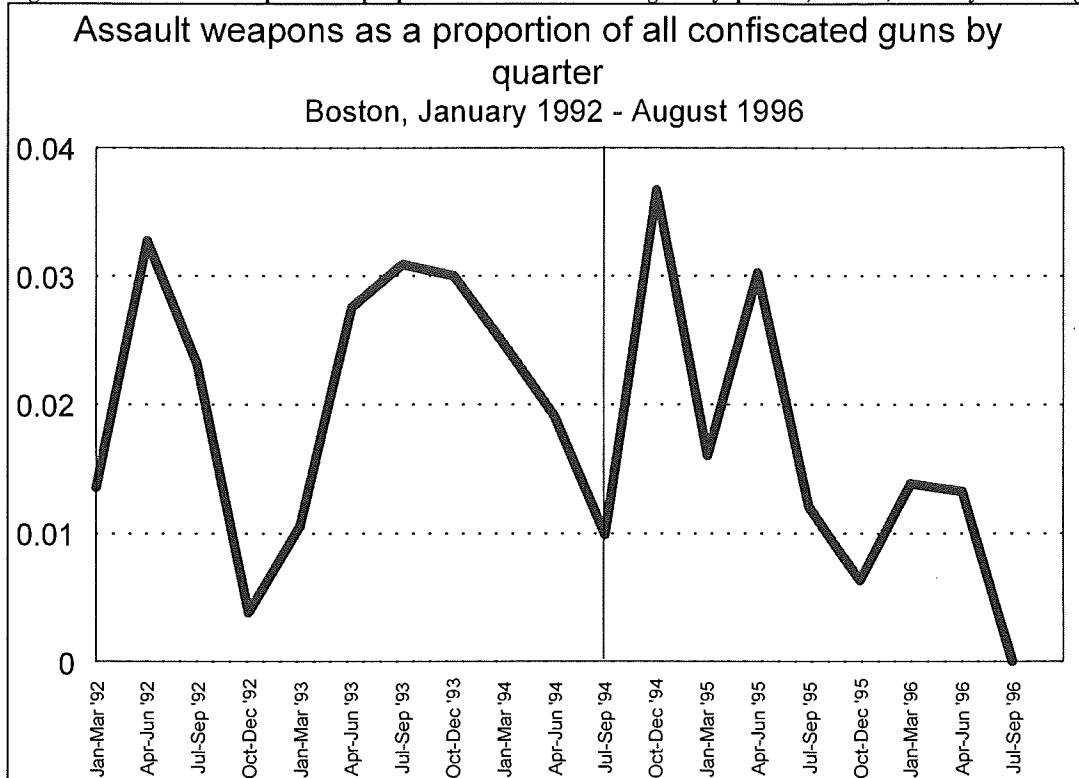
Table 5-10. Summary data on guns confiscated in Boston, January 1992 – August 1996

	<i>Pre-ban Jan. '92–Aug. '94)</i>	<i>Post-ban (Sept. '94–Aug. '96)</i>	<i>Change</i>
<u>Total guns confiscated</u>			
Total	2,567	1,273	
Monthly mean	80	53	-34%
<u>Assault guns</u>			
Total	53	21	
Monthly mean	2	1	-50%
Proportion of confiscated guns	.021	.016	-24%
<u>Large-capacity handguns (Ruger and Glock)</u>			
Total	28	17	
Monthly mean	1	1	0%
Proportion of all handguns	.015	.016	+7%

⁶² We did not estimate time series models with the Boston data due to the rarity with which assault weapons were confiscated during the study period.

⁶³ In other analyses, we found that long guns decreased as a proportion of gun confiscations throughout the period, suggesting that there was not substitution of long guns for assault weapons in Boston.

Figure 5-7. Assault weapons as a proportion of all confiscated guns by quarter, Boston, January 1992–August 1996



5.2.3. Assault Weapons and Crime

Using the data from St. Louis, we were able to investigate the types of crimes with which assault weapons were associated. Approximately 12% of the assault weapons seized in St. Louis during the study period were associated with the violent crimes of homicide, aggravated assault, and robbery. Overall, about 12% of all confiscated guns were associated with these crimes. Hence, assault weapons do not appear to be used disproportionately in violent crime relative to other guns in these data, a finding consistent with our conclusions about national BATF trace data (see previous section). Overall, assault weapons accounted for about 1% of guns associated with homicides, aggravated assaults, and robberies.

However, 27% of the assault weapons seized in St. Louis were associated with drug offenses. This figure is notably higher than the 17% of all confiscated guns associated with drug charges.⁶⁴ This finding is also consistent with our national trace data analysis showing assault weapons to be more heavily represented among drug offenders relative to other firearms. Nevertheless, only 2% of guns associated with drug crimes were assault weapons.

5.2.4. Unbanned Handguns Capable of Accepting Large-capacity Magazines

We could not directly measure criminal use of pre-ban large-capacity magazines. Therefore, in order to approximate pre-ban and post-ban trends, we examined confiscations of a number of Glock and Ruger handgun models which can accept large-capacity magazines. These guns are not banned by the Crime Act, but they can

⁶⁴ Some of the guns associated with drug charges were also tied to weapons charges.

accept banned large-capacity magazines. We selected Glock and Ruger models because they are relatively common in BATF trace data (BATF 1995a, p.35). A caveat to the analysis is that we were not able to obtain data on the magazines recovered with these guns. Consequently, we cannot say whether Glock and Ruger pistols confiscated after the ban were equipped with pre-ban large-capacity magazines. It is also possible that trends corresponding to Glocks and Rugers are not indicative of trends for other unbanned, large-capacity handguns.

As was discussed in Chapter 4 (see the NCIC stolen gun analysis), the hypothesized effects of the ban on this group of weapons is ambiguous. If large-capacity handgun magazines have become less available since the ban as intended (indeed, recall that the magazine price analysis in Chapter 4 indicated that prices of large-capacity magazines for Glock handguns remained at high levels through our last measurement period in the spring of 1996), one might hypothesize that offenders would find large-capacity handguns like Glocks and Rugers to be less desirable, particularly in light of their high prices relative to other handguns. If, on the other hand, large-capacity magazines for these unbanned handguns are still widely available, offenders seeking high-quality rapid-fire capability might substitute them for the banned assault weapons.

With the St. Louis data, we investigated trends in confiscations of all Glock handguns and Ruger P85 and P89 models. Police confiscated 118 of these handguns during the pre-ban months and 93 during the post-ban months (see Table 5-9). The monthly average increased from approximately 4 in the pre-ban months to 6 in the post-ban period. As a fraction of all confiscated handguns, moreover, the Glock and Ruger models rose from .018 before the ban to .031 after the ban, a relative increase of 72%. (These handguns also increased from .037 to .065 — a 76% change — as a fraction of all semiautomatic handguns; thus, the upward trend for these guns was not simply a result of a general increase in the use of semiautomatic handguns). However, Figure 5-8 shows that these handguns were trending upward as a fraction of all handguns well before the ban was implemented. (For this reason, we did not conduct contingency table chi-square tests for the pre-ban and post-ban proportions). Visually, it appears that the ban may have caused this trend to level off. Nevertheless, an interrupted time series analysis failed to provide evidence of a ban effect on the proportion of handguns which were unbanned large-capacity semiautomatics.⁶⁵

⁶⁵ In preliminary analysis, we found that the noise component of this time series was substantially affected by a modest outlier value at the last data point. We were able to estimate a better fitting model with more stable parameters with the outlier removed. After removing this data point (N=47), the final noise component consisted of a moving average parameter at the third lag, autoregressive parameters at lags two and four, and a seasonal autoregressive parameter at the twelfth lag. As in the time series analyses reported elsewhere, we examined a variety of impact models. The most appropriate impact model for the data was an abrupt, permanent impact. The impact parameter was positive (.006) but statistically insignificant (t value=1.13).

Figure 5-8. Unbanned large-capacity handguns as a proportion of all confiscated handguns, St. Louis, 1992-95

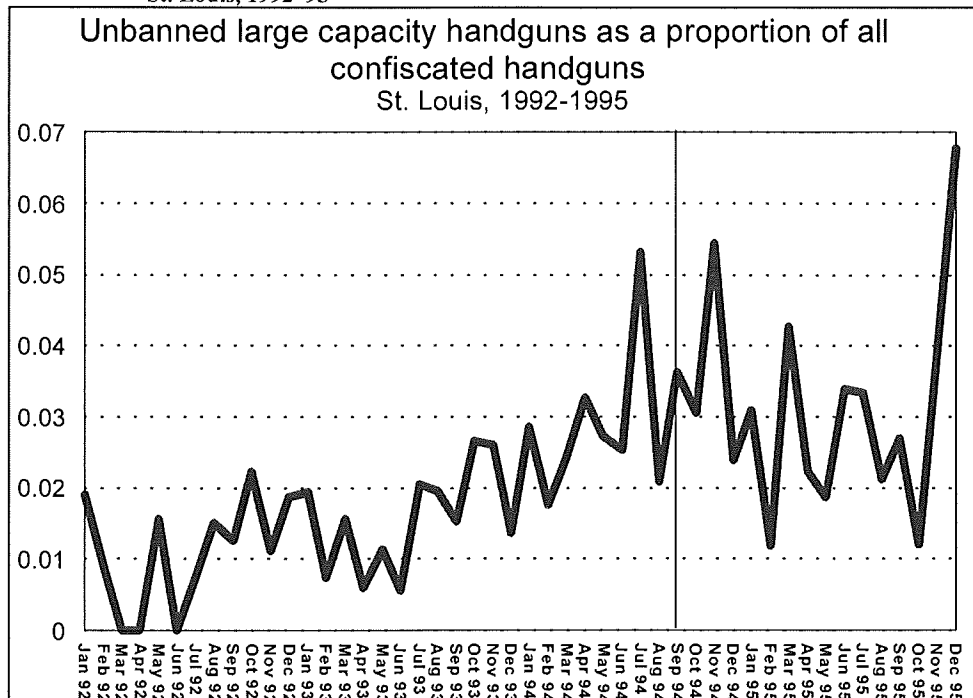
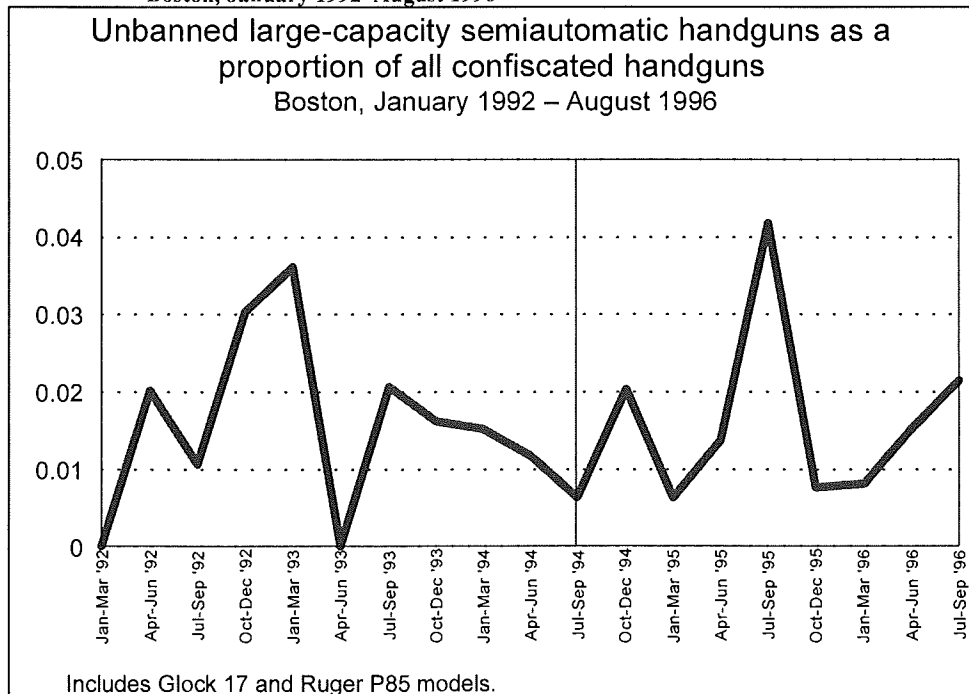


Figure 5-9. Unbanned large-capacity semiautomatic handguns as a proportion of all confiscated handguns, Boston, January 1992-August 1996



The data we acquired from Boston included counts for two specific unbanned, large-capacity handgun models, the Glock 17 and Ruger P85. Police in Boston confiscated 28 of these guns from January 1992 through August of 1994 and 17 from September 1994 through August 1996 (see Table 5-10). As a proportion of all

confiscated handguns, these models increased slightly from .015 before the ban to .016 after the ban. However, a contingency table chi-square test indicated that this difference was not statistically meaningful ($p=.83$).⁶⁶ The quarterly trend for the proportion measure is displayed in Figure 5-8. The pattern does not suggest any meaningful trends over time.⁶⁷

In sum, the data from St. Louis and Boston do not warrant any strong conclusions one way or the other with respect to the use of large-capacity magazines, as crudely approximated by confiscations of a few relatively popular unbanned handgun models which accept such magazines. The ban on large-capacity magazines does not seem to have discouraged the use of these guns. At the same time, the assault weapon ban has not caused a clear substitution of these weapons for the banned large-capacity firearms.

⁶⁶ We did not attempt any time series analyses with these data due to the rarity with which these guns were confiscated in Boston.

⁶⁷ A caveat to this analysis is that the Ruger P85 was discontinued in 1992 and replaced with a new version called the P89 (Fjestad 1996, p.996). The P89 was one of the ten most frequently traced guns nationally in 1994 (BATF 1995a, p.35). Unfortunately, we did not acquire data on confiscations of P89's in Boston (the P89 was included in our St. Louis figures). Had we been able to examine P89's in Boston, we may have found a greater increase in the use of unbanned, large-capacity handguns after the ban. Accordingly, the most prudent conclusion from the Boston data may be that there are no signs of a decrease in the use of unbanned, large-capacity handguns.

6. POTENTIAL CONSEQUENCES OF ASSAULT WEAPON USE

The Congressional mandate for this study required us to study how the Subtitle A bans on assault weapons and large-capacity magazines affected two consequences of using those weapons: specifically, violent and drug-related crime. Among violent crimes, we devoted most attention to gun murders, because it is the best measured. However, the total gun murder rate is an insensitive indicator of ban effects, because only a fraction of gun murders involve large-capacity magazines, and only about 25 percent of those murders involve the banned assault weapons. Therefore, we carried out supplementary analyses of certain categories of gun murders that more commonly involve the banned guns and magazines: events that involve multiple gun murder victims, gun murders involving multiple wounds, and killings of law enforcement officers. Unlike the BATF trace data analyzed in Chapter 5, available data sources did not permit us to categorize these events on the basis of relationship to drugs.

6.1. TRENDS IN STATE-LEVEL GUN HOMICIDE RATES

To estimate the impact of the Subtitle A bans on gun homicide rates, we estimated multivariate regression models using data from all states with reasonably consistent Supplementary Homicide Reporting over the sixteen-year period 1980 through 1995. We closely followed the approach used by Marvell and Moody (1995) to analyze the impact of enhanced prison sentences for felony gun use. Marvell and Moody generously provided their database, which we updated to cover the post-ban period.

Any effort to estimate how the ban affected the gun murder rate must confront a fundamental problem, that the maximum achievable preventive effect of the ban is almost certainly too small to detect statistically. Although our statistical model succeeded in explaining 92 percent of the variation in State murder rates over the observation period, a post hoc power analysis revealed that it lacks the statistical power to detect a preventive effect smaller than about 17 percent of all gun murders under conventional standards of statistical reliability.⁶⁸ A reduction that large would amount to preventing at least 2.4 murders for every one committed with an assault weapon before the ban, or, alternatively, preventing two-thirds of all gun murders committed with large-capacity magazines — obviously impossible feats given the availability of substitutes for the banned weapons.⁶⁹ While there are substantially smaller reductions that would benefit society by more than the cost of the ban, they would be impossible to detect in a statistical sense, at least until the U.S. accumulates more years of post-ban data.

Within this overall constraint, our strategy was to begin with a “first-approximation” estimate of the ban effect on murders, then to produce a series of re-estimates intended to rule out alternative explanations of the estimated effect. Based on these efforts, our best estimate of the short-run effect is that the ban produced a 6.7 percent reduction in gun murders in 1995. However, we caution that for the reasons just explained, we cannot statistically rule out the possibility that no effect occurred. Also, we expect any short-run 1995 preventive effect on gun murders to ebb, then flow, in future years, as the stock of grandfathered assault weapons makes its way to offenders patronizing secondary markets, while the stock of large-capacity magazines dwindles over time.

The following sections first describe our data set, then explain our analyses.

⁶⁸ By conventional standards, we mean statistical power of 0.8 to detect a change, with .05 probability of a Type 1 error.

⁶⁹ Moreover, no evidence exists on the lethality effect of limiting magazine capacity.

6.1.1. Data

Data for gun homicides are available for the entire 1980–95 period of the study. We obtained data from “Crime in the United States” Uniform Crime Reports for the years 1994 and 1995, and from Marvell and Moody for the years 1980 through 1993. (Marvell and Moody used “Crime in the United States” Uniform Crime Reports for years 1991 to 1993, and unpublished data from the FBI for the earlier years.)

Since the fraction of homicides for which weapon use was reported by states varied from state to state and even year to year over the period, it was necessary to adjust and filter the data. To address this reporting problem, we adopted Marvell and Moody’s (1995) approach to compile what they call a “usable” data series, consisting of observations (each year for each state) for which homicide weapon-use reporting is at least 75 percent complete (See Marvell and Moody, 1995).⁷⁰ On this basis we had to eliminate a certain portion of the gun homicide data (see Table 6-2). For each observation that met this requirement, the number of gun homicides was multiplied by a correction factor defined as the ratio of the FBI estimate for the total number of reported homicides in the state to the number of homicides for which the state reported weapon data.

We used Marvell and Moody’s rule of retaining states in the analysis only if they had data for seven or more consecutive years⁷¹ and added the additional requirement that states must have had gun homicide data for the post-intervention year, 1995. (This additional requirement caused us to eliminate four states entirely from the analysis: Delaware, Kansas, Nebraska, and New Mexico.) In addition, Marvell and Moody made allowances for otherwise adequate seven-year series that contained a single year of data that did not meet the above requirements. Provided the reporting rate was at least 50 percent and the corrected figure did not “depart greatly”⁷² from surrounding years, the state was not dropped from the analysis. (These are: Louisiana 1987, South Carolina 1991, Tennessee 1991, and Wyoming 1982.) A further allowance was, that if the reporting rate was below 50 percent, or if the adjusted number did depart from surrounding years, the percentage of gun homicides was revised as the average of that for the four surrounding years. (These are: Alaska 1984, Arizona 1989, Idaho 1991, Iowa, 1987, Kentucky 1983, Maryland 1987, Minnesota 1990, North Dakota 1991, Texas 1982, and Vermont, 1993.) In the end, “usable data” remained for 42 states for the analysis (see Table 6-2).

To allow us to account for intervening influences on gun homicide rates, we gathered data for several time-varying control variables that proved statistically significant in Marvell and Moody’s analysis. Two economic variables (state per capita personal income and state employment rate) and two age structure variables were included. State per capita personal income was available from the Bureau of Economic Analysis for all years; we obtained data for 1991–95 directly from the Department of Commerce, while Marvell and Moody provided us the data for earlier years. State employment rates were available from the Bureau of Labor Statistics, Department of Labor for 1994 and 1995 and from the Bureau of Economic Analysis (via Marvell and Moody) for year 1980–93. Data on the age structures of state populations were available from the Bureau of the Census

⁷⁰ An alternative approach would have been to use mortality data available from the National Center for Health Statistics through 1992, then to append NCR data for the subsequent years. We were concerned about possible artifactual effects of combining medical examiners’ and police data into a single time series, but recommend this approach for future replication.

⁷¹ However, we departed from Marvell and Moody by including observations for years that followed a gap in a series of “usable” data and were therefore not part of a seven-year string. The state was treated as a missing observation during the gap.

⁷² According to Marvell and Moody, a single year of data does not “depart greatly” from surrounding years if either the percentage of gun murders falls within the percentages for the prior and following years, or if it is within three percentage points of the average of the four closest years.

unadjusted estimates of total resident population of each state as of July 1 of each year. (We obtained these data directly for years 1994–95, while Marvell and Moody generously provided us with the data for earlier years).

6.1.2. Research Design

As a first approximation for estimating effects of the assault weapon ban, we specified Model 1 as loglinear in state gun homicide rate (adjusted as described above) and a series of regressors.⁷³ The regressors were:

- A third-degree polynomial trend in the logarithm of time;
- A dummy variable for each state;
- State per-capita income and employment rates for each year (logged);
- Proportions of the population aged 15-17 and 18-24 (logged);
- D95, a 1995 dummy variable, which represented ban effects in this first-approximation model; and
- PREBAN, a dummy variable set to represent states with assault weapon bans during their pre-ban years.

We represented time with the polynomial trend instead of a series of year dummies for two reasons. First, by reducing the number of time parameters to estimate from 15 to 3, we improved statistical efficiency. Second, during sensitivity analyses after Model 1 was fit, we discovered that it produced more conservative estimates of ban effects than a model using time dummies (that model implicitly compares 1995 levels to 1994 levels instead of to the projected trend for 1995), because the estimated trend began decreasing at an increasing rate in the most recent years. We included the economic and demographic explanatory variables because Marvell and Moody (1995) had found them to be significant influences on state-level homicide rates using the same data set. PREBAN was included so that for states with their own assault weapon bans, the D95 coefficient would reflect differences between 1995 and only those earlier years in which the state's gun ban was in place.

As shown in Table 6-1, Model 1 estimated a 9.0 percent reduction in gun murder rates in the year following the Crime Act, based on a statistically significant estimated coefficient for the 1995 dummy variable.⁷⁴ This estimated coefficient, of course, reflects the combined effect of a package of interventions that occurred nearly simultaneously with the Subtitle A bans on assault weapons and large-capacity magazines. These include: the Subtitle B ban on juvenile handgun possession and the new Subtitle C FFL application and reporting requirements, other Crime Act provisions, the Brady Act, and a variety of State and local initiatives.

We reasoned that if the Model 1 estimate truly reflected assault weapon ban effects, then by disaggregating the states we would find a larger reduction in gun murders in the states without pre-existing assault weapon bans than in the four states with such bans prior to 1994 (California, Connecticut, Hawaii, and New Jersey). To test this hypothesis, we estimated Model 2, in which D95 was replaced by two interaction terms that indicated whether or not a State ban was in place in 1995. As shown in Table 6-1, disaggregating the states using

⁷³ We weighted the regression by state population to adjust for heteroskedasticity and to avoid giving undue weight to small states.

⁷⁴ In our sensitivity analyses of models in which the polynomial time trend was replaced with year dummies, the corresponding Model 1 estimated reduction was 11.2 percent, and the estimated coefficient was statistically significant at the .05 level. Similarly, for alternatives to Models 2-4, the estimated ban effects were 2 to 3 percent larger than those shown in Table 6-1 and were statistically significant at the .05 level.

Model 2 did produce a larger estimated ban effect, a statistically significant reduction of 10.3 percent in the states without their own bans.

Table 6-1. Estimated Coefficients and Changes in Gun Murder Rates from Title XI Interventions

<i>Model</i>	<i>Subgroup for 1995 impact</i>	<i>Coefficient</i>	<i>Percent change</i>	<i>test statistic</i>
1	All Usable (N = 42)	-0.094 +	-9.0%	-1.67
2	States without AW ban (N = 38)	-0.108 +	-10.3	-1.88
	States with AW ban (N = 4)	-0.001	-0.1	-0.01
3	States without AW or JW ban (N = 22)	-0.102	-9.7	-1.56
	States without AW, with JW ban (N = 16)	-0.115	-10.9	-1.64
	States with AW, without JW ban (N = 2)	-0.076	-7.3	-0.41
	States with AW and JW ban (N = 2)	0.044	4.5	0.39
4	California and New York excluded: States without AW or JW ban (N = 22)	-0.103	-9.8	-1.58
	States without AW, with JW ban (N = 15)	-0.069	-6.7	-0.95
	States with AW, without JW ban (N = 2)	-0.079	-7.6	-0.43
	States with AW and JW ban (N = 1)	0.056	5.8	0.30

+ Statistically significant at 10-percent level

To isolate the hypothesized Subtitle A bans from the Subtitle B ban on juvenile handgun possession, we estimated Model 3, in which D95 was used in four interaction terms with dummy variables indicating whether a state had its own assault weapon ban, juvenile handgun possession ban, both, or neither at the time of the Crime Act.⁷⁵ We also added a term, PREJBAN, which represented states with juvenile bans during their pre-ban years, for reasons analogous to the inclusion of PREBAN. The estimates of most interest are those for the 38 states without their own assault weapon bans. Among those, the estimated ban effect was slightly larger in states that

⁷⁵ A more restrictive alternative to Model 3 is based on the assumption that the impacts for states without assault weapon bans and the impacts for states without juvenile handgun possession bans are additive. A model estimate under this assumption yielded very similar point estimates and slightly smaller standard errors than Model 3. We preferred the more flexible Model 3 for two reasons. First, the less restrictive model helps us interpret the estimates clearly in light of some of the legislative changes that occurred in late 1994. Model 3 allows the reader to assess the consequences of the assault weapon ban under each set of conditions that existed at the time the ban was implemented. Second, because a juvenile handgun possession ban a fortiori prohibits the most crime-prone segment of the population from possessing the assault weapons most widely used in crime, we hesitated to impose an additivity assumption.

already had a juvenile handgun possession ban than in those that did not. We interpret the former estimate as a better estimate of the assault weapon ban effect because the State juvenile ban attenuates any confounding effects of the Federal juvenile ban. In any event, however, the estimates are not widely different, and they imply a reduction in the 10 to 11 percent range.

We were also concerned that our estimates might be distorted by the effects of relevant State and local initiatives. Therefore, we reestimated Model 3 excluding 1995 data for California and New York. We filtered out these two because combined they account for nearly one-fourth of all U.S. murders and because they were experiencing potentially relevant local interventions at the time of the ban: California's "three strikes" law and New York City's "Bratton era" in policing, coming on the heels of several years of aggressive order maintenance in that city's subway system.

The estimation results with California and New York omitted appear as Model 4 in Table 6-1. While dropping these states leaves three of the estimated coefficients largely unaffected, it has a substantial effect on New York's category, states with a juvenile handgun possession ban but no assault weapon ban. The estimated ban effect in this category drops from a nearly significant 10.9 percent reduction to a clearly insignificant 6.7 percent reduction, which we take as our best estimate.

To conclude our study of state-level gun homicide rates, we performed an auxiliary analysis. We were concerned that our Model 4 estimate of 1995 ban effects could be biased by failure to control for the additional requirements on FFL applicants that were imposed administratively by BATF in early 1994 and included statutorily in Subtitle C of Title XI, which took effect simultaneously with the assault weapon ban. These requirements were intended to discourage new and renewal applications by scofflaw dealers who planned to sell guns primarily to ineligible purchasers presumed to be disproportionately criminal. Indeed, they succeeded in decreasing the number of FFLs by some 37 percent during 1994 and 1995, from about 280,000 to about 180,000 (U.S. Department of Treasury, 1997). We were concerned that if the FFLs who left the formal market during that period were disproportionately large suppliers of guns to criminals, then failure to control for their disappearance could cause us to impute any resulting decrease in gun murder rates mistakenly to the Subtitle A ban.

Unfortunately, we could use only the 1989–95 subset of our database to test this possibility, because we could not obtain state-level FFL counts for years before 1989. Therefore, we modified Model 4 by replacing the time trend polynomial with year dummies. We then estimated the modified Model 4 both with and without a logged FFL count and an interaction term between the logged count and a 1994–95 dummy variable. Although the estimated coefficient on the interaction term was significantly negative, the estimated 1995 ban effect was essentially unchanged.

Table 6-2. Years for which gun-related homicide data are not available

	<i>Gun homicide data 1980–95</i>
Alabama	✓
Alaska	✓
Arizona	✓
Arkansas	✓
California	✓
Colorado	✓
Connecticut	✓

	<i>Gun homicide data 1980-95</i>
Delaware	No usable data
District of Columbia	No usable data
Florida	1988-91
Georgia	1980-81
Hawaii	✓
Idaho	✓
Illinois	No usable data
Indiana	1989-1991
Iowa	1991-1993
Kansas	No usable data
Kentucky	1987-89; 1994
Louisiana	1990-91
Maine	1990-92
Maryland	✓
Massachusetts	1988-90
Michigan	✓
Minnesota	✓
Mississippi	No usable data
Missouri	✓
Montana	No usable data
Nebraska	No usable data
Nevada	✓
New Hampshire	✓
New Jersey	✓
New Mexico	No usable data
New York	✓
North Carolina	✓
North Dakota	1994
Ohio	✓
Oklahoma	✓
Oregon	✓

	<i>Gun homicide data 1980–95</i>
Pennsylvania	✓
Rhode Island	✓
South Carolina	✓
South Dakota	No usable data
Tennessee	✓
Texas	✓
Utah	✓
Vermont	1980-83
Virginia	✓
Washington	✓
West Virginia	✓
Wisconsin	✓
Wyoming	✓

✓ indicates usable data are available for all years (1980–95) in the period

6.2. ASSAULT WEAPONS, LARGE-CAPACITY MAGAZINES, AND MULTIPLE VICTIM/MASS MURDERS

6.2.1. Trends in Multiple-Victim Gun Homicides

The use of assault weapons and other firearms with large-capacity magazines is hypothesized to facilitate a greater number of shots fired per incident, thus increasing the probability that one or more victims are hit in any given gun attack. Accordingly, one might expect there to be on average a higher number of victims per gun homicide incident for cases involving assault weapons or other firearms with large-capacity magazines. To the extent that the Crime Act brought about a permanent or temporary decrease in the use of these weapons (a result tentatively but not conclusively demonstrated for assault weapons in Chapter 5), we can hypothesize that the number of victims per gun homicide incident may have also declined.

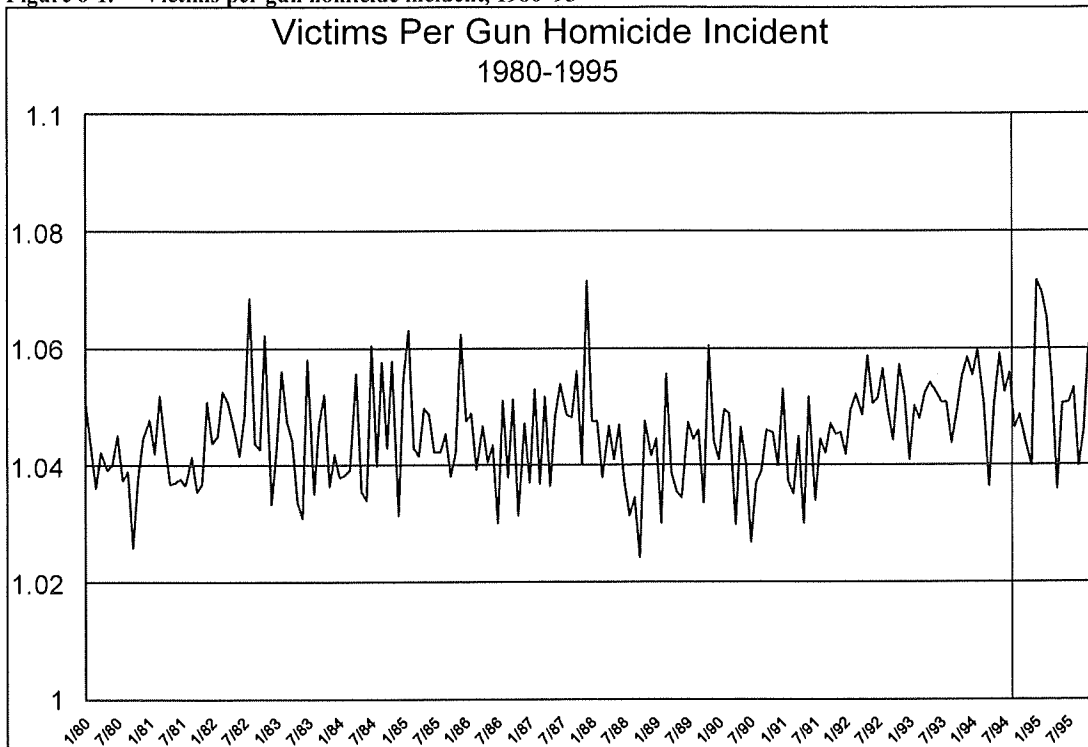
We investigated this hypothesis using data from the Federal Bureau of Investigation's Supplemental Homicide Reports (SHR) for the years 1980 through 1995. We constructed a monthly database containing the number of gun homicide incidents and victims throughout the nation.⁷⁶ The SHR does not contain information

⁷⁶ The SHR is compiled annually by the FBI based on homicide incident reports submitted voluntarily by law enforcement agencies throughout the country (see the FBI's *Uniform Crime Reports* for more information about reporting to the Uniform Crime Reports and the Supplemental Homicide Reports). Though the SHR contains data on the vast majority of homicides in the nation, not all agencies report homicide incident data to the SHR, and those agencies which do report may fail to report data for some of the homicides in their jurisdiction. In this application, it is not clear how any potential bias from

about the makes, models, and magazine capacities of firearms used in homicides. Consequently, these results rely on indirect, inferred links between expected changes in the use of banned weapons and trends in the victim per incident measure.

From 1980 through August of 1994 (the pre-ban period), there were 184,528 gun homicide incidents reported to the SHR. These cases involved 192,848 victims, for an average of 1.045 victims per gun homicide incident. For the post-ban months of September 1994 through December 1995, there were 18,720 victims killed in 17,797 incidents, for an average of 1.052 victims per incident. Thus, victims per incident increased very slightly (less than 1 percent) after the Crime Act. A graph of monthly means presented in Figure 6-1 suggests that this increase predated the assault weapon ban. Nevertheless, an interrupted time series analysis also failed to produce any evidence that the ban reduced the number of victims per gun homicide incident.⁷⁷

Figure 6-1. Victims per gun homicide incident, 1980-95



Considering the rarity with which assault weapons are used in violent crime (for example, assault weapons are estimated to be involved in 1 to 7 percent of gun homicides),⁷⁸ this result is not unexpected. At the same time, an important qualifier is that the data available for this study have not produced much evidence regarding pre-ban/post-ban trends in the use of large-capacity magazines in gun crime. In the next section, we offer a tentative estimate, based on one city, that approximately 20 to 25 percent of gun homicides are committed

missing cases would operate. That is, we are unaware of any data indicating whether reported and non-reported cases might differ with respect to the number of victims killed.

⁷⁷ We tested the data under different theories of impact suggested by the findings on assault weapon utilization reported in Chapter 5, but failed to find evidence of a beneficial ban effect. If anything, our time series analysis suggested that the post-ban increase in victims per gun murder incident was a meaningful change.

⁷⁸ See discussion in Chapters 2 (p.8) and 5 (p.58) and in Section 6.3 (p.87) of this chapter.

with gun equipped with large-capacity magazines banned by the Crime Act.⁷⁹ Hence, trends in the use of large-capacity magazines would seem to have more potential to produce measurable effects on gun homicides. It is not yet clear as to whether the use of large-capacity magazines has been substantially affected by the Crime Act.

Despite these ambiguities, we can at least say that this examination of SHR data produced no evidence of short term decreases in the lethality of gun violence as measured by the mean number of victims killed in gun homicide incidents.⁸⁰

6.3. CONSEQUENCES OF TITLE XI: MULTIPLE WOUND GUN HOMICIDES

To provide another measure of the consequences of the assault weapon/large-capacity magazine ban on the lethality of gun violence, we analyzed trends in the mean number of gunshot wounds per victim of gun homicides in a number of sites. In one jurisdiction, we were able to examine trends in multiple wound non-fatal gunshot cases. The logic of these analyses stems from the hypothesis that offenders with assault weapons or other large-capacity firearms can fire more times and at a more rapid rate, thereby increasing both the probability that they hit one or more victims and the likelihood that they inflict multiple wounds on their victims. One manifestation of this phenomenon could be a higher number of gunshot wounds for victims of gun homicides committed with assault weapons and other large-capacity firearms. To the extent that Title XI decreased the use of assault weapons and large-capacity magazines, we hypothesize a decrease in the average number of wounds per gun murder victim.

To test this hypothesis, we collected data from police and medical sources on gunshot murders (justifiable homicides were excluded) in Milwaukee County, Seattle and King County, Jersey City (New Jersey), Boston, and San Diego County. Selection of the cities was based on both data availability and theoretical relevance. Jersey City and San Diego were chosen as comparison series for the other cities because New Jersey and California had their own assault weapons bans prior to the Federal ban. The New Jersey and California laws did not ban all large-capacity magazines, but they did ban several weapons capable of accepting large-capacity magazines. Thus, we hypothesized that any reduction in gunshot wounds per gun homicide victim due to the Federal ban might be smaller in magnitude in Jersey City and San Diego.

The data from Seattle and San Diego were collected from the respective medical examiners' offices of those counties.⁸¹ The Milwaukee data were collected from both medical and police sources by researchers at the Medical College of Wisconsin. The Jersey City data were collected from the Jersey City Police Department. Finally, the Boston data were provided by the Massachusetts Department of Public Health. From each of these sources, we were able to collect data spanning from January 1992 through at least the end of 1995. In some cities we were able to obtain data on the actual number of gunshot wounds inflicted upon victims, while in other cities we were able to classify cases only as single wound or multiple wound cases. Depending on data available, we analyzed pre-ban and post-ban data in each city for either the mean number of wounds per victim or the proportion

⁷⁹ A New York study estimated this figure to be between 16 percent and 25 percent (New York State Division of Criminal Justice Services 1994, p.7).

⁸⁰ See Appendix A for an investigation of assault weapon use in mass murders.

⁸¹ The Seattle data were collected for this project by researchers at the Harborview Injury Prevention and Research Center in Seattle. The San Diego County Medical Examiner's Office provided data from San Diego.

of victims with multiple wounds. We concluded this investigation with an examination of the mean number of gunshot wounds for victims killed with assault weapons and other firearms with large-capacity magazines, based on data from one city.

6.3.1. Wounds per Incident: Milwaukee, Seattle, and Jersey City

From the Milwaukee, Seattle, and Jersey City data, we were able to ascertain the number of gunshot wounds suffered by gun murder victims. Relevant data comparing pre-ban and post-ban cases are displayed in Table 6-3. The average number of gunshot wounds per victim did not decrease in any of these three cities. Gunshot wounds per victim actually increased in all these cities, but these increases were not statistically significant.^{82 83}

Table 6-3. Gunshot wounds per gun homicide victim, Milwaukee, Seattle, and Jersey City

	<i>Cases</i>	<i>Average</i>	<i>Standard deviation</i>	<i>T value</i>	<i>P level</i>
<u>Milwaukee County (N = 418)</u>					
Pre-ban: January '92 - August '94	282	2.28	2.34		
Post-ban: September '94 - December '95	136	2.52	2.90		
<i>Difference</i>		+ 0.24		0.85*	.40
<u>Seattle and King County (N = 275)</u>					
Pre-ban: January '92 - August '94	184	2.08	1.78		
Post-ban: September '94 - June '96	91	2.46	2.22		
<i>Difference</i>		+ 0.38		1.44*	.15
<u>Jersey City (N = 44)</u>					
Pre-ban: January '92 - August '94	24	1.58	1.56		
Post-ban: September '94 - May '96	20	1.60	1.79		
<i>Difference</i>		+ 0.02		0.03	.97

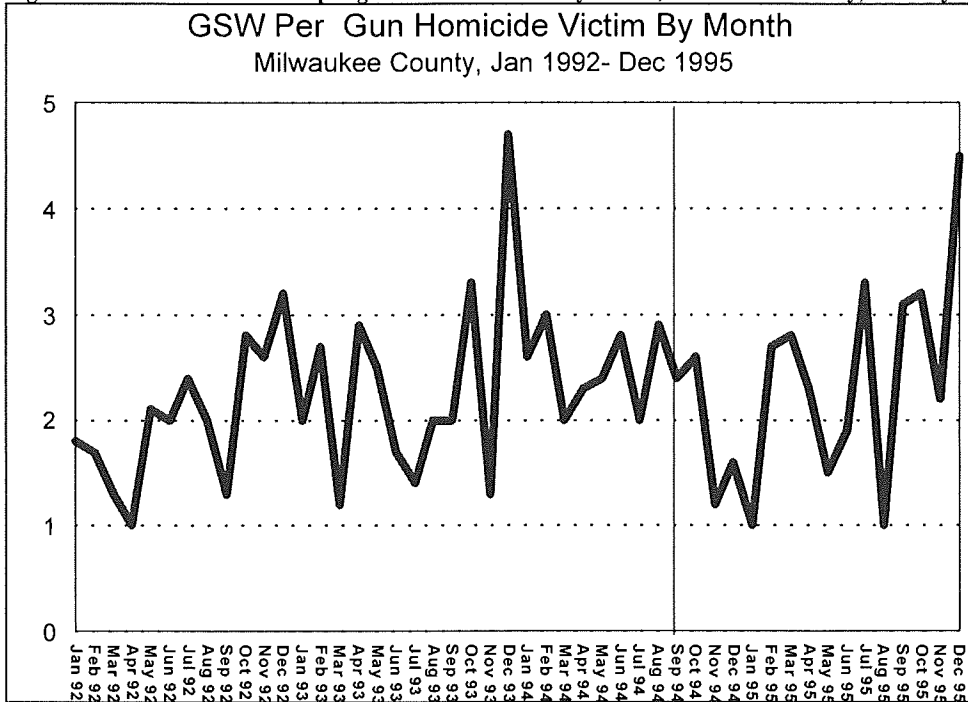
* T values were computed using formula for populations having unequal variances

⁸² Our comparisons of pre-ban and post-ban cases throughout this section are based on the assumption that the cases in each sample are independent. Technically, this assumption may be violated by incidents involving multiple victims and/or common offenders. Violation of this assumption has the practical consequence of making test statistics larger, thus making it more likely that differences will appear significant. Since the observed effects in these analyses are insignificant and usually in the wrong direction, it does not appear that violation of the independence assumption is a meaningful threat to our inferences.

⁸³ We also ran tests comparing only cases from 1993 (the last full year prior to passage and implementation of Title XI) and 1995 (the first full year following implementation of Title XI). These tests also failed to yield evidence of a post-ban reduction in the number of wounds per case.

Time trends in the monthly average of wounds per victim for Milwaukee and Seattle are displayed in Figure 6-2 and Figure 6-3. Figure 6-4 presents quarterly time trends for Jersey City. None of the graphs provide strong visual evidence of trends or changes in trends associated with the implementation of Title XI, but the Milwaukee and Seattle graphs are somewhat suggestive of upward pre-ban trends that may have been affected by the ban. We made limited efforts to estimate interrupted time series models (McCleary and Hay 1980) for these two series. The Milwaukee model provided no evidence of a ban effect,⁸⁴ and the efforts to model the Seattle data were inconclusive.⁸⁵ Because the ban produced no effects in Milwaukee or Seattle, it was not necessary to draw inferences about Jersey City as a comparison site.

Figure 6-2. Gunshot wounds per gun homicide victim by month, Milwaukee County, January 1992–December 1995



⁸⁴ We tested the Milwaukee data under various theories of impact but failed to find evidence of an effect from the ban.

⁸⁵ The Seattle data produced an autocorrelation function (see McCleary and Hay 1980) that was uninterpretable, perhaps as a result of the small number of gun murders per month in Seattle. Aggregating the data into larger time periods (such as quarters) would have made the series substantially shorter than the 40-50 observations commonly accepted as a minimum number of observations necessary for Box-Jenkins (i.e., ARIMA) modeling techniques (e.g., see McCleary and Hay 1980, p.20).

Figure 6-3. Gunshot wounds per gun homicide victim by month, King County (Seattle), January 1992–June 1996

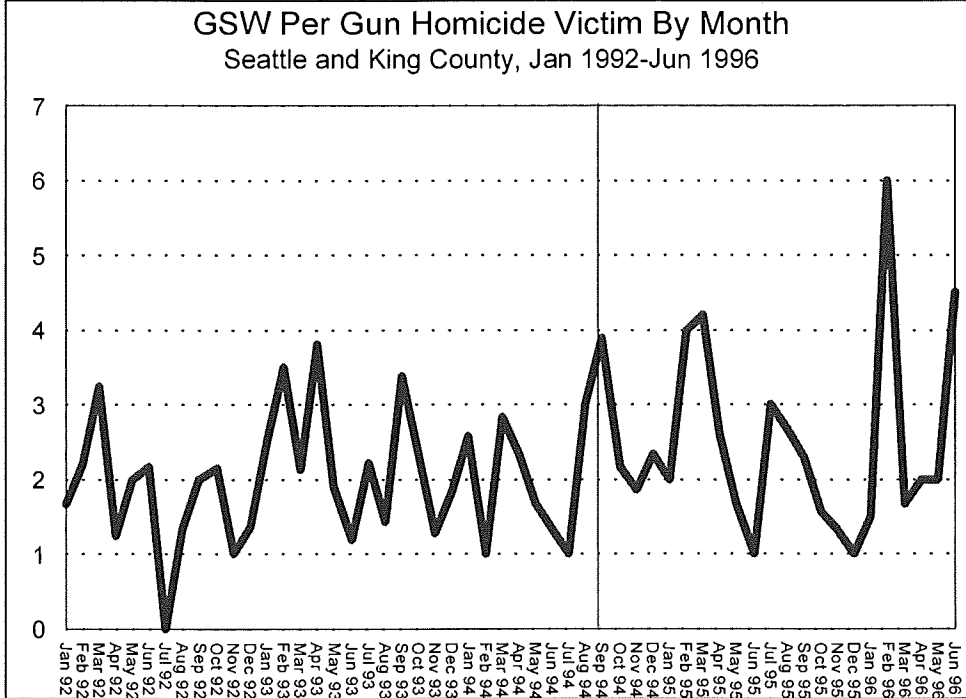
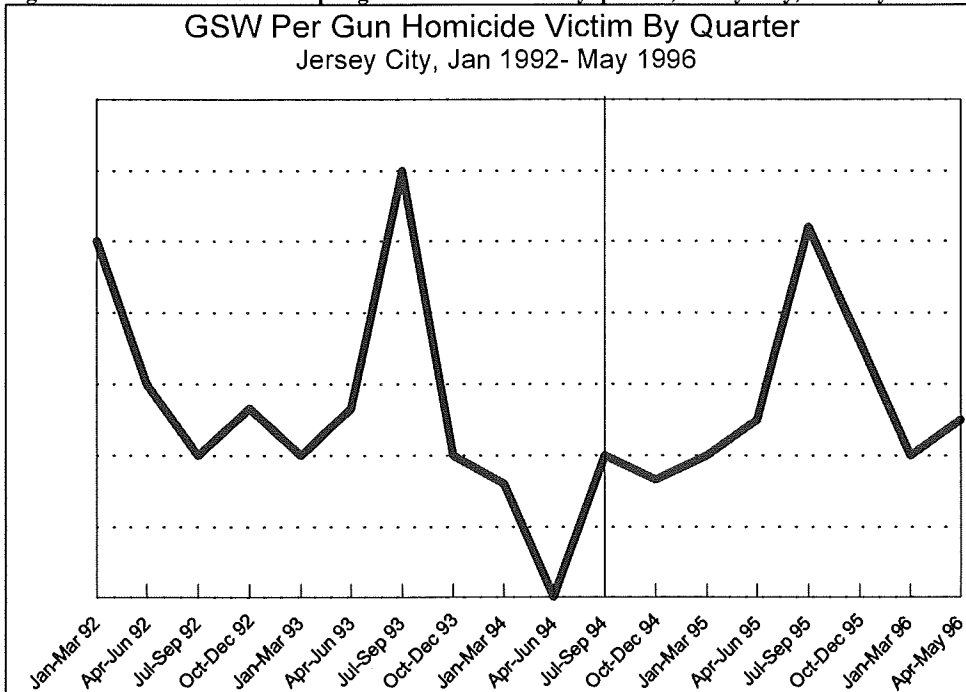


Figure 6-4. Gunshot wounds per gun homicide victim by quarter, Jersey City, January 1992–May 1996

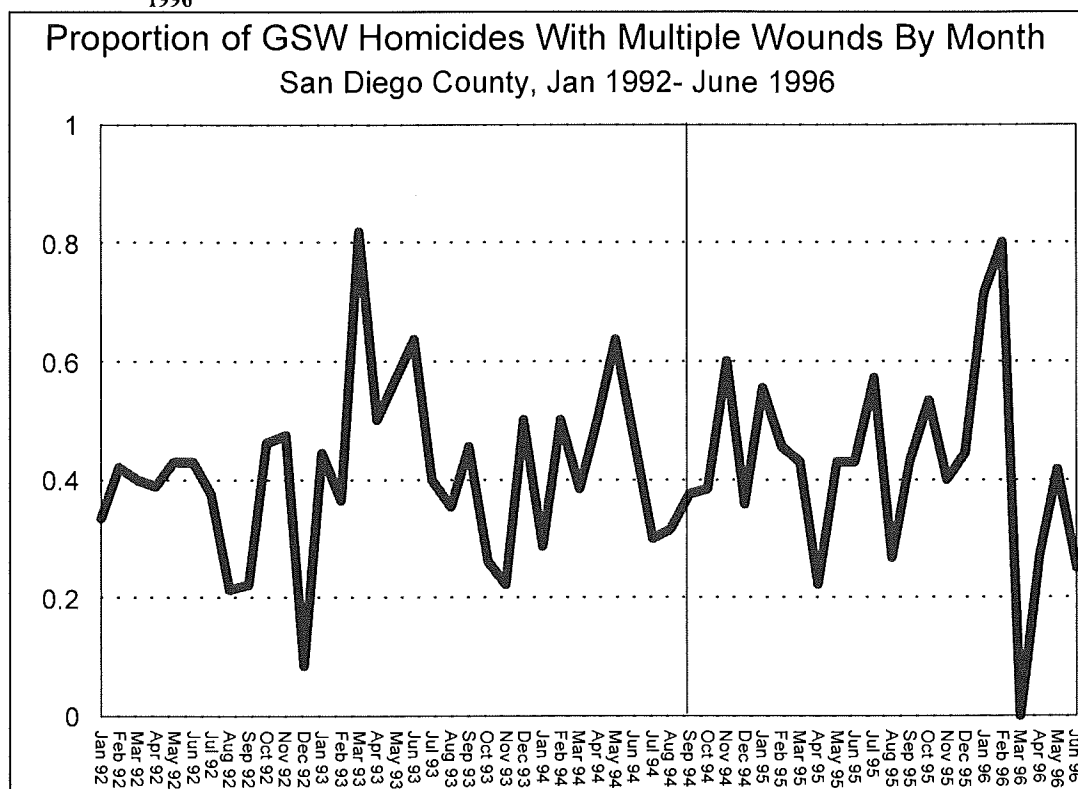


6.3.2. *Proportion of Cases With Multiple Wounds: San Diego and Boston*

The data from San Diego and Boston identified cases only as being single or multiple wound cases. We examined the proportions of pre-ban and post-ban cases involving multiple wounds and utilized contingency tables with chi-square tests to determine whether pre-ban and post-ban cases differed significantly.⁸⁶

The proportion of San Diego County's gun homicide victims sustaining multiple wounds increased very slightly after the ban (see Table 6-4), thus providing no evidence of a ban impact. Nor do there appear to have been any significant temporal trends before or after the ban (see Figure 6-5).

Figure 6-5. Proportion of gunshot homicides with multiple wounds by month, San Diego County, January 1992–June 1996



The Boston data require further explanation and qualification. The data were taken from the Weapon-Related Injury Surveillance System (WRISS) of the Massachusetts Department of Public Health (MDPH). WRISS tracks gunshot and stabbing cases treated in acute care hospital emergency departments throughout the state.⁸⁷ These data have the unique advantage of providing trends for non-fatal victimizations, but they represent a biased sample of gunshot homicide cases because gun homicide victims found dead at the scene are not tracked by WRISS.⁸⁸ Since multiple wound victims can be expected to have a greater chance of dying at the scene, WRISS

⁸⁶ Monthly and quarterly averages in the fraction of cases involving multiple wounds did not appear to follow discernible time trends for any of these series (see Figure 6-5 through Figure 6-8). Therefore, we did not analyze the data using time series methods.

⁸⁷ For a discussion of error rates in the determination of wound counts by hospital staff, see Randall (1993).

⁸⁸ The MDPH also maintains a database on all homicide victims, but this database does not contain single/multiple wound designations and data for 1995 are not complete as of this writing.

data are likely to underestimate the fraction of gun homicide victims with multiple wounds. While it is possible that this bias has remained constant over time, the gun homicide trends should be treated cautiously.

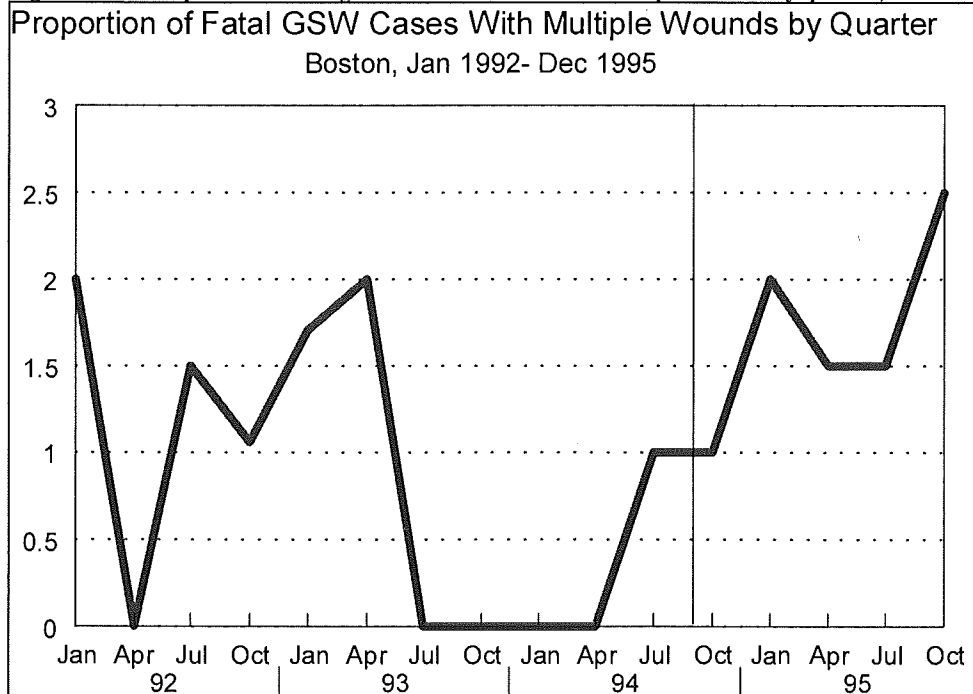
Table 6-4. Proportion of gunshot victims receiving multiple wounds, San Diego and Boston

	<i>Cases</i>	<i>Proportion with multiple wounds</i>	<i>Standard deviation</i>
<u>San Diego homicides (N = 668)</u>			
Pre-ban: January '92 - August '94	445	.41	.49
Post-ban: September '94 - June '96	223	.43	.50
<i>Difference</i>		.02	
$\chi^2 = 0.177$			
<i>P level</i> = .674			
<u>Boston Gun homicides (N = 53)</u>			
Pre-ban: January '92 - August '94	32	.50	.50
Post-ban: September '94 - December '95	21	.38	.50
<i>Difference</i>		-.12	
$\chi^2 = 0.725$			
<i>P level</i> = .39			
<u>Boston non-fatal gunshot victims (N = 762)</u>			
Pre-ban: January '92 - August '94	518	.18	.39
Post-ban: September '94 - December '95	244	.24	.43
<i>Difference</i>		.06	
$\chi^2 = 3.048$			
<i>P level</i> = .08			
<u>Boston total gunshot victims (N = 815)</u>			
Pre-ban: January '92 - August '94	550	.20	.40
Post-ban: September '94 - December '95	265	.27	.44
<i>Difference</i>		.07	
$\chi^2 = 4.506$			
<i>P level</i> = .03			

An additional concern with WRISS data is that system compliance is not 100 percent. Based on figures provided by MDPH, yearly hospital reporting rates in Boston during the study period were as follows: 63 percent for 1992; 69 percent for 1993; 75 percent for 1994; and 79 percent for 1995. It is thus possible that gunshot cases treated in non-reporting hospitals differ significantly from those treated in reporting hospitals with respect to single/multiple wound status. For all of these reasons, the Boston data should be interpreted cautiously. Overall, the WRISS captured 18 to 33 percent of Boston's gun homicides for the years 1992-94.

Pre-ban/post-ban comparisons for fatal, non-fatal, and total gunshot cases from WRISS are presented in Table 6-4. The proportion of multiple wound cases decreased only for gun homicides. This decrease was not statistically significant, but the sample sizes were very small and thus the statistical power of the test is rather low. Nonetheless, the non-fatal wound data, which are arguably less biased than the fatal wound data, show statistically meaningful increases in the proportion of cases with multiple wounds.⁸⁹ Figure 6-6 through Figure 6-8 present monthly or quarterly trends for each series. These trends fail to provide any visual evidence of a post-ban reduction in the proportion of multiple wound gunshot cases.⁹⁰ Thus, overall, the Boston data appear inconclusive.

Figure 6-6. Proportion of fatal gunshot wound cases with multiple wounds by quarter, Boston



⁸⁹ Further, the decrease for homicide cases could have been due to an increase in the proportion of multiple wound victims who died at the scene and were not recorded in the WRISS.

⁹⁰ As with the Milwaukee and Seattle data, we also ran supplemental tests with the San Diego and Boston data using only cases from 1993 and 1995. These comparisons also failed to produce evidence of post-ban reductions in the proportion of gunshot cases with multiple wounds.

Figure 6-7. Proportion of non-fatal gunshot wound cases with multiple wounds by month, Boston, January 1992–December 1995

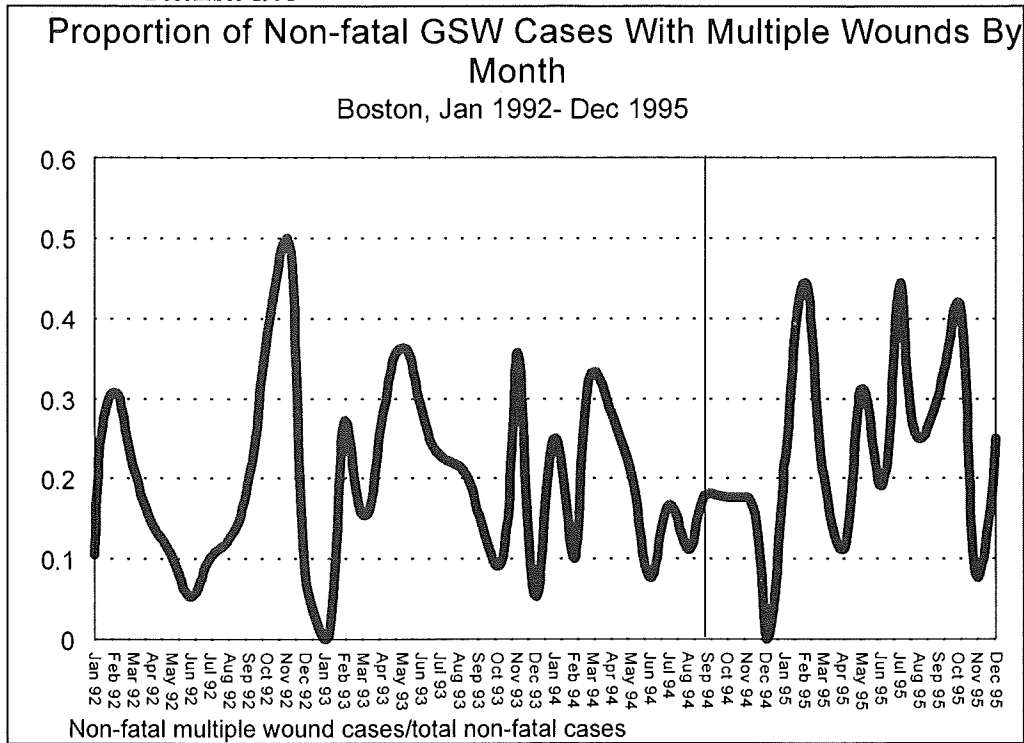
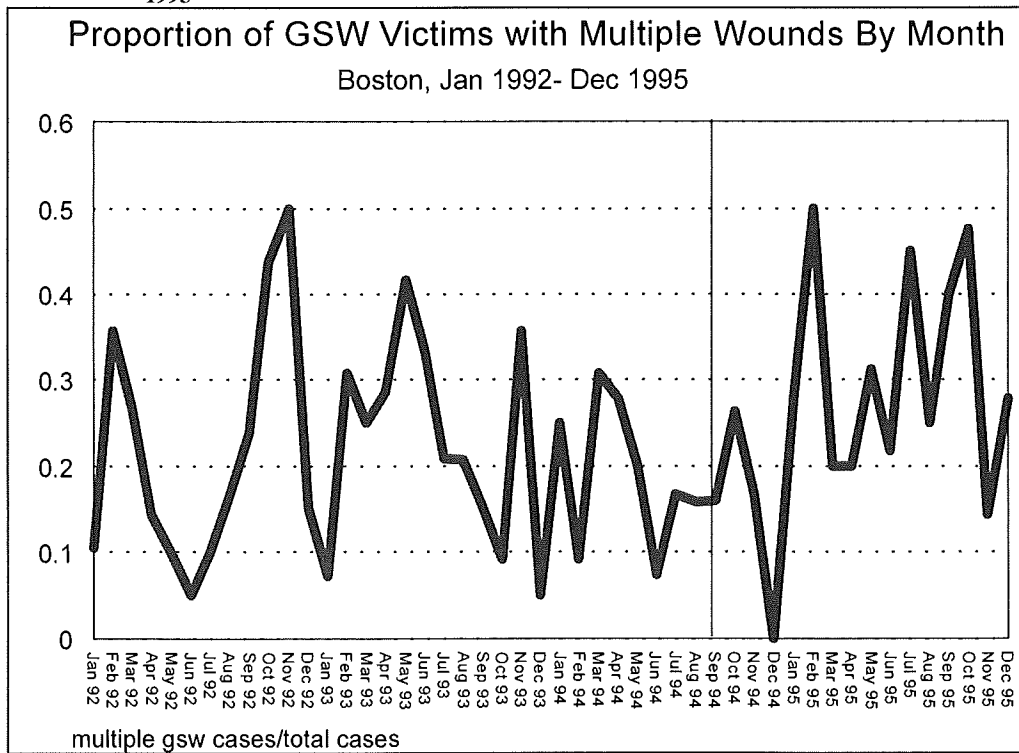


Figure 6-8. Proportion of gunshot wound victims with multiple wounds by month, Boston, January 1992–December 1995



6.3.3. Assault Weapons, Large-Capacity Magazines, and Multiple Wound Cases: Milwaukee

Most of the data sources used in this investigation contain little or no detailed information regarding weapon makes and models. Consequently, the validity of the previous analyses rest on indirect, inferred links between multiple wound gun homicides and expected changes in the use of assault weapons and large-capacity magazines.

However, we were able to make more explicit links between the banned weapons and gunshot wound counts by performing a cross-sectional analysis with the data from Milwaukee. Complete weapon make and model data were obtained for 149 guns associated with the 418 gun murders which occurred in Milwaukee County from 1992 through 1995. Eight of these firearms, or 5.4 percent, were assault weapons named in Title XI or copies of firearms named in Title XI (all of the assault weapons were handguns).⁹¹ Table 6-5 shows the mean number of wounds for gun homicide victims killed with assault weapons and other guns. Note that in Table 6-5 we screened out two cases in which the victim appeared to have been shot with multiple firearms. One of these cases involved an assault weapon. The results in Table 6-5 indicate that victims killed with assault weapons were shot a little over three times on average, while victims killed with other firearms were shot slightly over two times on average. This difference was not statistically significant, but the small number of cases involving assault weapons makes the test rather weak.

Table 6-5. Gunshot wounds per gun homicide victim: Assault weapon and large-capacity magazine cases, Milwaukee

	<i>Cases</i>	<i>Average</i>	<i>Standard deviation</i>	<i>T value</i>	<i>P level</i>
<u>Assault weapons v. other firearms (N = 147)</u>					
Assault weapons	7	3.14	3.08		
Other firearms	140	2.21	2.87		
<i>Difference</i>		0.93		0.83	.41
<u>Firearms with banned large-capacity magazines v. other firearms (N = 132)</u>					
Large-capacity firearms	30	3.23	4.29		
Other firearms	102	2.08	2.48		
<i>Difference</i>		1.15		1.41*	.17

*T values were computed using formula for populations having unequal variances.

We also conducted a more general examination of cases involving any firearm with a large-capacity magazine. There were 132 cases in which a victim was killed with a firearm for which make, model, and magazine capacity could be determined (the magazine capacity variable corresponds to the magazine actually recovered with the firearm). This analysis also excluded cases in which the victim was shot with more than one firearm. In 30 of these cases (23 percent), the victim was killed with a firearm carrying a large-capacity magazine

⁹¹ It is possible that other firearms in the database were assault weapons according to the features test of Title XI, but we did not have the opportunity to fully assess this issue.

banned by Title XI. As is shown in the bottom of Table 6-5, offenders killed with guns having banned large-capacity magazines received over three wounds on average. In contrast, persons killed with firearms having non-banned magazines received an average of two wounds. Despite the relatively small number of large magazine cases, the t statistic is moderately large and could be considered statistically meaningful with a one-tailed test.⁹² In addition, we constructed a regression model in which wound counts were regressed upon magazine capacity and the number of perpetrators involved in the incident.⁹³ The large-capacity magazine coefficient was 1.24 with a two-tailed p level equal to 0.05 (however, the equation explained only 3 percent of the variance in wound counts). These admittedly crude comparisons support the hypothesis that large-capacity magazines are linked to higher numbers of shots fired and wounds inflicted.

6.3.4. Conclusions

Our multi-site analysis of gunshot wounds inflicted in fatal and non-fatal gunshot cases failed to produce evidence of a post-ban reduction in the average number of gunshot wounds per case or in the proportion of cases involving multiple wounds. These results are perhaps to be expected. Available data from national gun trace requests to BATF (see Chapter 5), Milwaukee (this chapter), and other cities (see Chapters 2 and 5) indicate that assault weapons account for only 1 to 7 percent of all guns used in violent crime. Likewise, our analysis of guns used in homicides in Milwaukee suggests that a substantial majority of gun homicides (approximately three-quarters) are not committed with guns having large-capacity magazines. Further, victims killed with large-capacity magazines in Milwaukee were shot three times on average, a number well below the ten-round capacity permitted for post-ban magazines. This does not tell us the actual number of shots fired in these cases, but other limited evidence also suggests that most gun attacks involve three or fewer shots (Kleck 1991; McGonigal et al. 1993). Finally, a faster rate of fire is arguably an important lethality characteristic of semiautomatics which may influence the number of wounds inflicted in gun attacks; yet one would not expect the Crime Act to have had an impact on overall use of semiautomatics, of which assault weapons were a minority even before the ban.

On the other hand, the analysis of Milwaukee gun homicides did produce some weak evidence that homicide victims killed with guns having large-capacity magazines tended to have more bullet wounds than did victims killed with other firearms. This may suggest that large-capacity magazines facilitate higher numbers of shots fired per incident, perhaps by encouraging gun offenders to fire more shots (a phenomenon we have heard some police officers refer to as a "spray and pray" mentality). If so, the gradual attrition of the stock of pre-ban large-capacity magazines could have important preventive effects on the lethality of gun violence. However, our analysis of wounds inflicted in banned and non-banned magazine cases was crude and did not control for potentially important characteristics of the incidents, victims, and offenders. We believe that such incident-based analyses would yield important information about the role of specific firearm characteristics in lethal and non-lethal gun violence and provide further guidance by which to assess this aspect of the Crime Act legislation.

⁹² Note that two cases involving attached tubular .22 caliber large-capacity magazines were included in the non-banned magazine group because these magazines are exempted by Title XI. In one of these cases, the victim sustained 13 wounds. In a second comparison, these cases were removed from the analysis entirely. The results were essentially the same; the two-tailed p level for the comparison decreased to .13.

⁹³ The regression model (N=138) included cases in which the victim was shot with more than one gun. Separate variables were included for the number of victims and the use of more than one firearm. Both variables proved insignificant, but the perpetrator variable had a somewhat larger t statistic and was retained for the model discussed in the main text.

6.4. LAW ENFORCEMENT OFFICERS KILLED IN ACTION

6.4.1. *Introduction and Data*

As a final measure of consequences stemming from the assault weapons ban, we examined firearm homicides of police officers. Assault weapons and other high capacity firearms offer substantial firepower to offenders and may be especially attractive to very dangerous offenders. Further, the firepower offered by these weapons may facilitate successful gun battles with police. We hypothesized that these weapons might turn up more frequently in police homicides than in other gun homicides, and that the Crime Act might eventually decrease their use in these crimes.

To investigate this issue, we obtained data from the Federal Bureau of Investigation (FBI) on all gun murders of police officers from January 1992 through May 1996.⁹⁴ The data include the date of the incident, the state in which the incident occurred, the agency to which the officer belonged, and the make, model, and caliber of the firearm reportedly used in the murder. During this period, 276 police officers were killed by offenders using firearms. Gun murders of police peaked in 1994 (see Table 6-6). Data for 1995 and early 1996 suggest a decline in gun murders of police. However, any drop in gun murders of police could be due to more officers using bullet-proof vests, changes in policing tactics for drug markets, or other factors unrelated to the assault weapons ban. Moreover, the 1995 and 1996 data we received are preliminary and thus perhaps incomplete. For these reasons, we concentrated on the use of assault weapons in police homicides and did not attempt to judge whether the assault weapon ban has caused a decline in gun murders of police.

Table 6-6. Murders of police officers with assault weapons

<i>Year</i>	<i>Total gun murders of police officers</i>	<i>Officers killed with assault weapons</i>	<i>Proportion of victims killed with assault weapons (minimum estimate)</i>	<i>Proportion of victims killed with assault weapons for cases in which gun make is known</i>
1992	54	0	0%	0%
1993	67	4	6%	8%
1994	76	9	12%	16%
1995*	61	7	11%	16%
1996* (Jan-May)	18	0	0%	0%

*Data for 1995 and 1996 are preliminary

Even this more limited task was complicated by the fact that complete data on the make, model, and caliber of the murder weapon were not reported for a substantial proportion of these cases. The number of cases by year for which at least the gun make is known are 43 (80%) for 1992, 49 (73%) for 1993, 58 (76%) for 1994, 44 (72%) for 1995, and 10 (56%) for 1996.

6.4.2. *Assault Weapons and Homicides of Police Officers*

We focused our investigation on all makes and models named in Title XI and their exact copies. We also included our selected features test guns (Calico and Feather models), although we did not make a systematic

⁹⁴ These data are compiled annually by the FBI based on reports submitted by law enforcement agencies throughout the country.

assessment of all guns which may have failed the features test of the Crime Act as produced by their manufacturers.⁹⁵ Using these criteria, our estimate is that 20 officers were murdered by offenders using assault weapons during this period. (In some of these cases, it appears that the same weapon was used to murder more than one officer). Of these cases, 3 involved Intratec models, 6 were committed with weapons in the SWD family, 3 involved AR15's or exact AR15 copies, 2 cases involved Uzi's, and 6 cases identified AK-47's as the murder weapons.^{96 97} These cases accounted for about 7% of all gun murders of police during this period. This 7% figure serves as a minimum estimate of assault weapon use in police gun murders. A more accurate estimate was obtained by focusing on those cases for which, at a minimum, the gun make was reported. Overall, 10% of these cases involved assault weapons, a figure higher than that for gun murders of civilians.⁹⁸

All of the assault weapon cases took place from 1993 through 1995 (see Table 6-6). For those three years, murders with assault weapons ranged from 6% of the cases in 1993 to 12% in 1994. Among those cases for which firearm make was reported, assault weapons accounted for 8% in 1993 and 16% in both 1994 and 1995. All of these cases occurred prior to June 1995. From that point through May of 1996, there were no additional deaths of police officers attributed to assault weapons. This is perhaps another indication of the temporary or permanent decrease in the availability of these weapons which was suggested in Chapter 5.

In sum, police officers are rarely murdered with assault weapons. Yet the fraction of police gun murders perpetrated with assault weapons is higher than that for civilian gun murders. Assault weapons accounted for about 10% of police gun murders from 1992 through May of 1996 when considering only those cases for which the gun make could be ascertained. Whether the higher representation of assault weapons among police murders is due to characteristics of the weapons, characteristics of the offenders who are drawn to assault weapons, or some

⁹⁵ With the available data, it is not possible for us to determine whether otherwise legal guns were modified so as to make them assault weapons.

⁹⁶ There is a discrepancy between our data and those provided elsewhere with respect to a November 1994 incident in which two FBI agents and a Washington, D.C. police officer were killed. In a study of police murders from January 1994 through September 1995, Adler et al. (1995) reported that the offender in this case used a TEC9 assault pistol. The FBI data identify the weapon as an M11. (The data actually identify the gun as a Smith and Wesson M11. However, Smith and Wesson does not make a model M11. We counted the weapon as an SWD M11.)

In addition, Adler et al. identified one additional pre-ban incident in which an officer was killed with a weapon which may have failed the features test (a Springfield M1A). We are not aware of any other cases in our data which would qualify as assault weapon cases based on the features test, but we did not undertake an in-depth examination of this issue. There were no cases involving our select features test guns (Calico and Feather models).

⁹⁷ The weapon identifications in these data were made by the police departments reporting the incidents, and there is likely to be some degree of error in the firearm model designations. In particular, officers may not always accurately distinguish banned assault weapons from legal substitutes or look-alike variations. We note the issue here due to the prominence of AK-47's among guns used in police homicides. There are numerous AK-47 copies and look-alikes, and firearm experts have informed us that legal guns such as the SKS rifle and the Norinco NHM-90/91 (a modified, legal version of the AK-47) are sometimes, and perhaps commonly, mistakenly identified as AK-47's.

⁹⁸ In consultation with BATF officials, we developed a list of manufacturers who produced models listed in the Crime Act and exact copies of those firearms. We were thus able to determine whether all of the identified makes in the FBI file were assault weapons.

combination of both is unclear. However, there have been no recorded murders of police with assault weapons since the early part of 1995.⁹⁹

These findings have important ramifications for future research on the impact of the assault weapons ban. The relatively high use of assault weapons in murders of police suggests that police gun murders should be more sensitive to the effects of the ban than gun murders of civilians. That is, if the disproportionate representation of assault weapons among gun homicides of police is attributable to the objective properties of these firearms (i.e., the greater lethality of these firearms), then a decrease in the availability of these guns should cause a notable reduction of police gun murders because other weapons will not be effective substitutes in gun battles with police. At this point, however, it is not clear whether the high representation of assault weapons among police murder cases is due to the greater stopping power of assault weapons (most assault weapons are high velocity rifles or high velocity handguns and thus inflict more serious wounds), their rate of fire and ability to accept large-capacity magazines, some combination of these weapon characteristics, or simply the traits of offenders who prefer assault weapons. A variety of non-banned weapons may serve as adequate substitutes for offenders who engage in armed confrontations with police.

As more data become available, we encourage the study of trends in police gun murders before and after the Crime Act. Furthermore, we believe that research on these issues would be strengthened by the systematic recording of the magazines with which police murder weapons were equipped and the numbers of shots fired and wounds inflicted in these incidents.

⁹⁹ We did not examine police murders committed with firearms capable of accepting large-capacity magazines because the available data do not enable us to determine whether any guns used after the ban were actually equipped with pre-ban large-capacity magazines, nor do the data indicate the number of shots fired in these incidents. Moreover, in recent years many police departments have adopted large-capacity semiautomatic handguns as their standard firearm. Since about 14% of police officers murdered with guns are killed with their own firearms (FBI 1994, p.4), this could create an apparent increase in police murders with large-capacity firearms. (We did not acquire data on whether the officers were killed with their own firearms.) For a discussion of large-capacity firearms used in killings of police from January 1994 through September 30, 1995, see Adler et al. (1995).

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Appendix A

Assault Weapons and Mass Murder

INTRODUCTION: MASS MURDERS AS AN IMPACT MEASURE

As another indicator of ban effects on the consequences of assault weapon use, we attempted to analyze pre- and post-ban trends in mass murders, which we defined as the killing of four or more victims at one time and place by a lone offender. Although we lacked advance information on the proportion of mass murders involving assault weapons, we had two reasons for believing that assault weapons were more prevalent in mass murders than in events involving smaller numbers of victims:

- 1) A weapon lethality/facilitation hypothesis, that assault weapon characteristics, especially high magazine capacities, would enable a rational but intent killer to shoot more people more rapidly with an assault weapon than with many other firearms.
- 2) A selection hypothesis, that certain deranged killers might tend to select assault weapons to act out “commando” fantasies (e.g., see Holmes and Holmes 1994, pp.86-87).

In addition, we believed that newspaper reports of mass murders might carry more detail than reports of other murders, and that these reports might provide insights into the situational dynamics of mass murders involving assault weapons.

Our attempt to construct and analyze a 1992–96 trend line in mass murders using Nexis searches of U.S. news sources foundered, for two primary reasons. First, apparent variations in reporting or indexing practices forced us to alter our search parameters over the period, and so all three kinds of variation introduce validity problems into the trends. Second, newspaper accounts were surprisingly imprecise about the type of weapon involved. In some cases, the offender had not yet been apprehended and thus the make and model of the weapon was probably unknown. In other instances, there was apparent inattention or confusion regarding the make, model, and features. Finally, some offenders were armed with multiple weapons when they committed their crimes or when they were captured, and it was unclear to the reporter which weapon accounted for which death(s).¹

Nevertheless, our mass murder analysis produced several interesting, though tentative, findings. First, SHR and news media sources both appear to undercount mass murders under our definition, and our capture-recapture analysis suggests that their true number may exceed the count based on either source by something like 50 percent. Second, contrary to our expectations, only 2 — 3.8 percent — of the 52 mass murders we gleaned from the Nexis search unambiguously involved assault weapons. This is about the same percentage as for other murders. Third, media accounts lend some tenuous support to the notion that assault weapons are more deadly than other weapons in mass murder events, as measured by victims per incident.

Our search methodology and the findings above are explained more fully in the following sections, which conclude with recommendations for further related research.

¹ It is also not unusual for news accounts to use imprecise terms like “assault rifle” when describing a military-style firearm. However, we did not encounter any such cases in our particular sample.

DEFINING MASS MURDERS AND SAMPLE SELECTION

In general terms, a mass murder is the killing of a number of people at one time and place. The time requirement in particular sets mass murders apart from serial murders, which take place over a very long timeframe. We focused our analysis upon mass murders committed with firearms, and we chose four victims for our operational definition of mass murder.² In addition, we focused upon cases in which the murders were committed by one offender. We selected the victim and offender criteria based on practicality and because they arguably fit better with the weapon lethality/weapon facilitation argument. If assault weapons do contribute to mass murder, we hypothesized that they will enable a single offender to murder greater numbers of people at one time. Thus, we selected a subset of mass murders for which we felt assault weapons might plausibly play a greater role.

Project staff conducted Nexis searches for multiple-victim firearm murder stories appearing in U.S. news sources from 1992 through the early summer of 1996. Fifty-two stories meeting our firearm mass murder criteria were found. A breakdown of these cases by year is shown in the bottom row of table A-1.³ Cases ranged from a low of 3 in 1994 and 1996 to a high of 20 in 1995. We urge caution in the interpretation of these numbers. Although project staff did examine well over a thousand firearm murder stories, we do not claim to have found all firearm mass murders occurring during this time. Rather, these cases should be treated as a possibly unrepresentative sample of firearm mass murders. Further, we do not recommend using these numbers as trend indicators. We refined our search parameters several times during the course of the research, and we cannot speak to issues regarding changes in journalistic practices (or Nexis coverage) which may have occurred during this period and affected our results. This portion of the evaluation was more exploratory in nature, and the primary goal was to assess the prevalence of assault weapons among a sample of recent mass murder incidents.

Table A-1. Mass murder newspaper reports, by weapon type and year of event

	1992	1993	1994	1995	1996	Total
<u>Semiautomatics</u>						
Handgun	4	3	1	7	1	16
Rifle	0	0	0	2	0	2
<u>Generic weapon types</u>						
Revolver	0	0	0	1	0	1
Other non-semiautomatic handgun	0	0	0	0	0	0
Handgun, type unknown	2	2	0	1	0	5
Non-semiautomatic rifle	0	0	0	1	0	1
Rifle, type unknown	1	1	0	0	0	2
Non-semiautomatic shotgun	0	0	0	1	0	1
Shotgun, type unknown	2	3	0	1	0	6
Unknown firearm	5	2	2	6	2	17

² As Holmes and Holmes (1994, pp.71-73) have noted, most scholars set the victim criterion for mass murder at three or four victims.

³ Table A-1 excludes 1 of the 52 for which we were unable to ascertain the date of the mass murder.

Total cases	14	11	3	20	3	51
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ESTIMATING TOTAL FIREARM MASS MURDERS: A METHODOLOGICAL NOTE

Our investigation of multiple/mass murders utilized both the SHR and news media as data sources. Both of these sources have limitations for this task. Though the SHR is widely accepted as an accurate source of homicide data, not all agencies in the country report homicides to the SHR, and agencies that do report to the SHR program may not report all of their homicides. Likewise, some mass murders may not be reported accurately in media sources, or the stories may differ in their accessibility depending on where they occurred and the publication(s) which carried the story. Family-related mass murders, for example, seem less likely to be reported in national sources (Dietz 1986), although the availability of national electronic searches through services such as Nexis would seem to lessen this problem.⁴ Our experience suggests that both sources underestimate the number of true mass murders.

Capture-recapture methods (e.g., see Mastro et al. 1994; Neugebauer and Wittes 1994) offer one potential way of improving estimation of mass murders. Capture-recapture methods enable one to estimate the true size of a population based on the number of overlapping subjects found in random samples drawn from the population. Mastro et al. (1994), for example, have used this methodology to estimate the number of HIV-infected drug users in the population of a foreign city. Similarly, researchers in the biological sciences have used this methodology to estimate the size of different wildlife populations.

Given two samples from a population, the size of the population can be estimated as:

$$N = n1 * n2 / m$$

where N is the population estimate, n1 is the size of the first sample, n2 is the size of the second sample, and m is the amount of overlap in the samples (i.e., the number of subjects which turned up in the first sample and that were subsequently recaptured in the second sample). Neugebauer and Wittes (1994, p.1068) point out that this estimate is biased but that the "bias is small when the capture and recapture sizes are large." The reliability of the estimate depends on four assumptions (Mastro et al. 1994, pp.1096-1097). First, the population must be closed (in our case, this is not a problem because our samples are drawn from the same geographic area and time period). Second, the capture sources must be independent (if more than two sources are used, log-linear modeling can be used to account for dependence between the sources, and the assumption of independence is not necessary). Third, members of the population must have an equal probability of being captured. Finally, the matching procedure must be accurate — all matches must be identified and there can be no false matches.

As mentioned previously, our work with the SHR and media sources suggests that both sources underestimate the true number of firearm mass murders occurring in the nation. That being the case, we offer a tentative illustration of how capture-recapture methods might be used to estimate the true number of mass murders occurring in the nation based on the SHR and media source numbers. We add a number of qualifiers

⁴ In our experience, one factor making mass murder cases more difficult to locate is that many of these stories are not labeled with dramatic terms such as "mass murder" or "massacre." Despite the rarity and tragedy of these events, they are often described in commonplace terms (headlines may simply state something like, "Gunman shoots five persons during robbery"). Thus, it becomes necessary to develop Nexis search parameters broad enough to capture various sorts of multiple-victim incidents. This, in turn, requires one to examine a much greater number of stories.

throughout this exercise. To begin with, the SHR and media sources might not seem independent because, generally speaking, news organizations are reliant upon police for information about crime. Once a homicide is discovered, on the other hand, the reporting apparatuses for the SHR and news organizations are distinct.

With that caveat in mind, we used the year 1992 for this demonstration. For that year, we identified all cases from both sources in which one offender killed four or more persons using a firearm. The SHR search turned up 15 cases, and the Nexis search yielded 14 cases.

Next, we attempted to match these cases. Tentatively, we determined that nine cases were common to both sources (see Table A-2). Our estimate for the number of incidents during 1992 in which one offender killed four or more persons using a firearm(s) thus becomes:

$$N = (15 * 14)/9 = 23.$$

Table A-2. 1992 HR/Nexis comparisons

<u>NEXIS</u>	<u>SHR</u>	<u>NEXIS & SHR</u>
14	15	9
<u>NEXIS ONLY</u>		<u>NUMBER OF VICTIMS</u>
2/16/92	Mobile, AL	4
5/1/92	Yuba County, CA	4
6/15/92	Inglewood, CA	5
9/13/92	Harris County, TX	4
11/13/92	Spring Branch, TX	5
<u>FBI ONLY</u>		<u>NUMBER OF VICTIMS</u>
8/92	Dade, FL	4
9/92	Chicago, IL	4
5/92	Detroit, MI	4
3/92	New York, NY	4
1/92	Burleigh, ND	4
7/92	Houston, TX	4
<u>NEXIS & FBI</u>		<u>NUMBER OF VICTIMS</u>
2/12/92	Seattle, WA	4
3/21/92	Sullivan, MO	6
3/26/92	Queens, NY	5
7/23/92	Fairmont, WV	4
10/4/92	Dallas, TX	4
10/15/92	Schuyler County	4
11/1/92	Rancho Santa Fe, CA	4
12/13/92	King County, WA	4
12/24/92	Prince William County, VA	4

A number of cautionary notes are required. Obviously, our sample sizes are quite small, but, apparently, so is the population which we are trying to estimate. In addition, our matches between the sources were based on matching the town (determined from the police department's name), month of occurrence, number of victims, and number of offenders. In a more thorough investigation, one would wish to make the matches more carefully. If,

for instance, the victims were not all immediately killed, one may find a news story referring to the initial number of deaths, and that count might not match the final count appearing in the SHR. Moreover, we have focused on cases in which one offender committed the murders. However, the SHR might list two or more offenders if there were other accomplices who did not do the shooting. Finally, there could be ambiguity regarding the exact location of the SHR cases because we used the police department name to match the locations with the Nexis cases (city or town name does not appear in the file). We did not investigate these issues extensively, but they would seem to be manageable problems.

Another issue is whether each incident's probability of being captured is the same for each sample. Our tentative judgment is that this is not the case, or at least it does not appear to have been true for our sample. Referring to Table A-2, it seems that the SHR-only cases were more likely to appear in urban areas, whereas the Nexis-only cases appear to have taken place in more rural areas. We can speculate that rural police departments are somewhat less likely to participate in the SHR, and that cases in rural areas are thus less likely to be reported to the SHR. In contrast, the greater number of murders and violent acts which occur in urban areas may have the effect of making any given incident less newsworthy, even if that incident is a mass murder. A mass murder taking place among family members in an urban jurisdiction, for instance, might get less prominent coverage in news sources and might therefore be more difficult to locate in a national electronic search.

But even if we accept these biases as real, we can at least estimate the direction of the bias in the capture-recapture estimate. Biases such as those discussed above have the effect of lessening the overlap between our sources. Therefore, they decrease the denominator of the capture-recapture equation and bias the population estimate upwards. With this in mind, our 1992 estimate of 23 cases should be seen as an upper estimate of the number of these incidents for that year.

In this section, we have provided a very rough illustration of how capture-recapture models might be utilized to more accurately estimate the number of mass murders in the U.S. or any portion of the U.S. If additional homicide sources were added such as the U.S. Public Health Service's Mortality Detail Files, moreover, researchers could model any dependencies between the sources. With further research into past years and ahead into future years, researchers could build time series to track mass murders and firearm mass murders over time. This may be a worthwhile venture because though these events are only a small fraction of all homicides, they are arguably events which have a disproportionately negative impact on citizens' perceptions of safety.

Firearms Used in Mass Murders

Table A-1 displays information about the weapons used in our sample of mass murders. One of the major goals behind the Nexis search was to obtain more detailed information on the weapons used in firearm mass murders. Yet a substantial proportion of the articles said nothing about the firearm(s) used in the crime or identified the gun(s) with generic terms such as "handgun," "rifle," or "shotgun." Overall, 18 stories identified the murder weapon(s) as a semiautomatic weapon, and 16 of these guns were semiautomatic handguns. Only eight stories named the make and model of the murder weapon.

Despite the general lack of detailed weapon information, our operating assumption was that, due to their notoriety, assault weapons would draw more attention in media sources. That is, we assumed that reporters would explicitly identify any assault weapons that were involved in the incident and that unidentified weapons were most likely not assault weapons. This assumption is most reasonable for cases in which the offender was apprehended. Overall, 37 cases (71 percent) were solved and another 6 (11.5 percent) had known suspects.

Of the total 52 cases in our sample, 2, or 3.8 percent, involved assault weapons as the murder weapon. If we focus on just the 37 solved cases, assault weapons were involved in 5.4 percent (both assault weapon cases were solved). One of the assault weapon cases took place in 1993 and the other took place in 1995 after the ban's implementation. The accounts of those cases are as follows:

Case 1 (July 3, 1993, San Francisco, California). A 55-year-old man bearing a grudge against his former attorneys for a lawsuit in which he lost 1 million dollars killed 8 persons, wounded 6 others, and then killed himself during a 15-minute rampage in which he fired 50-100 rounds. The offender was armed with two TEC-9 assault pistols, a .45 caliber semiautomatic pistol, and hundreds of rounds of ammunition.⁵

Case 2 (June 20, 1995, Spokane, Washington). A military man assigned to Fairchild Air Force Base entered the base hospital with an AK-47 assault rifle and opened fire, killing 4 and wounding 19. The gunman was killed by a military police officer. At the time of the story, no motive for the killing had been discovered.

In addition, our search uncovered two other cases in which the offender possessed an assault weapon but did not use it in the crime. In one of these cases, the additional weapon was identified only as a "Chinese assault rifle," so there is the possibility that the gun was an SKS rifle or other firearm that was not an assault weapon by the criteria of Title XI.

LETHALITY OF ASSAULT WEAPONS USED IN MASS MURDERS

Although assault weapons appeared rarely in our sample of firearm mass murder cases, there are some indications that mass murders involving assault weapons are more deadly than other mass murders with guns. The two unambiguous assault weapon cases in our sample involved a mean of 6 victims, a number 1.5 higher than the 4.5 victims killed on average in the other cases. Further, each assault weapon case involved a substantial number of other victims who were wounded but not killed. Other notorious mass murders committed with assault weapons also claimed particularly high numbers of victims (Cox Newspapers 1989). The numbers of victims in these cases suggests that the ability of the murder weapons to accept large-capacity magazines was probably an important factor. We offer this observation cautiously, however, for several reasons besides the small number of cases in our sample. We did not make detailed assessments of the actors or circumstances involved in these incidents. Relevant questions, for example, might include whether the offender had a set number of intended targets (and, relatedly, the relationship between the offender and victims), the number of different guns used, whether the offender had the victims trapped at the time of the murders, and the amount of time the offender had to commit the crime.

In order to refine our comparison somewhat further, we examined the number of victims in assault weapon and non-assault weapon cases after removing 19 family-related cases from consideration. This did not change the results; the average number of victims in assault weapon cases was still approximately 1.5 higher than that of non-assault weapon cases.

⁵ The story indicated that the offender had modified the firearms to make them fire more rapidly than they would have otherwise. Presumably, this means that he converted the guns to fully automatic fire, but this is not entirely clear from the article.

RECOMMENDATIONS FOR FURTHER RELATED RESEARCH

There are a number of related questions that could be pursued in future research. One concerns a more explicit examination of the role of large-capacity magazines in mass murder, particularly for incidents involving non-assault weapon firearms. Based on our experience, this information is rarely offered in media sources and would require contacting police departments which investigated mass murder incidents. Another issue concerns non-fatal victims. This was not an express focus of our research, but if the assault weapon/large-capacity semiautomatic hypothesis has validity, we can hypothesize that shootings involving these weapons will involve more total victims. Along similar lines, Sherman and his colleagues (1989) documented a rise in bystander shootings in a number of cities during the 1980s and speculated that the spread of semiautomatic weaponry was a factor in this development. Due to time and resource limitations, we did not pursue the issue of bystander shootings for this study, but further research might shed light on whether assault weapons and large-capacity magazines have been a factor in any such rise.

The author(s) shown below used Federal funds provided by the U.S. Department of Justice and prepared the following final report:

Document Title: Updated Assessment of the Federal Assault Weapons Ban: Impacts on Gun Markets and Gun Violence, 1994-2003

Author(s): Christopher S. Koper

Document No.: 204431

Date Received: July 2004

Award Number: 98-IJ-CX-0039

This report has not been published by the U.S. Department of Justice. To provide better customer service, NCJRS has made this Federally-funded grant final report available electronically in addition to traditional paper copies.

<p>Opinions or points of view expressed are those of the author(s) and do not necessarily reflect the official position or policies of the U.S. Department of Justice.</p>

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF CONNECTICUT

JUNE SHEW, et al,

Plaintiffs,

-against-

DANNEL P. MALLOY, et al,

Defendants.

Civil No. 3:13-cv-739-AVC

DECLARATION

STATE OF CONNECTICUT)
)
COUNTY OF NEW LONDON)

SCOTT WILSON, under the penalties of perjury, hereby declares the following:

1. I am presently an officer of plaintiff THE CONNECTICUT CITIZENS DEFENSE LEAGUE ("CCDL", "association plaintiff"),

2. I am personally acquainted with the facts herein stated.

3. The CCDL is a domestic non-stock business entity with a principal place of business in Stratford, CT. The CCDL is a non-partisan, grassroots organization with approximately seven thousand six hundred (8,700) members. The CCDL is devoted to advocating rights affirmed by the Constitutions of the United States of America and the State of Connecticut. The CCDL is especially dedicated to protecting the unalienable right of all citizens to keep and bear arms, for the defense of both self and State, through public education and legislative action. The CCDL welcomes anyone who believes that the defense of constitutional rights is critical to the longevity of freedom and to the success of this nation, and in particular that the rights to self-defense and to keep and bear the arms to actualize that defense are fundamental and undeniable. The CCDL brings this suit on its own behalf and on behalf of its members.

4. Given my role as an officer of the CCDL, I have direct, first-hand knowledge that members of CCDL ("members," "member plaintiffs") possess and wish to acquire rifles, handguns, shotguns, ammunition feeding devices, and ammunition, but are prevented from doing so by the Act's restrictions on "assault weapons," "large capacity ammunition feeding devices," and ammunition sales.

5. Some members possess magazines with a capacity of more than ten rounds that are now criminalized by the Act. Other members do not possess magazines with a capacity of more than ten rounds, but would acquire them forthwith but for the Act. Many members would load more than ten rounds in their magazines for use in firearms kept in the home for self-protection but cannot do so because of the Act. Members are unaware how to modify magazines so they cannot "readily be restored or converted to accept" more than ten rounds.

6. Some members possess firearms now prohibited by the Act as "assault weapons." But for the Act, still other members, individual plaintiffs, and business plaintiffs would forthwith obtain and possess "assault weapons" under each and every one of the Act's new definitions.

7. As examples, some members possess, and other members would possess but for the Act, semiautomatic rifles that have an ability to accept a detachable magazine with a folding or telescoping stock, or any other stock which would allow an individual to grip the weapon, resulting in any finger on the trigger hand in addition to the trigger finger being directly below any portion of the action of the weapon when firing; or a forward pistol grip. Other members possess or would possess such rifles with muzzle

brakes, muzzle compensators, or threaded barrels designed to accommodate such attachments.

8. Further, some members possess semiautomatic rifles with detachable magazines and with a thumbhole stock. Such rifles are commonly used for hunting game and for target shooting. A thumbhole stock allows the rifle to be held more comfortably and fired more accurately, but it causes the rifle to be defined as an “assault weapon”.

9. But for the Act, other members would forthwith obtain and possess identical or similar rifles but may not do so in that they are now considered illegal “assault weapons”.

10. Being in possession of, or wishing to acquire, “assault weapons,” “large capacity ammunition feeding devices,” members are subject to the Act’s requirements regarding registration, and converting magazines, and to the Act’s serious criminal penalties, including incarceration, fines, forfeitures, and cancellation of licenses.

11. Members are unaware of how to convert “large capacity ammunition feeding devices” so that they will hold only ten rounds. Other members might possess the technical ability to attempt such conversions, but are unaware of the definition of “readily converted or restored” or “permanent” that the State of Connecticut would apply to such conversions. The State of Connecticut has provided no guidance in this regard, nor does it refer gun or magazine owners to other resources that can provide adequate guidance.

12. Members have sought guidance from the State of Connecticut as to the scope of, application of, and exceptions to the Act, and have either received no response from the State or responses that are inaccurate and confusing.

13. Members purchase ammunition at competitive prices from out-of-state businesses. The Act's ban on out-of-state ammunition sales has caused financial harm to these members and makes it more difficult for them to obtain ammunition for lawful self protection, hunting, target shooting, and trap shooting.

14. I have direct, first-hand knowledge that the firearms now classified as "assault weapons" by the Act have been used for self-defense, hunting and shooting competitions throughout the State of Connecticut for decades. I personally know many individuals who have hunted with these firearms for years. In this sense, the argument that assault weapons are not used for hunting is simply untrue.

15. In addition, there are numerous shooting competitions for non-military personnel that have taken place throughout the State of Connecticut for years that regularly used the firearms now classified as "assault weapons" to compete. For example, timed competitions known as "3 Gun Shoots" and "2 Gun Shoots" were regularly regularly held at such places as the Metacon Gun Club in Weatogue, CT, and the Rockville Fish & Game Club in Vernon, CT. These matches regularly used the rifles and pistols now classified by the Act as "assault weapons" in timed competitions that test accuracy and proficiency. These matches are extremely popular, have been taking place throughout Connecticut for years, and have been attended throughout the years by hundreds (and likely thousands) of members. In this sense, the argument that the firearms now classified as "assault weapons" are not used by private citizens for sporting competitions is simply untrue.

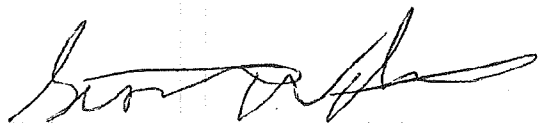
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16. I have reviewed the foregoing statements and pursuant to 28 U.S.C. 1746(1) hereby declare under the penalties of perjury that they are true, correct, complete and accurate according to the best of my knowledge, information and belief.


/s/ SCOTT WILSON

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF CONNECTICUT

JUNE SHEW, et al,

Plaintiffs,

-against-

DANNEL P. MALLOY, et al,

Defendants.

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Civil No. 3:13-cv-739-AVC

DECLARATION

STATE OF CONNECTICUT)
)
COUNTY OF FAIRFIELD)

PAUL HILLER, under the penalties of perjury, hereby states the following:

1. I am over the age of 18 and believe in the nature of an oath.
2. I am personally acquainted with the facts herein stated.
3. I am a resident of the State of Connecticut, and a citizen of the United States. I have never been arrested or convicted of any crime. I currently possess a pistol permit issued by the State of Connecticut. This permit has never been suspended or revoked.
4. I am also a Range Safety Officer pursuant to the National Rifle Association's Range Safety Officer program.
5. I am also qualified as an instructor through the NRA's program to teach personal protection in the home.
6. I am also a bail enforcement agent and hold a Gold Card in that capacity.
7. I am the owner with my partner of Hiller Sports LLC located at 4 New Canaan Avenue in Norwalk, CT. ("the Store"). The Store is the holder of a Federal Firearms License ("FFL") that permits it to buy and sell firearms both within and without the State of Connecticut.

Pursuant to this license, the Store buys, sells, and re-purchases firearms within and without the State of Connecticut. The Store sells ammunition, as well as magazines that hold ammunition.

8. The firearms sold by the Store include rifles, pistols and shotguns. Several models of these firearms are semi-automatic, and are capable of accepting detachable magazines. Several models are AR-15 type modern sporting rifles. Several of these same models also have characteristics such as pistol grips, forward grips, telescoping stocks, thumbhole stocks, and threaded barrels. Threaded barrels permit the firearm to accept popular accessories such as shrouds and flash hiders.

9. On April 4, 2013, the Governor of Connecticut signed into law An Act Concerning Gun Violence Prevention and Children's Safety ("the Act"). With certain exceptions, the Act bans "large capacity magazines" (magazines that can accept more than 10 rounds of ammunition). I understand that, starting January 1, 2014, possession of a "large capacity magazine" is a Class D felony. If the "large capacity magazine" was obtained before the Act's passage, a first offense for possessing it is an infraction subject to a fine, but any subsequent offense is a Class D felony.

10. The Act bans "assault weapons," the definition of which includes a semiautomatic rifle that has an ability to accept a detachable magazine, and which also has: a folding or telescoping stock; or a thumbhole stock; or any other stock which would allow an individual to grip the weapon, resulting in any finger on the trigger hand in addition to the trigger finger being directly below any portion of the action of the weapon when firing; or a forward pistol grip.

11. The Act's definition of "assault weapon" also includes a semiautomatic pistol that has the ability to accept a detachable magazine, and which also has at least one of the following: an ability to accept a detachable magazine that attaches at some location outside the pistol grip; a

threaded barrel capable of accepting a flash suppressor, forward pistol grip or silencer; a shroud that is attached to, or partially or completely encircles, the barrel and that permits the shooter to fire the firearm without being burned, except a slide that encloses the barrel; or a second hand grip.

12. Since the passage of the Act, the Store's business has been directly and adversely impacted.

13. As mentioned above, the Act outlaws semi-automatic rifles that can accept detachable magazines, and also have a thumbhole stock, a telescoping stock, a forward grip, or any grip that permits the fingers of the trigger hand to rest below the firearm's action when firing. These features are commonly found (either individually or in combination) on AR-15 type modern sporting rifles.

14. One segment of the Store's business involves the purchase of "AR"-type firearms from out-of-state distributors and the sale of these "AR"-type firearms to customers. Since the passage of the Act, several of the Store's out-of-state distributors have stopped altogether the shipment of "AR"-type firearms to the Store due to concern and confusion over whether these types of arms can legally be shipped to, received by and/or sold by the holder of an FFL. In fact, the Store had to hold orders worth approximately \$50,000 of back orders on AR-15s to its customers because the wholesaler would not ship the AR-15s to fill them. The sale of those types of firearms was a vast majority of the Store's sales before the passage of the Act. These stoppages have caused actual harm to Store's sales and overall business.

15. One segment of the Store's business involves the sale of accessories for "AR"-type firearms. These include, among other things, slings, rails, optics/scopes, grips, and cases.

Since the passage of the Act, I have only sold an extremely small number of accessories, whereas before the passage of the Act the sale of accessories kept pace with the sale of AR-type firearms.

16. One segment of the Store's business involves the sale of ammunition. Since the passage of the Act, several of the Store's out-of-state ammunition suppliers have not been able to ship ammunition to Hiller Sports LLC because the manufacturers are so backlogged. This has led to a decline in ammunition supply, which in turn has led to a decline in ammunition sales. This decline has caused actual harm to the Store's sales and overall business. Moreover, the lack of ammunition has caused actual harm to another segment of the Store's business. The Store recently installed a shooting range at significant expense in its building, designed and built for use by shooters of AR-15 types rifles chambered for .223 and .308 caliber ammunition. This is precisely the firearm that was outlawed by the Act. Thus, the inability to sell ammunition to customer to use at the range, and also rent range time at this facility, has caused an actual harm to the Store.

17. One segment of the Store's business involves the sale of ammunition magazines. Since the passage of the Act, the Store has returned all large capacity ammunition magazines and has asked, in turn, for the manufacturers to send it magazines that hold ten rounds. We are still waiting to receive those magazines from the manufacturers. This scenario has caused actual harm to the Store's sales and overall business.

18. One segment of the Store's business involves the receipt and transfer of large capacity magazines pursuant to the FFL the Store holds. Since the passage of the Act, we no longer transfer large capacity magazines out-of-state because the Store cannot profit from those transactions. The supply to the out-of-state dealers is high and thus these transactions are not profitable. This decline has caused actual harm to the Store's sales and overall business. Some of

customers who wanted to trade in their large capacity magazines have expressed dissatisfaction with the Store's refusal to receive and transfer the magazines out-of-state.

19. Since the passage of the Act, the Store's overall sales of rifles, pistols, and shotguns have declined significantly. I have observed that this decline in sales involves firearms that contain some of the individual features that are banned by the Act (e.g., pistol grips, telescoping stocks, etc.), but also firearms that are not characterized by the Act as "assault weapons." This decline is due, in large part, to customer confusion over which kinds of firearms are banned and which is not, as well as customer concern that purchasing a firearm will subject the customer to criminal prosecution.

20. I have reviewed the foregoing statements and pursuant to 28 U.S.C. 1746(1) hereby declare under the penalties of perjury that they are true, correct, complete and accurate according to the best of my knowledge, information and belief.

/s/ 
PAUL HILLER

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF CONNECTICUT

JUNE SHEW, et al,

Plaintiffs,

-against-

DANNEL P. MALLOY, et al,

Defendants.

Civil No. 3:13-cv-739-AVC

SUPPLEMENTAL DECLARATION

STATE OF CONNECTICUT)
)
COUNTY OF FAIRFIELD)

JUNE SHEW hereby states the following under penalties of perjury.

1. I am over the age of 18 and believe in the nature of an oath.
2. I am personally acquainted with the facts herein stated.
3. I am a resident of the State of Connecticut, and a citizen of the United States. I

have never been arrested or convicted of any crime. I currently possess a Permit To Carry Pistols and Revolvers issued by the State of Connecticut. This permit has never been suspended or revoked.

4. I am a member of the Metacon Gun Club. The Metacon Club sponsors and hosts different kinds of shooting competitions, and its members also compete as teams in shooting competitions at other locations. In addition, for the past ten years I have been Clinic Director of Metacon's "Women on Target." Women on Target is a comprehensive clinic that educates women on the safe and responsible use of firearms. Over the years, I have personally coached or instructed over one thousand (1,000) women on how to safely use firearms.

5. As a result of this experience, I have developed direct, first-hand knowledge of the different ways the Metacon and Women on Target members use the firearms now classified

as “assault weapons” under the Act, the kinds of shooting competitions held in the State of Connecticut, and the kinds of firearms that are regularly used at these events.

6. I have direct, first-hand knowledge that the firearms now classified as “assault weapons” by the Act have been used for self-defense, hunting and shooting competitions throughout the State of Connecticut for decades. I personally know many individuals who have hunted with these firearms for years. In this sense, the argument that assault weapons are not used for hunting is simply untrue.

7. In addition, there are numerous shooting competitions for non-military personnel that have taken place throughout the State of Connecticut for years that regularly used the firearms now classified as “assault weapons” to compete. For example, timed competitions known as “3 Gun Shoots” and “2 Gun Shoots” were regularly regularly held at the Metacon Gun Club, and also at the Rockville Fish & Game Club in Vernon, CT. These matches regularly used the rifles and pistols now classified by the Act as “assault weapons” in timed competitions that test accuracy and proficiency. These matches are extremely popular, have been taking place throughout Connecticut for years, and have been attended throughout the years by hundreds (and likely thousands) of Metacon members and other gun law-abiding owners and shooting enthusiasts. In this sense, the argument that the firearms now classified as “assault weapons” are not used by private citizens for sporting competitions is simply untrue.

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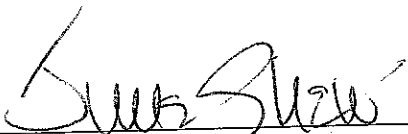
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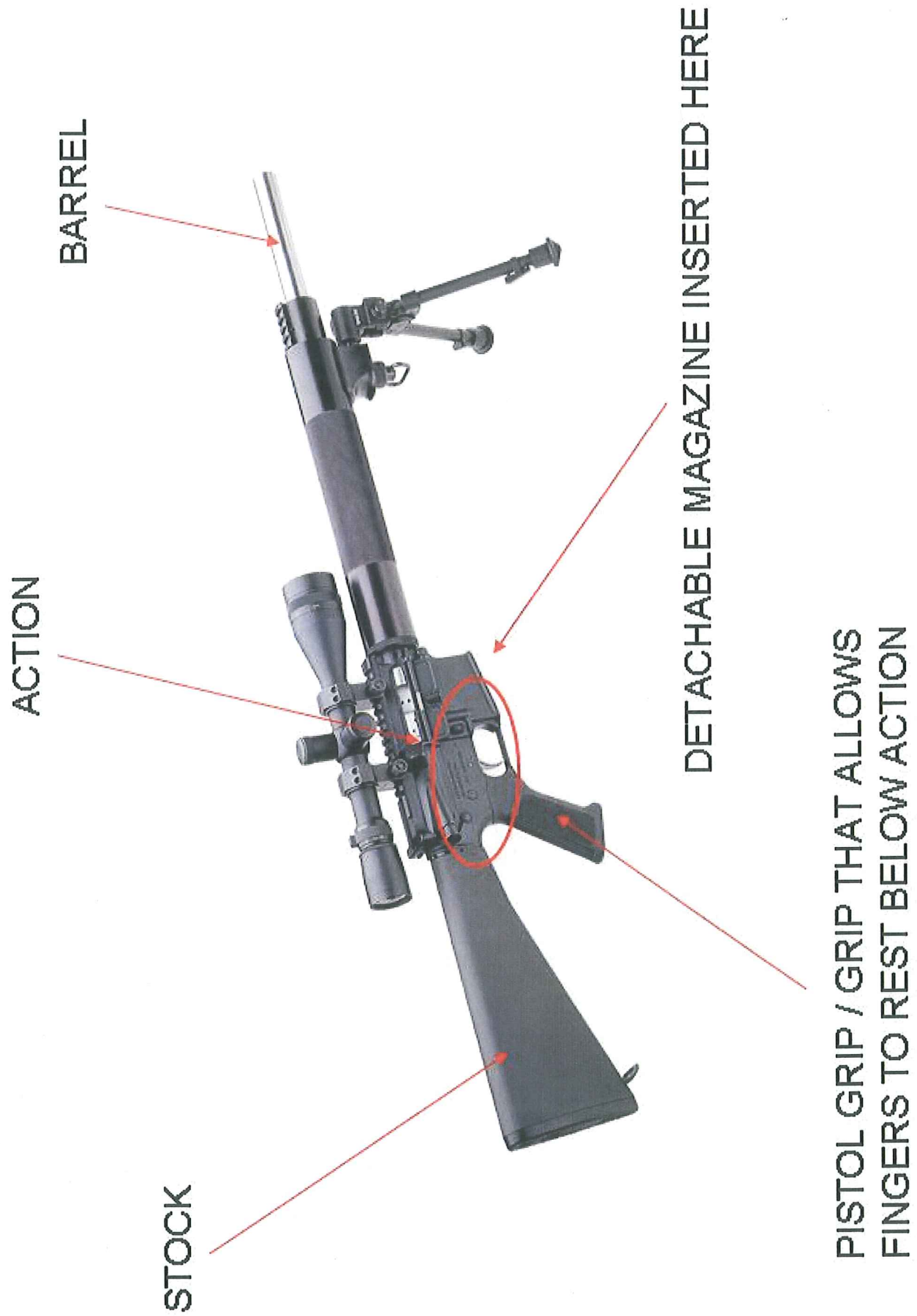
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8. I have reviewed the foregoing statements and pursuant to 28 U.S.C. 1746(1) hereby declare under the penalties of perjury that they are true, correct, complete and accurate according to the best of my knowledge, information and belief.



JUNE SHEU



Dr. Gary K. Roberts, DDS
750 Welch Road #118
Palo Alto, California 94304

August 23, 2013

Goldberg Segalla, LLP
100 Pearl Street – 11th Floor
Hartford, CT 06103
Attention: Brian Stapleton, Esq.

In Re: NYSRPA v Cuomo, et al.
Case No.: 1:13-cv-00291-WMS
Motion for Preliminary Injunction

Mr. Stapleton:

I offer this declaration in support of a motion made by plaintiffs in the above-referenced action that seeks a permanent injunction enjoining the enforcement of Connecticut's Act Concerning Gun Violence Prevention and Children's Safety ("the Act"). This declaration is based upon my review of the Act, and also my years of study, training, research and consulting in wound ballistics; my education; and my experience.

I offer the following opinions under the penalties of perjury, and to a reasonable degree of certainty found in the fields of weapon ballistics and wound ballistics.

I. EXPERIENCE & TRAINING

I am currently on staff at Stanford University Medical Center; this is a large teaching hospital and Level I Trauma center where I perform hospital dentistry and surgery. After completing my residency at Navy Hospital Oakland in 1989 while on active military duty, I studied at the Army Wound Ballistic Research Laboratory at the Letterman Army Institute of Research and became one of the first members of the International Wound Ballistic Association.

Since then, I have been tasked with performing military, law enforcement, and privately funded independent wound ballistic testing and analysis. As a Navy Reserve officer from 1986 to 2008, I served on the Joint Service Wound Ballistic IPT, as well as being a consultant to the Joint FBI-USMC munitions testing program and the TSWG MURG program.

I am frequently asked to provide wound ballistic technical assistance to numerous U.S. and allied SOF units and organizations, such as the Canadian Armed Forces Weapons Effect and Protection SIPES TDP. In addition, I am a technical advisor to the Association of Firearms and Toolmark Examiners, as well as to a variety of Federal, State, and municipal law enforcement agencies.

I have been a sworn Reserve Police Officer in the San Francisco Bay Area and have recently served in a Law Enforcement (LE) training role.

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II. THE SEMI-AUTOMATIC AR15 CARBINE IS LIKELY THE MOST ERGONOMIC, SAFE, AND EFFECTIVE FIREARM FOR CIVILIAN SELF-DEFENSE

A. INTRODUCTION to TERMINAL BALLISTICS

Internal ballistics is the study of projectile behavior from the time the cartridge is fired and propellant ignited, until the bullet exits the barrel of the firearm. External ballistics is the study of projectile flight through air after exiting the barrel of the firearm, until a target or object is hit. Terminal ballistics is the study of projectile behavior from the time the first target, intermediate barrier, or object is hit, until the projectile stops moving. Wound ballistics is the branch of terminal ballistics that studies the interaction between penetrating projectiles and tissue; essentially the pathophysiology of gunshot wounds. This is of crucial importance to the healthcare provider who must treat gunshot wounds, as a poor understanding of the types of injuries produced by penetrating projectiles may result in improper or inadequate clinical treatment being provided to a shooting victim. Terminal ballistics and wound ballistics are also of interest to military and law enforcement personnel as well as private citizens who depend on firearms to protect themselves since misconceptions regarding bullet effectiveness and body armor can jeopardize their lives and those of innocent individuals they are protecting.

B. BASIC WOUND BALLISTIC FACTS

The last 25 years of modern wound ballistic research has demonstrated yet again what historical reports have always indicated--that there are only two valid methods of incapacitation: one based on psychological factors and the other physiological damage.

People are often rapidly psychologically incapacitated by minor wounds that are not immediately physiologically incapacitating. Preconceived notions of how people should react when shot; intimidation from the weapon or act of being shot; fear of pain, injury, or death; anxiety about the appearance of their wound and the sight of their own blood; or a lack of will to continue and a desire to quit can all influence an individual's response to being shot. Up to fifty percent of those individuals rapidly incapacitated by bullet wounds are probably incapacitated for psychological rather than physiological reasons. Psychological factors are also the reason people can receive severe, even non-survivable wounds and continue functioning for short periods of time. Since pain is often initially absent following injury, an individual may not be aware of their wound and therefore will not react to it. Strong emotions such as anger, rage, hate, and basic survival instincts that release adrenalin, can stimulate the body. Chemicals can strongly influence an individual's psychological state. People under the influence of analgesics, stimulants, tranquilizers, or dissociative agents may not be aware of their injury, may have decreased pain perception, or may show no concern about their wound. Psychological incapacitation is an extremely erratic, highly variable, and completely unpredictable human response, independent of any inherent characteristics of a particular projectile.

On the other hand, the degree and rapidity of any physiological incapacitation is determined by the anatomic structures the projectile disrupts and the severity the tissue

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damage caused by the bullet. Physiologically, immediate incapacitation or death can only occur when the brain or upper spinal cord is damaged or destroyed. The tactical reality is that in OIS (*officer involved shooting*) incidents, opportunities for LE (*law enforcement*) personnel to take precisely aimed shots at the CNS (*central nervous system*) of threatening opponents is rare due to high stress unexpected contact marked by rapid fleeting movements, along with frequent poor visibility of the target caused by darkness, innocent bystanders, and the use of cover and concealment. Battlefield conditions for military personnel can be even more chaotic. Likewise, civilian self-defense encounters can be highly stressful and confusing. Thus there is a reduced likelihood of routine CNS targeting in defensive encounters requiring lethal force. Absent CNS damage, circulatory system collapse from severe disruption of the vital organs and blood vessels in the torso is the only other reliable method of physiological incapacitation from small arms. If the CNS is uninjured, physiological incapacitation is delayed until blood loss is sufficient to deprive the brain of oxygen. Multiple hits may be needed before an individual is physiologically incapacitated. An individual wounded in any area of the body other than the CNS may physiologically be able to continue their actions for a short period of time, even with non-survivable injuries. In a 1992 IWBA Journal paper, Dr. Ken Newgard wrote the following about how blood loss effects incapacitation:

A 70 kg male has a cardiac output of around 5.5 liters per minute. His blood volume is about 4200 cc. Assuming that his cardiac output can double under stress, his aortic blood flow can reach 11 Liters per minute. If this male had his thoracic aorta totally severed, it would take him 4.6 seconds to lose 20% of his total blood volume. This is the minimum amount of time in which a person could lose 20% of his blood volume from one point of injury. A marginally trained person can fire at a rate of two shots per second. In 4.6 seconds there could easily be 9 shots of return fire before the assailant's activity is neutralized. Note this analysis does not account for oxygen contained in the blood already perusing the brain that will keep the brain functioning for an even longer period of time.

LE personnel are generally trained to shoot at the center of mass, usually the torso, of an aggressive opponent who must be stopped through the use of lethal force. While the human body can appear incredibly complex and frail, it is also remarkably robust and durable, with the capacity to withstand severe stress and damage before being incapacitated. Physiological incapacitation with wounds to the torso is usually the result of circulatory system collapse. More rapid incapacitation may occur with greater tissue disruption. Tissue is damaged through two wounding mechanisms: the tissue in the projectile's path is permanently crushed and the tissue surrounding the projectile's path is temporarily stretched. A penetrating projectile physically crushes and destroys tissue as it cuts its path through the body. The space occupied by this pulped and disintegrated tissue is referred to as the permanent cavity. The permanent cavity, or wound track, can quite simply be considered as the hole bored by the projectile's passage. Obviously, bullets of greater diameter crush more tissue, forming a larger permanent cavity. The formation of this permanent cavity is consistent and reliable.

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The tissue surrounding the permanent cavity is briefly pushed laterally aside as it is centrifugally driven radially outward by the projectile's passage. The empty space normally occupied by the momentarily displaced tissue surrounding the wound track is called the temporary cavity. The temporary cavity quickly subsides as the elastic recoil of the stretched tissue returns it towards the wound track. The tissue that was stretched by the temporary cavity may be injured and is analogous to an area of blunt trauma surrounding the permanent crush cavity. The degree of injury produced by temporary cavitation is quite variable, erratic, and highly dependent on anatomic and physiologic considerations. Many flexible, elastic soft tissues such as muscle, bowel wall, skin, blood vessels, and empty hollow organs (*stomach, intestines, bladder, etc...*) are good energy absorbers and are highly resistant to the blunt trauma and contusion caused by the stretch of temporary cavitation. Inelastic tissues such as the liver, kidney, spleen, pancreas, brain, and completely full fluid or gas filled hollow organs are highly susceptible to severe permanent splitting, tearing, and rupture due to temporary cavitation insults. Projectiles are traveling at their maximum velocity when they initially strike and then slow as they travel through tissue. In spite of this, the maximum temporary cavity is not always found at the surface where the projectile is at its highest velocity, but often deeper in the tissue after it has slowed considerably. The maximum temporary cavitation is usually coincidental with that of maximum bullet yaw, deformation, or hyper-expansion and fragmentation, but not necessarily maximum projectile velocity.

All projectiles that penetrate the body can only disrupt tissue by these two wounding mechanisms: the localized crushing of tissue in the bullet's path and the transient stretching of tissue adjacent to the wound track. Projectile wounds differ in the amount and location of crushed and stretched tissue. The relative contribution by each of these mechanisms to any wound depends on the physical characteristics of the projectile, its size, weight, shape, construction, and velocity, penetration depth and the type of tissue with which the projectile interacts. Unlike rifle bullets, handgun bullets, regardless of whether they are fired from pistols or SMG's (*sub-machine gun*), generally only disrupt tissue by the crush mechanism. In addition, temporary cavitation from most handgun bullets does not reliably damage tissue and is not usually a significant mechanism of wounding.

Vital anatomic structures are located deep within the body, protected by various layers of tissue. The average thickness of an adult human torso is 9.4" and the major blood vessels in the torso of even a slender adult are located approximately 6" from the ventral skin surface. Bullets that may be required to incapacitate aggressors must reliably penetrate a minimum of approximately 10 to 12 inches of tissue in order to ensure disruption of the major organs and blood vessels in the torso from any angle and through excessive adipose tissue, hypertrophied muscle, or intervening anatomic structures, such as a raised arm. The FBI has defined the ideal penetration range for projectiles intended for LE use to be 12-18", thus ensuring adequate penetration, while limiting the chance of projectiles exiting a violent aggressor and going downrange to hit an innocent bystander. Bullet penetration depth varies depending on the density and resistance of the tissue encountered. Bullets striking dense structures such as bone have reduced penetration while those traveling through less resistant tissue, such as lung, exhibit increased penetration. The tough, resilient, flexible skin on the exit side of the body can have the same resistance to bullet passage as four

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inches of muscle and often causes bullets to end their path just under the skin at the anticipated exit point.

All other factors being equal, heavier bullets penetrate to a deeper depth in tissue than lighter bullets and non-deforming bullets generally penetrate deeper than deforming bullets. Non-deforming projectiles exhibit greater penetration as velocity is increased. Higher velocity also increases the penetration depth of deforming bullets, but only until the bullet begins to upset. The higher velocity then increases the amount and rate of bullet deformation, with the enlarged frontal area of the expanded bullet causing increased resistance to further penetration and a decreased total penetration depth. Projectiles that become destabilized after leaving the muzzle have greater yaw angles in flight and therefore greater AOA (*angle-of-attack*) on impact. AOA at impact refers to the angle between the flight axis of the projectile and the geometric axis of the projectile at the moment of impact. This results in decreased tissue penetration compared to the same bullet when properly stabilized. Decreased projectile penetration can also result if the bullet is deformed or fragmented after passing through intermediate obstacles, for example automobile windshields or sheet metal, before striking tissue. Penetration depth can be increased if an expanding bullet fails to deform, either through poor bullet design or external influences. For example, if the hollow nose cavity of a JHP (*jacketed hollow point*) bullet collapses in on itself after passing through intermediate obstacles such as automobile steel or if the hollow point becomes clogged with material from intermediate obstacles like wood or heavy clothing, it may be prevented from expanding and will behave like a deeper penetrating, non-deforming bullet.

Aerodynamic projectiles, such as bullets, cause minimal tissue disturbance when passing point forward through tissue. Tissue is a denser medium than air; as the bullets strikes tissue, the increased drag on the projectile overcomes its rotational stabilization and the bullet can upset and yaw. If the bullet yaws, more surface area is in contact with tissue, so it crushes more tissue, creating a larger permanent cavity. When a bullet yaws, it also displaces more of the surrounding tissue, increasing the temporary cavity size. Both the largest permanent and temporary cavities are produced by a non-deforming projectile when it is traveling sideways at 90 degrees of yaw, allowing the maximum lateral cross sectional area of the bullet to strike tissue and displace the greatest amount of tissue. Longer and wider bullets have a greater lateral cross sectional area and thus create a larger permanent cavity when they yaw. The depth in tissue at which a given bullet upsets is independent of bullet mass and velocity, and is strongly influenced by the AOA at which the bullet strikes tissue, as well as the projectile shape, construction, and center of gravity. All non-deforming, pointed tip Spitzer type projectiles, such as the FMJ (*full metal jacketed*) rifle bullets commonly used by militaries, yaw past 90 degrees in tissue, finally ending their path pointed backwards, their bases facing the direction of travel, as this is the most stable position for these projectiles when traveling through tissue since this places the bullet's center of gravity forward.

Projectile deformation destroys the aerodynamic shape of the bullet, shortening its length and increasing its diameter by expanding and flattening the bullet tip in the classic "mushroom" pattern exhibited by deforming JHP and JSP (*jacketed soft point bullets*). The larger frontal area of deformed bullets can crush more tissue, thus increasing permanent

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cavity size; more tissue is also displaced by a bullet with increased frontal area, causing an enlarged temporary cavity. The larger permanent and temporary cavities occur at a shallower penetration depth than that caused by non-deforming projectiles. The increased frontal area of a deformed bullet provides greater resistance to the projectile's passage, resulting in decreased penetration depth.

Projectile hyper-expansion and fragmentation in tissue can also greatly increase the permanent cavity size. When a rifle bullet hyper-expands and fragments in tissue, each of the multiple fragments spreads out radially from the main wound track, cutting its own path through tissue. This fragmentation acts synergistically with the stretch of temporary cavitation. The multiply perforated tissue loses its elasticity and is unable to absorb stretching that would ordinarily be tolerated by intact tissue. The temporary cavitation displacement of tissue, which occurs following the passage of the projectile, stretches this weakened tissue and can grossly disrupt its integrity, tearing and detaching pieces of tissue. Note that handgun bullets, regardless of whether they are fired from pistols or SMG's, do not generally exhibit the hyper-expansion and fragmentation effects produced by some rifle bullets. If handgun bullets do fragment, the bullet fragments are usually found within 1 cm of the permanent cavity and wound severity is usually decreased by the fragmentation since the bullet mass is reduced, causing a smaller permanent crush cavity. Depending on bullet design, as the velocity of a projectile is increased, the potential for fragmentation is often magnified. Tissue disruption can also be increased if bullets strike bone, since fractured bone fragments can act as secondary missiles, cutting through tissue surrounding the wound track. Furthermore, bullet deformation and fragmentation is more likely to occur if a projectile strikes bone. This same fragmentation effect can occur if a bullet strikes an intermediate object, such as a belt buckle, prior to penetrating tissue.

The approximately 40% to 60% of gunshot victims who fall down immediately upon wounding are not knocked over by the kinetic energy or momentum of the bullet impact, but rather are incapacitated by physiological and psychological effects. Bullets cannot physically knock down a person by the force of their impact. The U.S. M1911 .45 ACP 230 gr FMJ bullet has developed a legendary reputation for having "knock-down power", yet the impact or momentum of that bullet hitting the body is equivalent to being hit by a 10 pound weight dropped from a height of only 1.37 inches. Obviously, this impact could not knock a person over. Newton's Second Law of motion shows that every action has an equal and opposite reaction. If a bullet had the energy to knock a person down on impact, the recoil of the gun would also knock the shooter down as the bullet was fired. This basic law of physics is dramatically illustrated by a well known demonstration in which an adult male, protected by body armor, is shot from less than five feet by a 7.62 x 51mm NATO bullet fired from an FN FAL type rifle; the approximately 2667 ft/lbs of energy which the bullet "deposits" or "transfers" to the man does not knock him down or push him violently backwards. Kinetic energy or momentum transfer from a projectile to tissue is not a wounding mechanism. The amount of energy "deposited" in the body by a bullet is approximately equal to the amount transferred to the body when a person is hit by a baseball. The amount of kinetic energy "deposited" or momentum transferred to a body by a projectile is not directly proportional to the amount of tissue damaged and is not a measure of wounding power. Wounds of vastly differing severity can be inflicted by bullets of identical kinetic energy and momentum. What the bullet does in the body--whether it

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yaws, deforms, or fragments, how deeply it penetrates, and what tissue it passes through is what determines wound severity, not kinetic energy, momentum, or velocity.

Projectiles which travel at supersonic velocity form a sonic wave which trails in the air behind the projectile. Because the speed of sound in tissue is four times faster than the speed of sound in air, the Sonic Wave jumps ahead of the projectile as the skin surface is penetrated, and then precedes the projectile through tissue. This sonic wave is often erroneously referred to as a "shock wave". There are no shock waves or hydrostatic shock effects in tissue. The sonic wave produces no tissue movement or tissue damage; it is not a wounding mechanism and should not be confused with temporary cavitation. The benign nature of a sonic wave is illustrated by lithotripter treatment of kidney stones, where similar sonic pressure waves cause no gross injury to the soft tissue surrounding the kidney stones.

A basic knowledge of external ballistics is necessary in order to understand the principles of wound ballistics. Because projectiles must overcome air resistance during their flight to the target, they have an elongated, pointed, aerodynamic shape that reduces drag in the air. However, this position places the bullet's center of gravity at the rear of the projectile, an inherently unstable position that would cause the bullet to deviate from a nose forward position during flight and tumble end over end through the air if not rotationally stabilized by the spin imparted by the barrel's rifling. Yaw in flight is the angle of deviation of the projectile's longitudinal axis from its forward trajectory; in other words, the bullet turns sideways in relation to its direction of forward movement. Properly stabilized bullets have a negligible yaw angle in flight, usually less than three degrees, and do not tumble while in the air. Projectiles such as arrows and flechettes resist this tendency to yaw in the air because of the stabilization provided by their rear fins. Intermediate obstacles, including foliage, can disrupt bullet stabilization and induce tumbling while in flight, drastically compromising bullet accuracy and range. Bullets that are destabilized in flight can exhibit a large AOA on impact, causing increased tissue disruption at a shallower penetration depth than properly stabilized bullets.

A variety of equally important methodologies are used for terminal performance testing, including actual shooting incident reconstruction, forensic evidence analysis, and post-mortem data and/or surgical findings; properly conducted ethical animal test results; and laboratory testing—this includes the use of tissue simulants proven to have correlation with living tissue. The last several years of OCONUS military operations have provided a tremendous amount of combat derived terminal performance information. The U.S. government gathered numerous experts from a variety of disciplines, including military and law enforcement end-users, trauma surgeons, aero ballisticians, weapon and munitions engineers, and other scientific specialists to form the Joint Service Wound Ballistic Integrated Product Team to conduct a 4 year, 6 million dollar study to determine what terminal performance assessment best reflected the actual findings noted in combat the past few years. The test protocol that was found to be correct, valid, and became the agreed upon JSWB-IPT "standard" evolved from the one first developed by Dr. Fackler at LAIR in the 1980's, promoted by the IWBA in the 1990's, and used by most reputable wound ballistic researchers. The JSWB-IPT, FBI BRF, AFTE, and other organizations get to assess an extensive amount of post-shooting forensic data. The whole *raison d'être* of these independent, non-profit organizations is to interpret and disseminate information that will

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help LE and military personnel more safely and effectively perform their duties and missions. Physiological damage potential is the only metric that has been shown to have any correlation with field results in actual shooting incidents, based on law enforcement autopsy findings, as well as historical and ongoing combat trauma results.

C. DEFENSIVE MUNITION REQUIREMENTS

All projectiles discharged by firearms have the capacity to kill. None are more "lethal" than others. If person is shot with a projectile that can penetrate into the body, it has the capacity to kill and deadly force has been applied. When law enforcement agencies select munitions intended for potential lethal force use, the primary requirement is to choose ammunition that can reliably rapidly incapacitate and stop hostile individuals who pose an immediate life threatening danger to public safety and prevent them from continuing their violent actions. In addition, the munitions are carefully selected to try and minimize danger to innocent bystanders, as well as officers. By design, hunting bullets are designed to kill efficiently and humanely. In contrast, LE munitions are engineered to incapacitate and stop violent action as quickly as possible—an important distinction. This differentiation between death and incapacitation is not just one of semantics. If a hunter shoots and incapacitates a deer and the animal is still alive when the hunter reaches it, the hunter quickly kills the deer. The hunter is shooting to kill. If a LE officer uses a firearm to incapacitate a suspect and the suspect is still alive as the officer approaches, the officer captures the suspect and initiates medical care. This is shooting to stop a threat. There is a major difference in intent and action.

There is in fact a significant difference between many of the most common civilian hunting munitions and those used by law enforcement—the civilian ammunition is generally substantially more powerful and destructive than almost all small arms munitions in common police use. The most commonly used LE handguns in service calibers like 9 mm, .40 S&W, and .45 Auto are far less powerful than typical hunting handguns firing deep penetrating magnum calibers like the .357 Mag, .41 Mag, .44 Mag, .460 S&W Mag, and .500 S&W Mag. Likewise, police AR15's firing relatively weak .223/5.56 mm ammunition are quite anemic in penetration capability and pale in destructive capacity when compared to common civilian hunting rifles firing calibers like .260 Rem, .270 Win, 7 mm Mag, .30-06, .300 Mag, .338 Mag, .375 H&H, 416 Rigby, .458 Lott, and .500 Nitro. Even hunting rifles in older calibers from the 1800's like .30-30 and .45-70, penetrate much deeper and are far more damaging than the .223/5.56 mm ammunition fired by the AR15 carbines generally used by police. The only common LE weapon that approaches the destructive capability of civilian hunting firearms are 12 gauge shotguns, however police shotgun ammunition almost always uses the weaker 2 ¾" shells, while many civilian hunting shotguns use the more powerful 3" and 3 ½" magnum shotgun loads. Any of the civilian handgun, rifle, or shotgun calibers that are commonly used to hunt feral hogs, deer, elk, moose, bear, etc... will prove far more penetrative and destructive than most of the typical police handgun or carbine loads.

Almost all modern law enforcement ammunition is engineered to meet FBI guidelines of penetrating no less than 12" and no more than 18". In addition, LE ammunition is designed to be blind to barriers--in other words to consistently perform the

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same, whether a shot is unobstructed or first has to go through an intermediate barrier like an automobile windshield, vehicle door, or structural materials (*ex. a wall or door in a building, as well as window glass*). If a member of the public is sadly forced to use lethal force to defend themselves, their family, or other innocent citizens, the requirements for lethal force munitions are exactly the same as needed by the Police in such a horrible eventuality--to quickly stop the violent criminal without endangering other innocent people. In fact, it would likely be prudent and wise for a legally armed citizen to seek out the same tested and proven arms and munitions that are used by police in order to have the greatest chance of safely and successfully surviving a lethal force encounter. As the progenitor of modern law enforcement, Sir Robert Peel, noted:

The police are the public and the public are the police; the police being only members of the public who are paid to give full time attention to duties which are incumbent on every citizen in the interests of community welfare and existence.

In short, civilian citizens should use the same munitions chosen by police in their community, as the lethal force requirements are identical and the anatomy, physiology, and incapacitation potential of a violent felon does not suddenly change whether confronted by law enforcement officers or private citizens.

D. MAGAZINE CAPACITY

A standard capacity magazine is one containing the number of cartridges the firearm was designed to operate with: typically 15-17 rounds in 9 mm, 15 rounds in .40 S&W, 7-13 rounds in .45 ACP, 20-30 rounds in 5.56 mm, and 20 rounds in .308; high capacity magazines and feeding devices are those holding more cartridges than the weapon was originally designed to use; neutered, low capacity magazines are those whose capacity is artificially reduced from that which the firearm was originally designed to use. Numerous tests by LE and military entities have documented that the most reliable magazines are those the weapon was originally designed to use; both high capacity and reduced capacity magazines have frequently demonstrated more malfunctions in various types of firearms.

According to data from the BATF, the majority (approx. 62%) of pistols currently manufactured each year in the U.S. are designed to use magazines with a standard capacity greater than 10 rounds. The U.S. military has not adopted a handgun with a standard magazine capacity less than 10 rounds since 1911. Likewise, all U.S. military rifles that have been adopted since 1937 have a magazine capacity of 15 or more rounds. By capriciously limiting magazine capacity to 10 rounds or less, citizens are denied the benefits of modern technology and forced to use defensive tools from a bygone era.

The most recently released NYPD SOP-9 "Annual Firearms Discharge Report" data show from 2011 document that 7 rounds or less were fired in 65% of NYPD OIS incidents, while in 35% of cases officers needed to fire more than 7 shots to stop the threat. Interestingly in 29% of the incidents, more than 10 shots were required to end the violent encounter. For 2010, in 67% of the NYPD OIS incidents 7 rounds or less were fired;

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however in 33% of the incidents more than 7 shots were required to subdue the threat. In 21% of lethal force encounters more than 10 shots were required.

So if NYPD officers need more than 7 shots to stop violent attackers greater than 1/3 of the time, why would innocent civilians who likely have no body armor, no radio, no partner, no cover units, no less lethal options, no duty belt with extra magazines, yet who are being confronted by the same violent felons as the police need less ammunition than the NYPD officers? What about citizens with disabilities that may prevent their escape or avoidance of a threat and severely limit their ability to rapidly and effectively reload a firearm? By arbitrarily restricting magazine capacity for civilians to 7 or 10 rounds, the most current NYPD SOP-9 data strongly suggests that in 1/4 to 1/3 of incidents that civilians will likely run out of ammunition before the violent attacker has been stopped.

The public should never be limited to magazines of less capacity than that authorized for police in their community. To do so flies in the face of basic science, as well as logic, fact, and justice.

E. FIREARMS FOR SELF-DEFENSE

There are multiple factors that will play a role in determining which weapon might be the best choice for self-defense. Handguns are compact and easily carried, but generally offer poor incapacitation potential and are harder to shoot accurately compared to shoulder fired weapons. In contrast to handgun caliber weapons, virtually any shoulder fired firearm chambered in a center fire rifle caliber or using 12 ga. shotgun ammunition will prove superior from a both a wound ballistic and practical accuracy standpoint. SA Urey Patrick of the FBI Firearms Training Unit wrote the following to emphasize this point:

[N]o law enforcement officer should ever plan to meet an expected attack armed only with a handgun. Experienced officers implicitly recognize...when potential violence is reasonably anticipated their preparations are characterized by obtaining as many shoulder (fired) weapons as possible.

If at all possible, civilians forced to defend themselves with a firearm should heed this advice and select a shoulder-fired weapon in an effective caliber whenever circumstances allow this option.

The question then becomes which shoulder fired weapon is optimum for self-defense. In America's past, common shoulder fired weapons for home defense included muskets like the ubiquitous "Brown Bess" from the time of our Nation's founding, the Winchester lever action repeating rifle from the days of the Western Frontier, and a variety of shotguns. Until recently, the 12 gauge shotgun has remained the universally accepted shoulder fired weapon for United States law enforcement use. A close range hit from a 12 ga. shotgun using buckshot will create more tissue damage than most other commonly used LE firearms. Unfortunately, shotguns are not an ideal weapon due to their short effective range, imprecise accuracy, potential downrange hazard to innocent bystanders from stray pellets, possible excessive penetration, small ammunition capacity, slow reloading, difficult

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manual of arms, poor ergonomics, and harsh recoil. Recognition of the shotgun's significant limitations have prompted many American law enforcement agencies to adopt the more versatile semi-automatic magazine fed carbine. Semi-automatic carbines offer superior accuracy, less recoil, greater effective range, faster reloading, potentially reduced downrange a hazard, better ergonomics, and a larger ammunition capacity than the traditional shotgun. Currently, the most common carbine in LE use is the .223/5.56 mm AR15.

Recently many in the media and politics have unfairly criticized the AR15 as an "assault weapon" only good for killing people. This is inaccurate. The AR15 is the semi-automatic civilian sporting version of the select-fire M16 rifle and M4 carbine used by the U.S. military and many LE agencies. If the civilian legal, semi-automatic AR15 is only a dangerous and unusual offensive weapon of war, with no legitimate hunting, sporting, or self-defense purpose, good only for producing mass mayhem, and not in common use by law abiding citizens for lawful purposes as some uninformed individuals have claimed, why is it that AR15 rifles have consistently been used by winning competitors for the past quarter of a century at the U.S. Civilian Marksmanship National Match target shooting championships held each year at Camp Perry, Ohio? Why have AR15's become one of the most popular hunting rifles for harvesting a wide variety of game, including varmints, feral hog, deer, and even elk? Why are AR15's the most commonly used and recommended rifles for defensive use by LE personnel? Aren't target shooters, hunters, and police officers law abiding citizens engaged in lawful pursuits?

According to experts such as the U.S. military, the Association of Firearms and Toolmark Examiners (AFTE), and the Smithsonian Museum, for a weapon to be labeled an "Assault Rifle", it must have the following specific physical and performance characteristics:

- Shoulder Fired Carbine
- Uses an Intermediate Cartridge
- Fires from a Closed Bolt
- Magazine with Capacity of at least 20 rounds
- Offers Select Fire Capability (*ie. can fire multiple shots per each trigger pull*)

The civilian legal, semi-automatic AR15 does NOT meet these criteria, as it is NOT select-fire and cannot easily be modified to be so. As a result of their select fire capability, true assault rifles like the M16 and M4 are severely restricted and effectively banned for routine civilian ownership by the NFA of 1934, the GCA of 1968, and the FOPA of 1986. Some glib persons have stated that semi-automatic weapons like the AR15 can be shot at rates of fire making them virtually indistinguishable from machine guns; clearly this is ludicrous, as the U.S. military has documented that the average rate of accurate semi-automatic fire from an AR15 type rifle is approximately 45-90 RPM, while select-fire M16 rifles or M4 carbines shoot at 700-970 RPM—a quite profound and obvious difference.

In the past 2 decades, a new term has joined the popular lexicon: "Assault Weapon". The term "assault weapon" is a vague, inaccurate misnomer, and is not synonymous with "assault rifle". The term "assault weapon" appears to arbitrarily be based

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on the appearance of a firearm and not specific functional or performance parameters. Features like adjustable stocks, muzzle devices, and free float rails are commonly in use on precision target firearms used for competition, as well as on LE rifles intended for self-defense use, as they increase accuracy and improve ergonomics. Some areas also have laws codifying various firearms as so-called “assault weapons”. This is illogical and confusing, as two firearms can exhibit identical performance parameters: the same caliber, same magazine capacity, and same rate of fire, but one is classified as an “assault weapon” and the other is not.

If assault weapons are, “*the weapons of choice among drug dealers, criminal gangs, hate groups, and mentally deranged persons bent on mass murder*” as stated by some individuals, why do almost all major U.S. law enforcement agencies, including the FBI, recommend “assault weapons” like the AR15 for lawful defensive purposes? True military assault rifles, as well as civilian firearms disingenuously labeled as “assault weapons” based on physical appearance rather than functional characteristics, do not inflict wounds of any greater severity than those produced by traditional military rifles. In addition, wounds caused by common civilian hunting rifles and shotguns like those in use for the past 150 years or so are typically far more severe and destructive to tissue than many so-called “assault weapons.”

The roots of the .223/5.56 mm cartridge commonly used in the AR15 come from a caliber designed for small game varmint hunting and used to eliminate small furry rodents and animals up to coyote size. Many hunters avoid it for medium size, 100 + pound game; in fact in numerous states it is prohibited to hunt deer size game with the .223/5.56 mm. 5.56 mm 55 gr M193 FMJ fired from 20” barrel M16A1 rifles was the standard U.S. military 5.56 mm ammunition in the 1960’s and 1970’s. Dr. Martin Fackler, the man who has done more research on the 5.56 mm 55 gr M193 FMJ than anyone else on this planet, has written the following (Fackler, ML: “*Literature Review*”. **Wound Ballistics Review**; 5(2):40, Fall 2001) about 55 gr FMJ:

In 1980, I treated a soldier shot accidentally with an M16 M193 bullet from a distance of about ten feet. The bullet entered his left thigh and traveled obliquely upward. It exited after passing through about 11 inches of muscle. The man walked in to my clinic with no limp whatsoever: the entrance and exit holes were about 4 mm across, and punctate. X-ray films showed intact bones, no bullet fragments, and no evidence of significant tissue disruption caused by the bullet’s temporary cavity. The bullet path passed well lateral to the femoral vessels. He was back on duty in a few days. Devastating? Hardly. The wound profile of the M193 bullet (page 29 of the Emergency War Surgery—NATO Handbook, GPO, Washington, D.C., 1988) shows that most often the bullet travels about five inches through flesh before beginning significant yaw. But about 15% of the time, it travels much farther than that before yawing—in which case it causes even milder wounds, if it missed bones, guts, lung, and major blood vessels. In my experience and research, at least as many M16 users in Vietnam concluded that it produced unacceptably minimal, rather than “massive”, wounds. After viewing the wound profile, recall that the

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Vietnamese were small people, and generally very slim. Many M16 bullets passed through their torsos traveling mostly point forward, and caused minimal damage. Most shots piercing an extremity, even in the heavier-built Americans, unless they hit bone, caused no more damage than a 22 caliber rimfire bullet.

During defensive shooting encounters, shots that inadvertently miss the intended target in CQB and urban environments can place innocent citizens in danger. In general, .223/5.56 mm bullets demonstrate LESS penetration after passing through building structural materials than other common LE and civilian calibers. All of the .223/5.56mm bullets recommended for law enforcement use offer reduced downrange penetration hazards, resulting in less potential risk of injuring innocent citizens and reduced risk of civil litigation in situations where bullets miss their intended target and enter or exit structures compared with common handgun bullets, traditional hunting rifle ammunition, and defensive shotgun projectiles (*buckshot and slugs*). When comparing issued handgun, shotgun, and rifle ammunition, the FBI has explicitly stated that the .223/5.56 mm ammunition used in the AR15 was the only caliber that offered ideal penetration of 12-18" in all test events, that the issued .223/5.56 mm loading had no overpenetration issues compared with the other service caliber handgun, shotgun, and rifle ammunition tested, and that .223/5.56 mm was more consistent in performance than all the other calibers. This is in sharp contrast and completely refutes the people who have falsely claimed that the .223/5.56 mm ammunition used in AR15's increases the threat of stray bullets harming innocent family members, neighbors, and passerby.

The AR15 is extremely common in America. The AR15 is extremely common in America. According to data from the BATF, FBI, and NSSF (National Shooting Sports Foundation) approximately 4.5 million AR15's have been sold in the U.S. since 1986; historical data indicates that an additional 350,000 AR15's were produced from 1963-1986. AR15 commercial sales continue to increase, currently accounting for approximately 20% of all rifles sold in the U.S. Within the next year, the total number of AR15's sold in America will likely have reached 5 million rifles. In addition, approximately 6 million Ruger Mini-14 rifles have been sold in the U.S.; these fire the same .223 cartridge as the AR15, have the same rate of fire, an identical magazine capacity, and have also been used by some LE agencies, including NYPD and CHP. However, the Mini-14 has not proven as accurate, durable, ergonomic, reliable, or as easy to maintain in LE service as the AR15 and has generally fallen out of LE use. In addition, quite a few of the 3 million or so AK type rifles imported to the U.S. use the .223 cartridge, as do many rifles that have been sold in the U.S. by foreign companies such as Beretta, Daewoo, FN, HK, IMI, Sig, Steyer, Valmet, and other vendors.

As a result of the M16 FOW (Family of Weapons) being used by the U.S. military for nearly 50 years, perhaps more Americans have been trained to safely operate the AR15 than any other firearm, as there are approximately 25 million American veterans who have been taught how to properly use an AR15 type rifle through their military training, not to mention in excess of 1 million American LE officers who have qualified on the AR15 over the last several decades, as well as numerous civilian target shooters and hunters who routinely use AR15's. Since so few military service members, particularly those not on

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active duty, get enough training and practice with their M16 or M4 service rifle, many military Reservists and National Guard personnel, as well as some active duty service members, have purchased civilian AR15's in order to train and practice on their own time with a rifle offering similar ergonomics and operating controls as the service weapon they are issued in the military. In many ways, the AR15 is the ubiquitous "Brown Bess" musket or Winchester repeating rifle of the modern era—a true firearm for the people. The AR15 is a highly versatile design that can be adapted for military, law enforcement, civilian self-defense, hunting, target shooting, and other sporting purposes. AR15's come in numerous configurations and are not all the same!

The semi-automatic AR15 carbine is likely the most ergonomic, safe, and effective firearm for law enforcement general purpose use and for civilian self-defense.

III. CONCLUSION

The Act's broadening of the definition of banned "assault weapons" encompasses semi-automatic carbines that offer superior accuracy, less recoil, greater effective range, faster reloading, potentially reduced downrange hazard, better ergonomics, and a larger ammunition capacity than the traditional shotgun. For this very reason, the most common carbine in law enforcement use is the .223/5.56 mm AR15. Likewise, the AR15 carbine is likely the most ergonomic, safe, and effective firearm for civilian self-defense.

I have reviewed the foregoing statement, and pursuant to 28 U.S.C. § 1746(1), I hereby declare under the penalties of perjury that they are true, correct, complete and accurate according to the best of my knowledge, information and belief.

Sincerely,

A handwritten signature in black ink, appearing to read "Gary K. Roberts, DDS". The signature is fluid and cursive, with the last name "Roberts" being more prominent.

Dr. Gary Roberts

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