



National Institute of Justice

R e s e a r c h i n g B r i e f

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Issues and Findings

Discussed in this Brief: This study examines the short-term impact (1994–96) of the assault weapons ban on gun markets and gun-related violence as contained in Title XI of the Federal Violent Crime Control and Law Enforcement Act of 1994. Title XI prohibits the manufacture, sale, and possession of specific makes and models of military-style semiautomatic firearms and other semiautomatics with multiple military-style features (detachable magazines, flash suppressors, folding rifle stocks, and threaded barrels for attaching silencers) and outlaws most large capacity magazines (ammunition-feeding devices) capable of holding more than 10 rounds of ammunition. Weapons and magazines manufactured prior to September 13, 1994, are exempt from the ban.

Key issues: Although the weapons banned by this legislation were used only rarely in gun crimes before the ban, supporters felt that these weapons posed a threat to public safety because they are capable of firing many shots rapidly. They argued that these characteristics enhance offenders' ability to kill and wound more persons and to inflict multiple wounds on each victim, so that a decrease in their use would reduce the fatality rate of gun attacks.

The ban's impact on lethal gun violence is unclear because the short period since the enabling legislation's passage created methodological difficulties for

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Impacts of the 1994 Assault Weapons Ban: 1994–96

by Jeffrey A. Roth and Christopher S. Koper

On January 17, 1989, Patrick Edward Purdy, armed with an AKS rifle—a semiautomatic variant of the military AK-47—returned to his childhood elementary school in Stockton, California, and opened fire, killing 5 children and wounding 30 others. Purdy, a drifter, squeezed off more than 100 rounds in 1 minute before turning the weapon on himself.

During the 1980s and early 1990s, this tragedy and other similar acts of seemingly senseless violence, coupled with escalating turf and drug wars waged by urban gangs, sparked a national debate over whether legislation was needed to end, or at least restrict, the market for imported and domestic "assault weapons." Beginning in 1989, a few States enacted their own assault weapons bans, but it was not until 1994 that a Federal law was enacted.

On September 13, 1994, Title XI of the Federal Violent Crime Control and Law Enforcement Act of 1994—known as the Crime Control Act of 1994—took effect. Subtitle A (the Public Safety and Recreational Firearms Use Protection Act) of the act banned the manufacture, transfer, and possession of certain semiautomatic firearms designated as assault weapons and "large capacity" ammunition maga-

zines. The legislation required the Attorney General to deliver to Congress within 30 months an evaluation of the effects of the ban. To meet this requirement, the National Institute of Justice (NIJ) funded research from October 1995 to December 1996 to evaluate the impact of Subtitle A. This Research in Brief summarizes the results of that evaluation.

A number of factors—including the fact that the banned weapons and magazines were rarely used to commit murders in this country, the limited availability of data on the weapons, other components of the Crime Control Act of 1994, and State and local initiatives implemented at the same time—posed challenges in discerning the effects of the ban. The ban appears to have had clear short-term effects on the gun market, some of which were unintended consequences: production of the banned weapons increased before the law took effect, and prices fell afterward. This suggests that the weapons became more available generally, but they must have become less accessible to criminals because there was at least a short-term decrease in criminal use of the banned weapons.

Debated in a politically charged environment, the Public Safety and Recreational Firearms Use Protection Act, as its title

Issues and Findings

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researchers. The National Institute of Justice is funding a followup study by the authors that is expected to be released in 2000. It will assess the longer term impacts of the ban and the effects of the other firearms provisions of Title XI. The long-term impacts of the ban could differ substantially from the short-term impacts.

Key findings: The authors, using a variety of national and local data sources, examined market trends—prices, production, and thefts—for the banned weapons and close substitutes before estimating potential ban effects and their consequences.

- The research shows that the ban triggered speculative price increases and ramped-up production of the banned firearms prior to the law's implementation, followed by a substantial postban drop in prices to levels of previous years.

- Criminal use of the banned guns declined, at least temporarily, after the law went into effect, which suggests that the legal stock of preban assault weapons was, at least for the short term, largely in the hands of collectors and dealers.

- Evidence suggests that the ban may have contributed to a reduction in the gun murder rate and murders of police officers by criminals armed with assault weapons.

- The ban has failed to reduce the average number of victims per gun murder incident or multiple gunshot wound victims.

Target audience: Congressional representatives and staff; State and local legislators; Federal, State, and local law enforcement officials; criminal justice practitioners and researchers; advocacy groups; State and local government officials.

suggests, attempted to balance two competing policy goals. The first was to respond to several mass shooting incidents committed with military-style and other semiautomatics equipped with magazines holding large amounts of ammunition. The second consideration was to limit the impact of the ban on recreational gun use by law-abiding owners, dealers, and manufacturers. The ban specifically prohibited only nine narrow categories of pistols, rifles, and shotguns (see exhibit 1). It also banned “features test” weapons, that is, semiautomatics with multiple features (e.g., detachable magazines, flash suppressors, folding rifle stocks, and threaded barrels for attaching silencers) that appeared useful in military and criminal applications but that were deemed unnecessary in shooting sports (see exhibit 2). The law also banned revolving cylinder shotguns (large capacity shotguns) and “large capacity magazines,” defined as ammunition-feeding devices designed to hold more than 10 rounds, far more than a hunter or competitive shooter might reasonably need (see exhibit 3).

Various provisions of the ban limited its potential effects on criminal use. As shown in exhibit 1, about half the banned makes and models were rifles, which are hard to conceal for criminal use. Imports of the five foreign rifle categories on this list had been banned in 1989. Further, the banned guns are used in only a small fraction of gun crimes; even before the ban, most of them rarely turned up in law enforcement agencies' requests to the Bureau of Alcohol, Tobacco and Firearms (BATF) to trace the sales histories of guns recovered in criminal investigations.

As a matter of equity, the law exempted “grandfathered” guns and magazines manufactured before the ban took effect. While it also banned “exact” or duplicate copies of the prohibited makes and models, the emphasis was on “exact.” Shortening a gun’s barrel by a few millimeters

or “sporterizing” a rifle by removing its pistol grip and replacing it with a thumbhole in the stock, for example, was sufficient to transform a banned weapon into a legal substitute. On April 5, 1998, President Clinton signed an Executive order banning the imports of 58 foreign-made substitutes.

Gun bans and gun crime

Evidence is mixed about the effectiveness of previous gun bans. Federal restrictions enacted in 1934 on the ownership of fully automatic weapons (machine guns) appear to have been quite successful based on the rarity with which such guns are used in crime.¹ Washington, D.C.’s restrictive handgun licensing system, which went into effect in 1976, produced a drop in gun fatalities that lasted for several years after its enactment.² Yet, State and local bans on handguns have been found to be ineffective in other research.³

The inconsistency of previous findings may reflect, in part, the interplay of several effects that a ban may have on gun markets. To reduce criminal use of guns and the tragic consequences of such use, a ban must make the existing stockpile of guns less accessible to criminals (see exhibit 4) by, for example, raising their purchase prices.⁴ However, the anticipation of higher prices may encourage gun manufacturers to boost production just before the ban takes effect in the hope of generating large profits from the soon-to-be collectors’ items. Immediately after the ban, criminals may find it difficult to purchase banned weapons if they remain in dealers’ and speculators’ storage facilities. Over the long term, however, the stockpiled weapons might begin flowing into criminals’ hands, through straw purchases, thefts, or “off-the-books” sales that dealers or speculators falsely report to insurance companies and government officials as thefts.⁵

Exhibit 1. Description of firearms banned in Title XI

Name of firearm	Description	1993 Blue Book price status	Preban Federal legal status	1993 BATF trace request count	Examples of legal substitutes
Avtomat Kalashnikov (AK)	Chinese, Russian, other foreign, and domestic: 0.223 or 7.62x39mm caliber, semiautomatic Kalashnikov rifle, 5-, 10-, or 30-shot magazine, 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, 0.41, or 0.45 caliber semiautomatic carbine, minicarbine, or pistol. Magazine capacity of 16, 20, or 25, depending on model and type (10 or 20 on pistols).	\$550–\$1,050 (Uzi) \$875–\$1,150 (Galil)	Imports banned in 1989	281 Uzi; 12 Galil	Uzi Sporter**
Beretta AR-70	Italian: 0.222 or 0.223 caliber, semiautomatic paramilitary design rifle, 5-, 8-, or 30-shot magazine.	\$1,050	Imports banned in 1989	1	
Colt AR-15	Domestic: Primarily 0.223 caliber paramilitary rifle or carbine, 5-shot magazine, often comes with two 5-shot detachable magazines. Exact copies by DPMS, Eagle, Olympic, and others.	\$825–\$1,325	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: 0.308 Winchester caliber, semiautomatic rifle or 0.223 Remington combat carbine with 30-shot magazine. Rifle comes with flash hider, 4-position fire selector on automatic models. Manufacturing discontinued in 1988.	\$1,100–\$2,500	Imports banned in 1989	9	L1A1 Sporter** (FN, Century)
SWD M-10 M-11, M-11/9, M-12	Domestic: 9mm paramilitary semiautomatic pistol, fires from closed bolt, 32-shot magazine. Also available in fully automatic variation.	\$215	Legal	878	Cobray PM-11, PM-12; Kimel AP-9, Mini AP-9
Steyr AUG	Austrian: 0.223 Remington/5.56mm caliber, semiautomatic paramilitary design rifle.	\$2,500	Imports banned in 1989	4	
TEC-9 TEC DC-9, TEC-22	Domestic: 9mm semiautomatic paramilitary design pistol, 10- or 32-shot magazine; 0.22 LR semiautomatic paramilitary design pistol, 30-shot magazine.	\$145–\$295	Legal	1202 Intratec; 175 Exact copies	TEC-AB
Revolving Cylinder Shotguns	Domestic: 12 gauge, 12-shot rotary magazine, paramilitary configuration, double action.	\$525***	Legal	64 SWD Street Sweepers	

* Imports were halted in 1994 under the Federal embargo on the importation of firearms from China.

** Imports banned by Federal Executive order, April 1998.

*** Street Sweeper.

Source for firearm descriptions: Blue Book of Gun Values, 17th ed., by S.P. Fjestad, 1996.

Exhibit 2. Features test of the assault weapons ban

Exhibit provided courtesy of Handgun Control, Inc.

1. Semiautomatic rifles having the ability to accept a detachable ammunition magazine and at least two of the following traits:

- A folding or telescoping stock.
- A pistol grip that protrudes beneath the firing action.
- A bayonet mount.
- A flash hider or a threaded barrel designed to accommodate one.
- A grenade launcher.

2. Semiautomatic pistols having the ability to accept a detachable ammunition magazine and at least two of the following traits:

- An ammunition magazine attaching outside the pistol grip.
- A threaded barrel capable of accepting a barrel extender, flash hider, forward handgrip, or silencer.
- A heat shroud attached to or encircling the barrel (this permits the shooter to hold the firearm with the nontrigger hand without being burned).
- A weight of more than 50 ounces unloaded.
- A semiautomatic version of a fully automatic firearm.

3. Semiautomatic shotguns having at least two of the following traits:

- A folding or telescoping stock.
- A pistol grip that protrudes beneath the firing action.
- A fixed magazine capacity of more than five rounds.
- Ability to accept a detachable ammunition magazine.

Note: A semiautomatic firearm discharges one shot for each pull of the trigger. After being fired, a semiautomatic cocks itself for refiring and loads a new round (i.e., bullet) automatically.

The timing and magnitudes of these market effects cannot be known in advance. Therefore, the study examined market trends—prices, production, and thefts—for the banned weapons and close substitutes before estimating potential ban effects on their use and the consequences of that use.

Market effects

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 in Congress. Gun distributors, dealers, and collectors speculated that the banned weapons would become expensive collectors' items. However, prices fell sharply after the ban was implemented. Exhibit 4 shows price trends for a number of firearms. Prices for banned AR-15 rifles, exact copies, and legal substitutes at least doubled in the year preceding the ban, fell to near 1992 levels once the ban took effect, and remained at those levels at least through mid-1996. Similarly, prices of banned SWD semiautomatic pistols rose by about 47 percent during the year preceding the ban but fell by about 20 percent the following year. For comparison, exhibit 4 shows that the prices of unbanned Davis and Lorcin semiautomatic pistols (among the crime guns police seize most frequently) remained virtually constant over the entire period.⁶

Fueled by the preban speculative price boom, production of assault weapons surged in the months leading up to the ban. Data limitations preclude precise and comprehensive counts. However, estimates based on BATF gun production data suggest that the annual production of five categories of assault weapons—AR-15s, models by Intratec, SWD, AA Arms, and Calico—and legal substitutes rose by more than 120

percent, from an estimated average of 91,000 guns annually between 1989 and 1993 to about 204,000 in 1994—more than 1 year's extra supply (see exhibit 5). In contrast, production of unbanned Lorcin and Davis pistols fell by about 35 percent, from an average of 283,000 annually between 1989 and 1993 to 184,000 in 1994.

These trends suggest that the preban 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, assault weapons prices fell sharply within months after the ban was in place, apparently under the combined weight of preban overproduction of grandfathered guns and the introduction of new legal substitute guns at that time.

These findings resemble what happened in 1989, when imports of several models of assault rifles surged prior to the implementation of a Federal ban.⁷ Shortly thereafter, while California debated its own ban, criminal use of assault weapons declined,⁸ suggesting that higher prices and speculative stockpiling made the guns less accessible to criminal users.⁹

It was plausible that the price and production trends related to the 1994 ban would be followed by an increase in reported thefts of assault weapons, for at least two reasons. First, if short-term price increases in primary markets temporarily kept assault weapons from entering illegal sales channels, criminals might be tempted to steal them instead. In addition, dealers and collectors who paid high speculative prices for grandfathered assault weapons around the time of the ban, but then watched as their investment depreciated after the ban took effect, might be inclined to

Exhibit 3. Logic model for Public Safety and Recreational Firearms Use Protection Act impact study

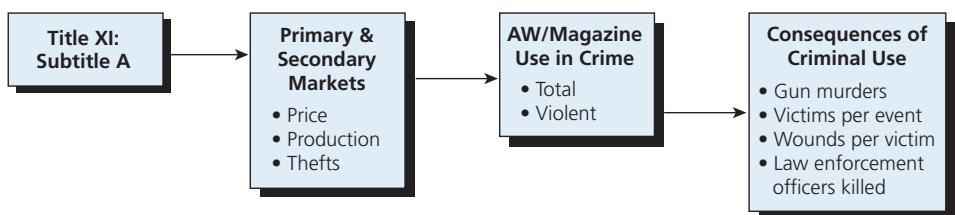
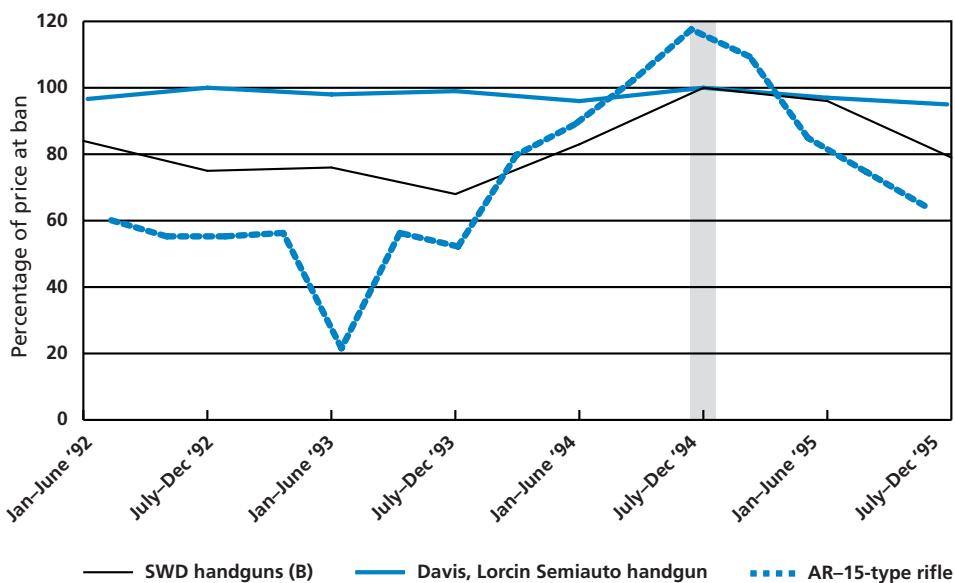


Exhibit 4. Comparison of price trends for banned and unbanned weapons



Data were collected from display ads in randomly selected issues of the nationally distributed periodical *Shotgun News*. Price indices are adjusted for the mix of products and distributors advertised during each time period. SWD, Davis, and Lorcin handgun data are reported semiannually.

sell the guns to ineligible purchasers and then falsely report them as stolen to insurance companies and regulatory agencies.¹⁰

By the spring of 1996, however, there had been no such increase. Instead, thefts of assault weapons declined about 14 percent as a fraction of all thefts of semiautomatics.¹¹ Therefore, it appears that, at least in the short term, the grandfathered assault weapons re-

mained largely in dealers' and collectors' inventories instead of leaking into the secondary markets through which criminals tend to obtain guns.

Criminal use of assault weapons

Because crime guns tend to be newly purchased guns,¹² it was hypothesized that speculative price increases would tend to channel the flow of banned

weapons from criminal purchasers to law-abiding speculators, thereby potentially decreasing their use in criminal activities. (See “Study Design and Method.”) However, the potential decrease in criminal uses of the banned weapons might be offset by the produc-

tion increase and the postban fall in prices. To estimate the net effect on criminal use, the researchers measured criminal use of assault weapons using data on gun trace requests submitted by law enforcement agencies to BATF, whose tracing data provide the only

available national sample of the types of guns used in crime.¹³ These data are limited because police agencies do not submit a trace request on every gun they confiscate. Many agencies submit very few requests to BATF, particularly in States that maintain gun sales databases (such as California). Therefore, tracing data are a biased sample of guns recovered by police. Prior studies suggest that assault weapons are more likely to be submitted for tracing than are other confiscated firearms.¹⁴

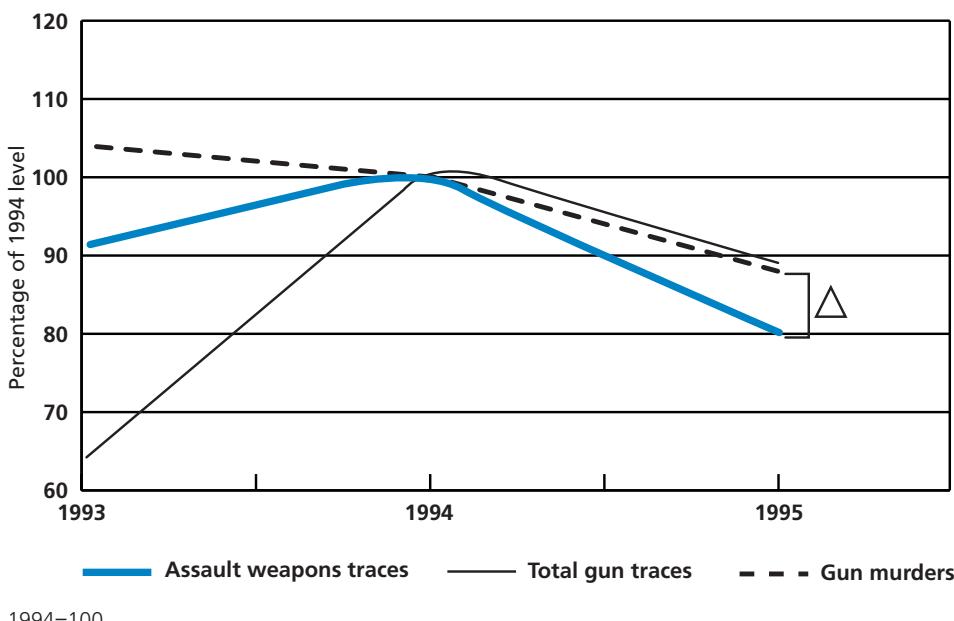
Exhibit 5. Production trends estimates for banned assault weapons and comparison guns*

Firearm type	(1) 1994 production	(2) 1989–93 average production	(3) Ratio [(1)/(2)]	(4) “Excess” production [(1)–(2)]
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) and 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 and Davis	184,139	282,603	0.652	
Assault weapon total**	203,578	91,137	2.233	112,441

* Estimates are based on figures provided by gun manufacturers to BATF and compiled and disseminated annually by the Violence Policy Center.

** Assault weapon total excludes Lorcin/Davis group.

Exhibit 6. Relative changes in total and assault weapons traces



As shown in exhibit 6, law enforcement agency requests for BATF assault weapons traces in the 1993–95 period declined 20 percent in the first calendar year after the ban took effect, dropping from 4,077 in 1994 to 3,268 in 1995. Some of this decrease may reflect an overall decrease in gun crimes; total trace requests dropped 11 percent from 1994 to 1995, and gun murders declined 10 percent over the same period. Nevertheless, these trends suggest a 9- to 10-percent additional decrease (labeled with a triangle in exhibit 6) due to substitution of other guns for the banned assault weapons in 1995 gun crimes.¹⁵

In contrast, assault weapons trace requests from States with their own assault weapons bans declined by only an estimated 6 to 8 percent in 1995—further evidence that the national trends reflect effects of the Federal ban. There were fewer assault weapons traces in 1995 than in 1993 (3,748), suggesting that the national decrease was not the result of a surge of assault weapons tracing around the effective date of the ban.¹⁶

These national findings were supported by analyses of trends in assault weapons recovered in crimes in St. Louis and Boston, two cities that did not have preexisting State assault weapons bans in place. Although

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Study design and method

Subtitle A of Title XI banned the manufacture, transfer, and possession of assault weapons and large capacity magazines. Researchers hypothesized that the ban would:

- Produce direct effects in the primary markets for these weapons.
- Reduce, through related indirect effects in the secondary markets, the use of these weapons in criminal activities.
- Reduce the consequences of criminal gun use as measured by gun homicides and, especially, incidents of multiple victims, multiple wounds, and killings of law enforcement officers.

Because the measures of available data on these effects varied widely, the research team decided to conduct several small studies with different error sources and integrate the findings. The strategy was to test whether the assault weapons and magazine bans interrupted these trends over time. Researchers employed various types of time series and multiple regression analyses, simple before-and-after comparisons, and graphical displays.

The analysis of market impacts included:

- Pricing trends in the primary markets for banned semiautomatic weapons, comparable legal firearms, and large capacity magazines using 1992–96 national distributors' price lists.

assault weapons recoveries were rare in those cities both before and after the ban, they declined 29 and 24 percent, respectively, as a share of all gun recoveries during late 1995 and into 1996. Because these cities' trends reflect all guns recovered in crime, they are not subject to the potential biases of trace request data.

- Comparison of gun production data through 1994, the latest available year.

- Comparison and time series analyses of "leakage" of guns to illegal markets as measured by guns reported stolen to the Federal Bureau of Investigation/National Crime Information Center between 1992 and 1996.

The analysis of assault weapon use included:

- Analysis of requests for BATF traces of assault weapons (1992–96) recovered in crime investigations, both in absolute terms and as a percentage of all requests.
- Preban and postban comparisons and analyses of gun counts recovered in crime investigations by selected local law enforcement agencies.

The analyses of the consequences of using assault weapons and semiautomatics with large capacity magazines in criminal activities included:

- Examination of State time series data on gun murders with controls for the potential influence of legal, demographic, and economic variables of criminological importance.
- Comparisons and time series analyses of trends between 1980 and 1995 in victims per gun homicide incidents as

measured nationally from Supplementary Homicide Reports.

- Descriptive analysis of the use of assault weapons in mass murders in the United States from 1992 to 1996.
- Comparison of data gathered between 1992 and 1996 from medical examiners, one hospital emergency department, and one police department in selected cities regarding the number of wounds per gunshot victim.
- Analysis of 1992–96 data of law enforcement officers killed in action with assault weapons.

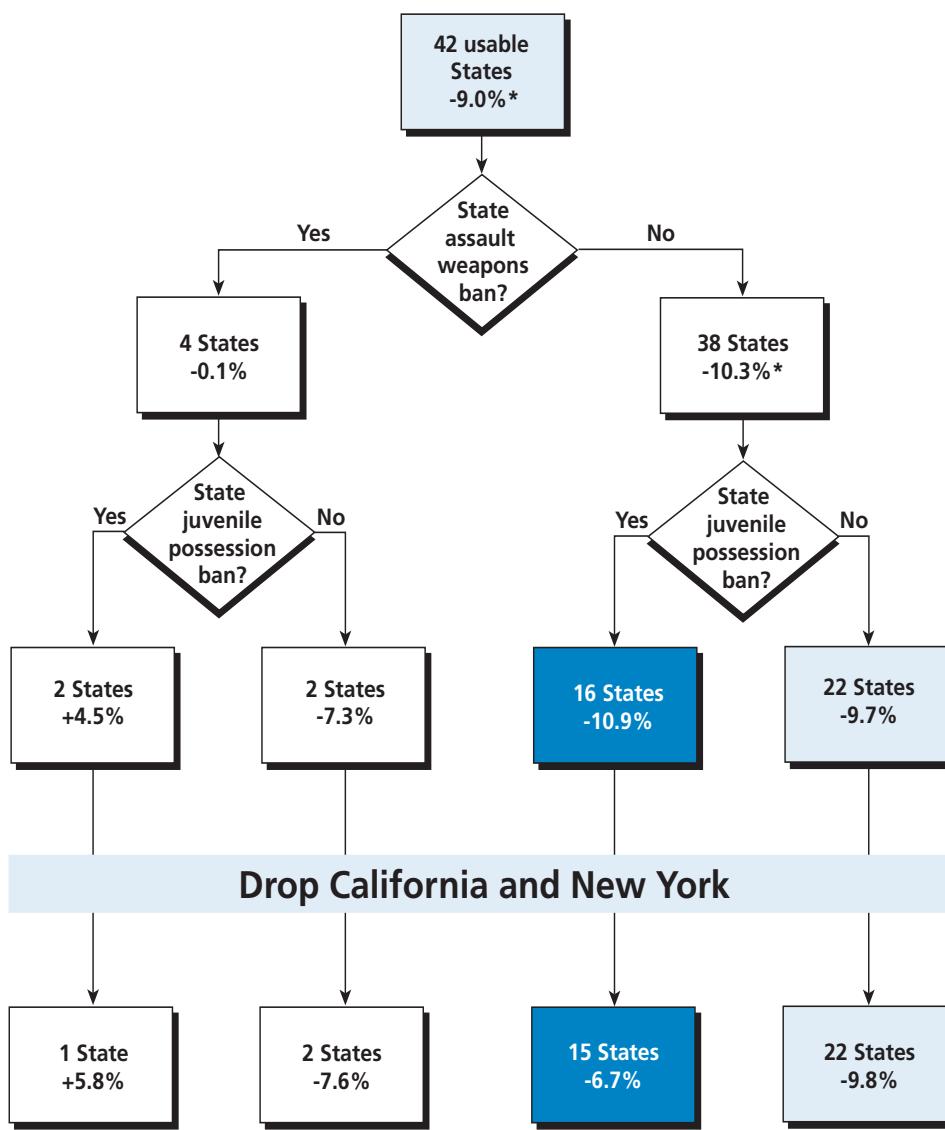
For comparison purposes, researchers examined trends of types of guns and magazines that were affected differently by the ban. Few available databases relate the consequences of assault weapon use to the make and model of the weapon, so most of the analyses of consequences are based on treatment and comparison jurisdictions defined by the legal environments in which the incident occurred. For instance, California, Connecticut, Hawaii, and New Jersey had banned assault weapons before 1994. Although interstate traffickers can circumvent State bans, researchers hypothesized that the existence of these State-level bans reduced the impact of the Federal ban in those respective jurisdictions.

Consequences of assault weapons use

A central argument for special regulation of assault weapons and large capacity magazines is that they facilitate the rapid firing of high numbers of shots, which allows offenders to inflict more wounds on more persons in a

short period of time, thereby increasing the expected number of injuries and deaths per criminal use. The study examined trends in the following consequences of gun use: gun murders, victims per gun homicide incident, wounds per gunshot victim, and, to a lesser extent, gun murders of police.

Exhibit 7. Estimated 1994–95 ban effects on total gun murder rate



* Statistically significant at 10-percent level.

There were several reasons to expect, at best, a modest ban effect on criminal gun injuries and deaths. First, studies before the ban generally found that between less than 1 and 8 percent of gun crimes involved assault weapons, depending on the specific definition and data source used.¹⁷ Although limited evidence suggests that semiautomatics equipped with large capacity

magazines are used in 20 to 25 percent of these gun crimes, it is not clear how often large capacity magazines actually turn a gun attack into a gun murder.¹⁸ Second, offenders could replace the banned guns with legal substitutes or other unbanned semiautomatic weapons to commit their crimes. Third, the schedule for this study set out in the legislation limited

the power of the statistical analyses to detect worthwhile ban effects that may have occurred. Given the limited use of the banned guns and magazines in gun crimes, even the maximum theoretically achievable preventive effect of the ban on outcomes such as the gun murder rate is almost certainly too small to detect statistically because the congressionally mandated timeframe for the study effectively limited postban data collection to, at most, 24 months (and only 1 calendar year for annual data series).

Nevertheless, to estimate the first-year ban effect on gun murders, the analysis compared actual 1995 State gun murder rates with the rates that would have been expected in the absence of the assault weapons ban. Data from 1980 to 1995 of 42 States with adequate annual murder statistics (as reported to the Federal Bureau of Investigation) were used to project 1995 gun murder rates adjusted for ongoing trends and demographic and economic changes. Tests were run to determine whether the deviation from the projection could be explained by various policy interventions other than the assault weapons ban.

Exhibit 7 displays the steps in that analysis. Overall, 1995 gun murder rates were 9 percent lower than the projection.¹⁹ Gun murders declined 10.3 percent in States without preexisting assault weapons bans, but they remained unchanged in States with their own bans. After adjusting the projection for possible effects of State bans on juvenile handgun possession and a similar Federal ban that took effect simultaneously with the assault weapons ban, the study found that 1995 gun murder rates were 10.9 percent below the projected level. Finally, statistical controls were added for

postban drops in California and New York to avoid confounding possible effects of the assault weapons ban, California's "three strikes" law, and New York City's "quality of life" policing. Still, 1995 murder rates in the 15 remaining States with juvenile handgun possession bans but no assault weapons ban were 6.7 percent below the projection—a difference that could not be explained in terms of murder trends, demographic and economic changes, the Federal juvenile handgun possession ban, or the California and New York initiatives.

Random, year-to-year fluctuations could not be ruled out as an explanation of the 6.7-percent drop. With only 1 year of postban data available and only 15 States meeting the screening criteria for the final estimate, the model lacks the statistical power to detect a preventive effect of even 20 percent under conventional standards of statistical reliability.²⁰ Although it is highly improbable that the assault weapons ban produced an effect this large, the ban could have reduced murders by an amount that would escape statistical detection.

However, other analyses using a variety of national and local data sources found no clear ban effects on certain types of murders that were thought to be more closely associated with the rapid-fire features of assault weapons and other semiautomatics equipped with large capacity magazines. The ban did not produce declines in the average number of victims per incident of gun murder or gun murder victims with multiple wounds.

Murders of police by offenders armed with assault weapons declined from an estimated 16 percent of gun murders of police in 1994 and early 1995 to 0 percent in the latter half of 1995 and early 1996. However, such incidents are suf-

ficiently rare that the available data do not permit a reliable assessment of whether this contributed to a general reduction in gun murders of police.

Implications and research recommendations

It appears that the assault weapons ban had clear short-term effects on the gun market, some of which were unintended consequences: production of the banned weapons increased before the law took effect and prices fell afterward. These effects suggest that the weapons became more available generally, but they must have become less accessible to criminals because there was at least a short-term decrease in criminal use of the banned weapons. Evidently, the excess stock of grandfathered assault weapons manufactured prior to the ban is, at least for now, largely in the hands of dealers and collectors. The ban's short-term impact on gun violence has been uncertain, due perhaps to the continuing availability of grandfathered assault weapons, close substitute guns and large capacity magazines, and the relative rarity with which the banned weapons were used in gun violence even before the ban.

To provide a more current and detailed understanding of the assault weapons ban and gun markets generally, we recommend a variety of further steps:

- **Update the impact analysis.** This study was conducted with data collected within 24 months of the ban's passage; a number of the analyses were conducted with only 1 calendar year of postban data. This limited timeframe weakens the ability of statistical tests to discern impacts that may be meaningful from a policy perspective. Also, because the ban's effects on gun markets and gun violence are still unfolding,

the long-term consequences may differ substantially from the short-term consequences reported here. (A followup study of longer term impacts of the ban and the effects of other provisions of Title XI is underway and is expected to be released in 2000.)

- **Develop new gun market data sources and improve existing ones.** For example, NIJ and BATF should consider cooperating to establish and maintain time series data on primary and secondary market 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, 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 crime.
- **Examine potential substitution effects.** A key remaining question is whether offenders who preferred the banned assault weapons have switched to the new legal substitute models or to other legal guns, such as semiautomatic handguns that accept large capacity magazines.
- **Study criminal use of large capacity magazines.** The lack of knowledge about trends in the criminal use of large capacity magazines is especially salient for three reasons. The large capacity magazine is perhaps the most functionally important distinguishing feature of assault weapons. The magazine ban also affected more gun models and gun crimes than did the bans on designated firearms. Finally, recent anecdotal evidence suggests that new and remanufactured preban,

high-capacity magazines are beginning to reappear in the market for use with legal semiautomatic pistols.

- **Improve the recording of magazines recovered with crime guns.** To better understand the role large capacity magazines play in gun crimes, BATF and State and local law enforcement agencies should encourage efforts to record the magazines with which confiscated firearms are equipped—information that frequently goes unrecorded under current practice. Further studies are needed on trends in the criminal use of guns equipped with large capacity magazines.
- **Conduct indepth, incident-based research on the situational dynamics of fatal and nonfatal gun assaults.** Despite the rhetoric that characterizes firearms policy debates, there are still questions regarding the impacts that weaponry, actor, and situational characteristics have on the outcomes of gun attacks. Therefore, research is needed to gain a greater understanding of the roles of banned and other weapons in intentional deaths and injuries. 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 nonfatal attack? The study yielded some weak evidence that victims killed by guns having large capacity magazines (including assault weapons) tend to suffer 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, research results were based on

simple comparisons; much more comprehensive research that takes into account important characteristics of the actors and situations should be pursued. Future research on the dynamics of criminal shootings, including various measures of the number of shots fired, wounds inflicted, and victims killed or wounded, would improve estimates of the potential effects of the assault weapons and magazine ban, while yielding useful information on violent gun crime generally.

Future directions

Gun control policies, and especially gun bans, are highly controversial crime control measures, and the debates tend to be dominated by anecdotes and emotion rather than empirical findings. In the course of this study, the researchers attempted to develop a logical framework for evaluating gun policies, one that considers the workings of gun markets and the variety of outcomes such policies may have. The findings suggest that the relatively modest gun control measures that are politically feasible in this country may affect gun markets in ways that at least temporarily reduce criminals' access to the regulated guns, with little impact on law-abiding gun owners.

The public safety benefits of the 1994 ban have not yet been demonstrated. This suggests that existing regulations should be complemented by further tests of enforcement tactics that focus on the tiny minorities of gun dealers and owners who are linked to gun violence. These include strategic targeting of problem gun dealers,²¹ crackdowns on "hot spots" for gun crime,²² and strategic crackdowns on perpetrators of gun violence,²³ followed by comprehensive efforts to involve communities in maintaining the safety that these tactics achieve.²⁴ These techniques

are still being refined, and none will ever stop all gun violence. However, with dispassionate analyses of their effects and a willingness to modify tactics in response to evidence, these approaches may well prove more immediately effective, and certainly less controversial, than regulatory approaches alone.

Notes

1. Kleck, Gary, *Point Blank: Guns and Violence in America*, New York: Aldine De Gruyter, 1991.
2. Loftin, Colin, David McDowall, Brian Wiersema, and Talbert J. Cottet, "Effects of Restrictive Licensing of Handguns on Homicide and Suicide in the District of Columbia," *New England Journal of Medicine*, 325: 1625–1630.
3. Kleck, *Point Blank: Guns and Violence in America*.
4. The ban exempted assault weapons manufactured before the effective date of the law. Because significant deterioration or loss of those guns occurs only over decades, any immediate ban effects would have to reflect scarcity of assault weapons to criminal purchasers, rather than a dwindling of the stockpile.
5. A number of researchers and journalists have commented on the weak state of Federal firearms licensees (FFLs) regulation, particularly before 1994 when Title XI strengthened the screening process for obtaining and renewing licenses. Empirical evidence suggests that a small minority of gun dealers supply many of the guns used by criminals. Analysis of Bureau of Alcohol, Tobacco and Firearms tracing data by Glenn Pierce and his colleagues in 1995 showed that while 92 percent of FFLs had no confiscated guns traced back to them, 0.4 percent of the dealers were linked to nearly 50 percent of the traced weapons. Although some of this concentration could simply reflect the proximity of some large law-abiding dealers to high-crime areas, evidence suggests that illegal practices by some dealers contribute to this concentration. See Wachtel, Julius, "Sources of Crime Guns in Los Angeles, California," *Policing: An International Journal of Police Strategies and Management*, 21(2) (1998): 220–239; Larson, Erik, *Lethal Passage: The Story of a Gun*, New York: Vintage Books, 1995; Pierce, Glenn L., LeBaron Briggs, and David A.

Carlson, *The Identification of Patterns in Firearms Trafficking: Implications for Focused Enforcement Strategy*, Washington, D.C.: U.S. Department of the Treasury, Bureau of Alcohol, Tobacco and Firearms, 1995; and Violence Policy Center, *More Gun Dealers Than Gas Stations: A Study of Federally Licensed Firearms Dealers in America*, Washington, D.C.: Violence Policy Center, 1992.

6. Like assault weapons prices, large capacity magazine prices generally doubled in the year preceding the ban. However, trends diverged after the ban, depending on the gun for which the magazine was made. See Chapter 4 in Roth, Jeffrey A., and Christopher S. Koper, *Impact Evaluation of the Public Safety and Recreational Firearms Use Protection Act of 1994*, Washington, D.C.: The Urban Institute, 1997.

7. American Medical Association Council on Scientific Affairs, "Assault Weapons as a Public Health Hazard in the United States," *Journal of the American Medical Association*, 267 (1992): 3067–3070.

8. Mathews, J., "Unholstering the Gun Ban," *The Washington Post*, December 31, 1989.

9. Cook, Philip J., and James A. Leitzel, "'Perversity, Futility, Jeopardy': An Economic Analysis of the Attack on Gun Control," *Law and Contemporary Problems*, 59 (1996): 91–118.

10. Since enactment of the Gun Control Act of 1968, FFLs are required to retain records of all gun sales and a running log of their gun acquisitions and dispositions. Federal law has various regulations governing sales by FFLs, including the requirement that FFLs have potential gun purchasers sign statements that they are not legally ineligible to purchase firearms. The 1993 Brady Act further requires FFLs to obtain photo identification of potential handgun purchasers, notify the chief local law enforcement officer of each application for a handgun purchase, and wait 5 business days before completing the sale, during which time the chief law enforcement officer may check the applicant's eligibility.

FFLs who sell guns without following these requirements may, if inspected by BATF, try to cover up their illegal sales by claiming that the guns were lost or stolen. To help prevent such practices, Subtitle C of Title XI requires FFLs to report all stolen and lost firearms to BATF and local authorities within 48 hours.

Gun transfers made by nonlicensed citizens do not require such recordkeeping. In some instances, however, gun owners who knowingly transfer guns to ineligible purchasers may choose to falsely report the guns as stolen to prevent themselves from being linked to any crimes committed with the guns.

11. This finding is a revision of results reported in Chapter 4 of Roth and Koper, *Impact Evaluation of the Public Safety and Recreational Firearms Use Protection Act of 1994*.

12. Zimring, Franklin E., "Street Crime and New Guns: Some Implications for Firearms Control," *Journal of Criminal Justice*, 4 (1976): 95–107.

13. A gun trace usually tracks a gun to its first point of sale by a licensed dealer. Upon request, BATF traces guns suspected of being used in crime as a service to Federal, State, and local law enforcement agencies.

14. For additional discussions of the limits of tracing data, see Chapter 5 in Roth and Koper, *Impact Evaluation of the Public Safety and Recreational Firearms Use Protection Act of 1994*; Zawitz, Marianne W., *Guns Used in Crime*, Washington, D.C.: U.S. Department of Justice, Bureau of Justice Statistics, 1995; and Kleck, Gary, *Targeting Guns: Firearms and Their Control*, New York: Aldine De Gruyter, 1997.

15. Percentage decreases in assault weapon traces related to violent and drug crimes were similar to or greater than those for total assault weapons, although these categories were quite small in number. Separate analyses were conducted for all assault weapons and for a select group of domestically produced assault weapons that were still in production when the ban went into effect. Both analyses showed the same drop in overall trace requests. See Chapter 5 in Roth and Koper, *Impact Evaluation of the Public Safety and Recreational Firearms Use Protection Act of 1994*.

16. In general, our analysis of assault weapons use did not include legal substitute versions of the banned weapons. However, lack of precision in the data sources could have resulted in some of these weapons being counted as postban traces or recoveries of assault weapons.

17. For example, see Beck, Allen, Darrell Gilliard, Lawrence Greenfeld, Caroline Harlow, Thomas Hester, Louis Jankowski, Tracy Snell, James Stephan, and Danielle Morton, *Survey of State Prison Inmates, 1991*, Washington, D.C.: U.S. Department of Justice, National Institute of Justice, 1995, NCJ 150855

U.S. Department of Justice, Bureau of Justice Statistics, 1993; Hargarten, Stephen W., Trudy A. Carlson, Mallory O'Brien, Jerry Hancock, and Edward Quebbeman, "Characteristics of Firearms Involved in Fatalities," *Journal of the American Medical Association*, 275 (1996): 42–45; Hutson, H. Range, Deirdre Anglin, and Michael J. Pratts, Jr., "Adolescents and Children Injured or Killed in Drive-by Shootings in Los Angeles," *The New England Journal of Medicine*, 330 (1994): 324–327; Kleck, Gary, *Targeting Guns: Firearms and Their Control*, New York: Aldine De Gruyter 1997; Cox Newspapers, *Firepower: Assault Weapons in America*, Washington, D.C.: Cox Newspapers, 1989; McGonigal, Michael D., John Cole, C. William Schwab, Donald R. Kauder, Michael F. Rotondo, and Peter B. Angood, "Urban Firearm Deaths: A Five-Year Perspective," *The Journal of Trauma*, 35 (1993): 532–536; New York State Division of Criminal Justice Services, *Assault Weapons and Homicide in New York City*, Albany, New York: New York State Division of Criminal Justice Services, 1994; Zawitz, Marianne W., *Guns Used in Crime*; also see review in Koper, Christopher S., *Gun Lethality and Homicide: Gun Types Used by Criminals and the Lethality of Gun Violence in Kansas City, Missouri, 1985–1993*, Ann Arbor, Michigan: University Microfilms, Inc., 1995.

18. See Chapter 6 in Roth and Koper, *Impact Evaluation of the Public Safety and Recreational Firearms Use Protection Act of 1994*; and New York State Division of Criminal Justice Services, *Assault Weapons and Homicide in New York City*.

19. In addition to the variables discussed in the text, the models included an indicator variable for each State, a polynomial time trend for the national gun homicide trend, and annual State-level controls for per capita income, employment rates, and age structure of the population.

20. By conventional standards, we mean statistical power of 0.8 to detect a change, with 0.05 probability of a Type I error.

21. Pierce et al., *The Identification of Patterns in Firearms Trafficking: Implications for Focused Enforcement Strategy*.

22. Sherman, Lawrence W., James W. Shaw, and Dennis P. Rogan, *The Kansas City Gun Experiment*, Research in Brief, Washington, D.C.: U.S. Department of Justice, National Institute of Justice, 1995, NCJ 150855

23. Kennedy, David, Anne M. Piehl, and Anthony A. Braga, "Youth Violence in Boston: Gun Markets, Serious Youth Offenders, and a Use-Reduction Strategy," *Law and Contemporary Problems*, 59 (1996): 147-196.
24. Kelling, G.L., M.R. Hochberg, S.K. Costello, A.M. Rocheleau, D.P. Rosenbaum, J.A. Roth, and W.G. Skogan, *The Bureau of Justice Assistance Comprehensive Communities Program: A Preliminary Report*, Cambridge, Massachusetts: Botec Analysis (forthcoming).

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