No. 19-55376

## IN THE UNITED STATES COURT OF APPEALS FOR THE NINTH CIRCUIT

VIRGINIA DUNCAN, RICHARD LEWIS, PATRICK LOVETTE, DAVID MARGUGLIO, CHRISTOPHER WADDELL, AND CALIFORNIA RIFLE & PISTOL ASSOCIATION, INC., A CALIFORNIA CORPORATION, Plaintiffs and Respondents,

V.

XAVIER BECERRA, IN HIS OFFICIAL CAPACITY AS ATTORNEY GENERAL OF THE STATE OF CALIFORNIA, Defendant and Appellant.

> On Appeal from the United States District Court for the Southern District of California

No. 17-cv-1017-BEN-JLB The Honorable Roger T. Benitez, Judge

## APPELLANT'S EXCERPTS OF RECORD VOLUME THREE

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<u>Filing</u> <u>Date</u>	<b>Document Description</b>	
	VOLUME I	
4/4/19	Notice of Appeal (Docket No. 96)	1-6
3/29/19	Judgment in a Civil Case (Docket No. 88)	7
3/29/19	Order Granting Plaintiffs' Motion for Summary Judgment, Declaring California Penal Code § 32310 Unconstitutional and Enjoining Enforcement (Docket No. 87)	8-93
5/22/18	Transcript of Hearing on Motion for Summary Judgment (Docket No. 61)	94-218
	<u>VOLUME II</u>	
4/4/19	Order Staying in Part Judgment Pending Appeal (Docket No. 97)	219-224
4/3/19	Declaration of Anna M. Barvir (Docket No. 94-1)	225-236
4/3/19	Declaration of Charles David Wylie, Jr. (Docket No. 94-2)	237-239
4/1/19	Defendant's Ex Parte Application to Stay Judgement Pending Appeal (Docket No. 89)	240-242
4/1/19	Declaration of John D. Echeverria in Support of Defendant's Ex Parte Application to Stay Judgment Pending Appeal (Docket No. 89-2)	243-249
4/9/18	Declaration of Blake Graham in Opposition to Plaintiffs' Motion for Summary Judgment or, Alternatively, Partial Summary Judgment (Docket No. 53-2)	250-258

<u>Filing</u> Date	<b>Document Description</b>	Pages
4/9/18	Declaration of Ken James in Opposition to Plaintiffs' Motion for Summary Judgement or, Alternatively, Partial Summary Judgment (Docket No. 53-3)	259-266
4/9/18	Declaration of John D. Echeverria in Support of Defendant's Opposition to Plaintiffs' Motion for Summary Judgment or, Alternatively, Partial Summary Judgment (Docket No. 53-4)	267-279
	Exhibit 1 to the Declaration of John D. Echeverria: Expert Report of Lucy P. Allen (Docket No. 53-4)	280-311
	Exhibit 2 to the Declaration of John D. Echeverria: Expert Rebuttal Report of John J. Donohue (Docket No. 53-4)	312-349
	Exhibit 3 to the Declaration of John D. Echeverria: Revised Expert Report of Dr. Louis Klarevas (Docket No. 53-4)	250-396
	Exhibit 4 to the Declaration of John D. Echeverria: Expert Report of Dr. Christopher S. Koper (Docket No. 53-5)	397-504
	<b>VOLUME III</b>	
4/9/18	Continued Exhibit 4 to the Declaration of John D. Echeverria: Expert Report of Dr. Christopher S. Koper (Docket No. 53-5)	505-708
	Exhibit 5 to the Declaration of John D. Echeverria: Excerpts of Transcript of Deposition of Stephen Helsley (Docket No. 53-5)	709-717
	Exhibit 6 to the Declaration of John D. Echeverria: Excerpts of Transcript of Deposition of Blake Graham (Docket No. 53-5)	718-723

<u>Filing</u> Date	<b>Document Description</b>	Pages
	Exhibit 7 to the Declaration of John D. Echeverria: Excerpts of Transcript of Deposition of Carlisle Moody (Docket No. 53-6)	724-732
	Exhibit 8 to the Declaration of John D. Echeverria: Excerpts of Transcript of Deposition of Gary Kleck (Docket No. 53-6)	733-739
	Exhibit 9 to the Declaration of John D. Echeverria: Excerpts of Transcript of Deposition of Christopher S. Koper, Ph.D. (Docket No. 53-6)	740-745
	Exhibit 10 to the Declaration of John D. Echeverria: Excerpts of Transcript of Deposition of Lucy P. Allen (Docket No. 53-6)	746-760
	Exhibit 11 to the Declaration of John D. Echeverria: Excerpts of Transcript of Deposition of Louis Klarevas (Docket No. 53-6)	761-771
	Exhibit 12 to the Declaration of John D. Echeverria: Dep't of the Treasury, Bureau of Alcohol, Tobacco, and Firearms, <i>Report and Recommendation on the</i> <i>Importability of Certain Semiautomatic Rifles</i> (1989) (Docket No. 53-7)	772-790
	<b>VOLUME IV</b>	
4/9/18	Exhibit 13 to the Declaration of John D. Echeverria: Dep't of the Treasury, Bureau of Alcohol, Tobacco, and Firearms, <i>Study on the Sporting Suitability of</i> <i>Modified Semiautomatic Assault Rifles</i> (1998) (Docket No. 53-7)	791-916

Exhibit 14 to the Declaration of John D. Echeverria: 917-919 Assemb. Floor Analysis of S.B. 1446 (2015-2016 Reg. Sess.) (Docket No. 53-7)

<u>Filing</u> Date	<b>Document Description</b>	Pages
	Exhibit 15 to the Declaration of John D. Echeverria: Prepared Testimony by Laurence H. Tribe, <i>Proposals</i> to Reduce Gun Violence: Protecting Our Communities While Respecting the Second Amendment: Hearing Before the Subcomm. on the Constitution, Civil Rights and Human Rights, S. Comm. on the Judiciary (Feb. 12, 2013) (Docket No. 53-7)	920-955
	Exhibit 16 to the Declaration of John D. Echeverria: Mark Follman, et al., U.S. Mass Shootings, 1982- 2018: Data from Mother Jones' Investigation, Mother Jones (2018) (Docket No. 53-8)	956-969
	Exhibit 17 to the Declaration of John D. Echeverria: Mayors Against Illegal Guns, <i>Analysis of Recent</i> <i>Mass Shootings</i> (2013) (Docket No. 53-8)	970-1004
	Exhibit 18 to the Declaration of John D. Echeverria: Declaration of Professor Daniel W. Webster in Support of Defendant Xavier Becerra's Opposition to Plaintiffs' Motion for Preliminary Injunction (Originally Filed as Docket No. 15) (Docket No. 53-8)	1005-1023
	Exhibit 19 to the Declaration of John D. Echeverria: Larry Buchanan, et al., <i>Nine Rounds a Second: How</i> <i>the Las Vegas Gunman Outfitted a Rifle to Fire</i> <i>Faster</i> , N.Y. Times, Oct. 5, 2017 (Docket No. 53-8)	1024-1027
	Exhibit 20 to the Declaration of John D. Echeverria: Violence Policy Center, <i>High-Capacity Ammunition</i> <i>Magazines are the Common Thread Running Through</i> <i>Most Mass Shootings in the United States</i> (2018) (Docket No. 53-9)	1028-1036

## **Document Description**

**Pages** 

<u>Filing</u> Date

Exhibit 21 to the Declaration of John D. Echeverria: 1037-1039
Alex Yablon, Bans on High-Capacity Magazines, Not
Assault Rifles, Most Likely to Limit Shooting
Carnage, The Trace, June 13, 2016
(Docket No. 53-9)

## **VOLUME V**

Just., Report of the State's Attorney for the Judicial District of Danbury on the Shootings at Sandy Hook Elementary School and 36 Yogananda Street, Newtown, Connecticut on December 14, 2012 (2013) (Docket No. 53-9)	
Exhibit 24 to the Declaration of John D. Echeverria: Excerpts from Louis Klarevas, Rampage Nation: Securing America from Mass Shootings (2016) (Docket No. 53-10)	1088-1117
Exhibit 25 to the Declaration of John D. Echeverria: Excerpts from Robert J. Spitzer, <i>Gun Law History in</i> <i>the United States and Second Amendment Rights</i> , 80 Law & Contemporary Problems 55 (2017) (Docket No. 53-10)	1118-1122
Exhibit 26 to the Declaration of John D. Echeverria: H.R. Rep. No. 103-489 (1994) (Docket No. 53-10)	1123-1198
Exhibit 27 to the Declaration of John D. Echeverria: The Safety for All Act of 2016, 2016 Cal. Legis. Serv. Proposition 63 (West) (Docket No. 53-10)	1199-1227

# Document Description Pages

## <u>Filing</u> Date

## **VOLUME VI**

4/9/18 Exhibit 28 to the Declaration of John D. Echeverria: 1228-1504
Sandy Hook Advisory Comm'n, Final Report of the Sandy Hook Advisory Commission (2015) (Docket No. 53-10)

Exhibit 29 to the Declaration of John D. Echeverria: 1505-1508 LAPD Chief Backs Ban on Some Ammo Magazines, NBC So. Cal. (Docket No. 53-11)

## **VOLUME VII**

4/9/18 Exhibit 30 to the Declaration of John D. Echeverria: 1509-1513
C. S. Koper & D. C. Reedy, Impact of Handgun Types on Gun Assault Outcomes: A Comparison of Gun Assaults Involving Semiautomatic Pistols and Revolvers, 9 Injury Prevention 151 (2003) (Docket No. 53-11)

> Exhibit 31 to the Declaration of John D. Echeverria: 1514-1576 Brady Center to Prevent Gun Violence, Assault Weapons: 'Mass Produced Mayhem' (2008) (Docket No. 53-11)

> Exhibit 32 to the Declaration of John D. Echeverria: 1577-1583 Testimony of Brian J. Siebel, Senior Attorney, Brady Ctr. to Prevent Gun Violence, Before the Council of the District of Columbia (Oct. 1, 2008) (Docket No. 53-11)

> Exhibit 33 to the Declaration of John D. Echeverria: 1584-1587
> Christopher S. Koper et al., *Gunshot Victimisations Resulting from High-Volume Gunfire Incidents in Minneapolis: Findings and Policy Implications*,
> Injury Prevention (Feb. 24, 2018) (Docket No. 53-11)

<u>Filing</u> <u>Date</u>	<b>Document Description</b>	Pages
	Exhibit 34 to the Declaration of John D. Echeverria: Nat. Law Enforcement P'ship to Prevent Gun Violence, Protecting Communities from Assault Weapons and High-capacity Ammunition Magazines (2017) (Docket No. 53-12)	1588-1591
	Exhibit 35 to the Declaration of John D. Echeverria: Declaration of San Francisco Police Department Officer Joseph Emanuel in Support of Plaintiff's Ex Parte Application for Order to Show Cause Re: Preliminary Injunction, <i>People v. Badger Mountain</i> <i>Supply</i> , No. CGC-17-557010 (S.F. Super. Feb. 21, 2017) (Docket No. 53-12)	1592-1610
	Exhibit 36 to the Declaration of John D. Echeverria: Declaration of Detective Michael Mersereau of the Los Angeles Police Department in Support of Amici Curiae the City and County of San Francisco, the City of Los Angeles, and the City of Sunnyvale, <i>Duncan v.</i> <i>Becerra</i> , No. 17- 56081 (9th Cir. Oct. 19, 2017) (Docket No. 53-12)	1611-1619
	Exhibit 37 to the Declaration of John D. Echeverria: Mark Follman, et al., <i>A Guide to Mass Shootings in</i> <i>America</i> , Mother Jones (last updated Mar. 10, 2018, 9:00 a.m.) (Docket No. 53-12)	1620-1623
	Exhibit 38 to the Declaration of John D. Echeverria: David S. Fallis & James V. Grimaldi, <i>Va. Data Show</i> <i>Drop in Criminal Firepower During Assault Gun</i> <i>Ban</i> , Wash. Post (Jan. 23, 2011) (Docket No. 53-12)	1624-1627
	Exhibit 39 to the Declaration of John D. Echeverria: David S. Fallis, Data Indicate Drop in High-Capacity Magazines During Federal Gun Ban, Wash. Post (Jan. 10, 2013) (Docket No. 53-12)	1628-1631

<u>Filing</u> Date	<b>Document Description</b>	Pages
	Exhibit 40 to the Declaration of John D. Echeverria: Excerpts of Gary Kleck, Point Blank: Guns and Violence in America (1991) (Docket No. 53-12)	1632-1640
	Exhibit 41 to the Declaration of John D. Echeverria: Claude Werner, The Armed Citizen - Analysis of Five Years of Armed Encounters, GunsSaveLives.com (Mar. 12, 2012) (Docket No. 53- 12)	1641-1647
	Exhibit 42 to the Declaration of John D. Echeverria: California Voter Information Guide, Firearms. Ammunition Sales. Initiative Statute. California Proposition 63 (2016) (Docket No. 53-12)	1648-1670
	Exhibit 43 to the Declaration of John D. Echeverria: Larry Buchanan, et al., <i>How They Got Their Guns</i> , N.Y. Times, Nov. 5, 2017 (Docket No. 53-12)	1671-1678
3/5/18	Declaration of Anna M. Barvir in Support of Plaintiffs' Motion for Summary Judgment or, Alternatively, Partial Summary Judgment (Docket No. 50-8)	1679-1696
	Exhibit 1 to the Declaration of Anna M Barvir: Expert Report of James Curcuruto (Docket No. 50-8)	1697-1703
	Exhibit 2 to the Declaration of Anna M Barvir: Expert Report of Stephen Helsley (Docket No. 50-8)	1704-1713
	Exhibit 3 to the Declaration of Anna M Barvir: Expert Report of Gary Kleck (Docket No. 50-8)	1714-1776

<u>Filing</u> Date	<b>Document Description</b>	<b>Pages</b>
	<u>VOLUME VIII</u>	
3/5/18	Exhibit 4 to the Declaration of Anna M Barvir: Expert Rebuttal Report of Carlisle Moody (Docket No. 50-8)	1777-1800
	Exhibit 12 to the Declaration of Anna M Barvir: David B. Kopel, <i>The History of Firearm Magazines</i> <i>and Magazine Prohibitions</i> , 78 Albany L. Rev. 849 (2015) (Docket No. 50-10)	1801-1840
3/5/18	Exhibit 69 to Plaintiffs' Request for Judicial Notice: Act of June 2, 1927, No. 372, § 3, 1927 Mich. Pub. Acts 888 (Docket No. 50-2)	1841-1847
	Exhibit 70 to Plaintiffs' Request for Judicial Notice: Act of Apr. 22, 1927, ch. 1052, §§ 1, 4, 1927 R.I. Acts & Resolves 256, 256-57 (Docket No. 50-2)	1848-1849
	Exhibit 71 to Plaintiffs' Request for Judicial Notice: Act of Apr. 6, 1933, No. 166, sec. 1, §§ 12819-3, -4, 1933 Ohio Laws 189, 189 (Docket No. 50-2)	1850
	Exhibit 78 to Plaintiffs' Request for Judicial Notice: Act of July 8, 1932, Pub. L. No. 72-275, §§ 1, 8, 47 Stat. 650 (Docket No. 50-2)	1851-1855
	Exhibit 79 to Plaintiffs' Request for Judicial Notice: Colo. Rev. Stat. §§ 18-12-301–302 (Docket No. 50-2)	1856-1857
	Exhibit 80 to Plaintiffs' Request for Judicial Notice: Conn. Gen. Stat. § 53-202w (Docket No. 50-2)	1858-1860
	Exhibit 81 to Plaintiffs' Request for Judicial Notice: D.C. Code § 7-2506.01(b) (Docket No. 50-2)	1861-1862

FilingDocument DescriptionDate		<b>Pages</b>
	Exhibit 82 to Plaintiffs' Request for Judicial Notice: Haw. Rev. Stat. § 134-8(c) (Docket No. 50-2)	1863-1864
	Exhibit 83 to Plaintiffs' Request for Judicial Notice: Md. Code, Crim. Law § 4-305(b) (Docket No. 50-2)	1865-1866
	Exhibit 84 to Plaintiffs' Request for Judicial Notice: Mass. Gen. Laws ch. 140, §§ 121, 131(a) (Docket No. 50-2)	1867-1878
	Exhibit 85 to Plaintiffs' Request for Judicial Notice: N.J. Stat. § 2C:39-1y, -3j, -9h (Docket No. 50-2)	1879-1886
	Exhibit 86 to Plaintiffs' Request for Judicial Notice: N.Y. Penal Law §§ 265.00, 265.36 (Docket No. 50-2)	1887-1908
6/5/17	Exhibit 18 to the Declaration of Alexandra Robert Gordon in Support of Defendant's Opposition to Plaintiffs' Motion for Preliminary Injunction: Department of Justice Finding of Emergency (Docket No. 18)	1909-1914
	Exhibit 22 to the Declaration of Alexandra Robert Gordon in Support of Defendant's Opposition to Plaintiffs' Motion for Preliminary Injunction: Amended Notice of Withdrawal (Docket No. 18)	1915
	Exhibit 24 to the Declaration of Alexandra Robert Gordon in Support of Defendant's Opposition to Plaintiffs' Motion for Preliminary Injunction: Letter in Opposition to Proposed Emergency Regulations (Docket No. 18)	1916-1928
6/12/17	Answer (Docket No. 25)	1929-1942

<u>Filing</u> <u>Date</u>	<b>Document Description</b>	Pages
5/17/17	Complaint (Docket No. 1)	1943-1965
5/22/19	Docket Report, Case No. 3:17-cv-01017-BEN-JLB	1966-1977

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5951 Page 116 of 349



### 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 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.

Exhibit 4 Page 00230

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5952 Page 117 of 349

#### 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:<sup>38</sup>

- Colt AR15 group: all .223 caliber firearms made by Colt, Eagle, Olympic/SGW, Essential Arms, Bushmaster, and Sendra.
- Intratec group: all 9mm and .22 caliber semiautomatic weapons made by Intratec and all 9mm semiautomatic handguns made by AA Arms.
- SWD group: all 9mm, .380, and .45 caliber semiautomatic weapons made by SWD, Ingram, Military Armaments Corp., and RPB Industries.
- 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

<sup>38</sup> 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.

Exhibit 4 Page 00231

### 51

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5953 Page 118 of 349

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. 1	1994-May 1996) ch	anges in counts of stolen assault
	weapons and unbanned semiautomatic handguns c	apable of accepting	g large-capacity magazines
		Pre-ban	Post-han

Stolen gun type	Pre-ban monthly mean	Post-ban monthly mean
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

9	L. L	Pre-ban	Post-ban	Change
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.

Exhibit 4 Page 00232

### 52

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5954 Page 119 of

349

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 chisquare test indicated that this was a statistically significant increase (p<.01).<sup>39</sup> 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.<sup>40</sup> Either way, the relative Increase in assault weapon thefts appears to have been very modest.

<sup>39</sup> 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.

<sup>40</sup> 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.

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

Exhibit 4 Page 00233

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5955 Page 120 of 349

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).

54

Exhibit 4 Page 00234

## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 18 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5956 Page 121 of 349



Exhibit 4 Page 00235

### ER000510

55

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5957 Page 122 of 349

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.<sup>41</sup> (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.

<sup>41</sup> 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 preban/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.

## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 20 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5958 Page 123 of 349







Exhibit 4 Page 00237

### 57

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5959 Page 124 of 349

## 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,<sup>42</sup> 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).<sup>43</sup>

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

<sup>42</sup> The weapon categories consist of revolver, pistol, derringer, rifle, shotgun, combination rifle/shotgun, and a few other miscellaneous categories.

Exhibit 4 Page 00238

<sup>&</sup>lt;sup>43</sup> 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.

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5960 Page 125 of 349

(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).<sup>44</sup> 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.<sup>45</sup> 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

<sup>&</sup>lt;sup>44</sup> This calculation excludes guns scized by special crime hot spots patrols which were proactively targeting guns. Thus, the figure reflects normal police activity.

<sup>&</sup>lt;sup>45</sup> 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.

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5961 Page 126 of 349

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

Year	Total	Monthly average	Percent change from previous year
1993 -	55,089	4,591	N/A
1994	86,216	7,185	+ 57
1995	76,924	6,410	- 11
1996 (JanMay)	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

Year	Offense	Number	Percent change from previous year
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.<sup>46</sup> The Boston data are consistent with national trends in gun violence in that they show decreases in gun seizures for each year.<sup>47</sup> In St. Louis, gun confiscations increased slightly in 1994, but in 1995, they decreased by an amount comparable to the nationwide

<sup>46</sup> 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.

<sup>47</sup> 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).

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5962 Page 127 of 349

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.

Year	Total	Monthly average	Percent change from previous year
Gun confiscations/traces fo	or Boston, MA, January 1	<u>993–May 1996</u>	
1993	866	72	N/A
1994	762	64	- 12%
1995	712	59	- 7%
1996 (JanMay)	241	48	- 28%*
<u>Gun confiscations in St. Le</u>	ouis, MO, 1993-95		
1993	3,544	295	N/A
1994	3.729	311	5%
1995	3,349	279	-10%

Table 5-3. Gun confiscations/traces. January 1993–May 1996

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'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.<sup>48</sup>

<sup>&</sup>lt;sup>48</sup> 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

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5963 Page 128 of 349

### 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.<sup>49</sup> The requests include all states, Washington, D.C., Puerto Rico, and Guam.<sup>50</sup>

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.<sup>51</sup>

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.

<sup>49</sup> 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.

<sup>50</sup> 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.

<sup>51</sup> 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.

Exhibit 4 Page 00242

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5964 Page 129 of 349

Year		Total	Monthly average	Percent change from previous Year
1993	C2	3,748	312	N/A
1994	15	4,077	340	+ 9%
1995		3,268	272	- 20%
1996 (JanMay)		1,608	322	+ 7%*

#### able 5-4. Assault weapons traces, January 1993–May 1996

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);<sup>52</sup> 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).<sup>53</sup> 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.

<sup>&</sup>lt;sup>52</sup> 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).

<sup>&</sup>lt;sup>53</sup> 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.

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5965 Page 130 of 349

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.



Table 5.5	Twanen for colort accoult weapons	Tonwow 1002 May 1006
Table 5-5.	I races for select assault weapons.	January 199.1-Way 1996

	Year	Total	Monthly average	Percent change from previous year
	1993	3,040	253	N/A
	1994	3,358	280	+10%
2	1995	2,673	223	- 20%
	1996 (JanMay)	1,323	265	+ 8%*

\*Change is expressed relative to January through May of 1995.

<sup>t</sup>Includes traces for AR15 group, Intratec group, SWD handgun group, and selected Calico and Feather models.

Exhibit 4 Page 00244

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5966 Page 131 of 349

## 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.

> Exhibit 4 Page 00245

## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 29 of 299

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5967 Page 132 of 349



Exhibit 4 Page 00246

#### 66

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5968 Page 133 of 349

## Table 5-6. Traces for select assault weapons,<sup>†</sup> January 1993–May 1996 (violent and drug-related crimes)

## Violent Crimes:

Year	Total	Monthly average	Percent change from previous year
1993	513	43	N/A
1994	428	36	- 17%
1995	354	30	- 17%
1996 (JanMay)	222		+ 35%*

#### **Drug-Related Crimes:**

Year	Total	Monthly average	Percent change from previous year	
1993	498	42	N/A	
1994	595	50	+ 19%	s.
1995	403	34	- 32%	
1996 (JanMay)	217	43	+ 24% <b>*</b>	

\*Change is expressed relative to January through May of 1995.

<sup>†</sup>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

Exhibit 4 Page 00247

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5969 Page 134 of 349

traces. Further, there were approximately 13 percent fewer assault weapon trace requests in 1995 than during the pre-ban year of 1993.<sup>54</sup>



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.<sup>55</sup>

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,

68

<sup>&</sup>lt;sup>54</sup> 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.

<sup>&</sup>lt;sup>55</sup> 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.

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5970 Page 135 of 349

Year	Total	Monthly mean	Percent change from previous year
1993	. 204	17	N/A
1994	228	19	+12%
1995	210	18	- 8%
1996 (JanMay)	. 106	21	+15%

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.<sup>56</sup>

### 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.

<sup>56</sup> 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.

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5971 Page 136 of 349



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.

Exhibit 4 Page 00250

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5972 Page 137 of 349

Table 5-8. Assault weapon trace requests to BATF by crime type					
	1993	1994	1995	1996 (Jan–May)	
Offense type*	(N=3,725)	(N=4,048)	(N=3,226)	(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.<sup>57</sup>

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 seniautomatic handguns capable of accepting large-capacity magazines by analyzing confiscations of selected Glock and Ruger pistols.

<sup>57</sup> Time, cost, and personnel considerations limited our ability to implement on-site data collection efforts.

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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.<sup>58</sup>

### 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.<sup>59</sup> 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

	Pre-ban (Jan. '92–Aug. '94)	Post-ban (Sept. '94–Dec. '95)	Change
Total guns confiscated			
Total	9,372	4,491	
Monthly mean	293	281	-4%
Assault guns	-140 -140	a a	
Total	134	46	
Monthly mean	4	3	-25%
Proportion of confiscated guns	.014	.010	-29%
Large-capacity handguns (Ruger			5. <sup>7</sup>
and Glock)	÷		
Total	118	93	
Monthly mean	4	6	+50%
Proportion of all handguns	.018	.031	+72%

 Table 5-9.
 Summary data on guns confiscated in St. Louis, January 1992 - December 1995

<sup>58</sup> 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.

<sup>59</sup> The St. Louis data contain a few SWD streetsweeper shotguns in addition to SWD assault pistols.

### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5974 Page 139 of 349

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



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

<sup>60</sup> 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.

<sup>61</sup> 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.

Exhibit 4
# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5975 Page 140 of 349

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.<sup>62</sup> <sup>63</sup>

× ×	Pre-ban	Post-ban	10
	Jan. '92-Aug. '94)	(Sept, '94–Aug. '96)	Change
Total guns confiscated			
Total	2,567	1,273	
Monthly mean	80	53	-34%
Assault guns		±	
Total	53	21	
Monthly mean	2	1	-50%
Proportion of confiscated guns	.021	.016	-24%
Large-capacity handguns (Ruger		22	
and Glock)			*
Total	28	17	
Monthly mean	1	. 1 .	0%
Proportion of all handguns	.015	.016	+7%

Table 5-10. Summary data on guns confiscated in Boston, January 1992 - August 1996

 $^{62}$  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.

<sup>63</sup> 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.

Exhibit 4 Page 00254

#### 74

### Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 38 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5976 Page 141 of 349



#### 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.<sup>64</sup> 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

<sup>64</sup> Some of the guns associated with drug charges were also tied to weapons charges:

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5977 Page 142 of 349

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.<sup>65</sup>

Exhibit 4 Page 00256

 $<sup>^{65}</sup>$  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).

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5978 Page 143 of 349



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

Exhibit 4 Page 00257

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5979 Page 144 of 349

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).<sup>66</sup> The quarterly trend for the proportion measure is displayed in Figure 5-8. The pattern does not suggest any meaningful trends over time.<sup>67</sup>

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.

<sup>67</sup> 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.

Exhibit 4 Page 00258

### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5980 Page 145 of

#### 349

### 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.<sup>68</sup> 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.<sup>69</sup> 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.

<sup>69</sup> Moreover, no evidence exists on the lethality effect of limiting magazine capacity.

Exhibit 4 Page 00259 Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5981 Page 146 of 349

#### 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).<sup>70</sup> 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 years<sup>71</sup> 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"<sup>72</sup> 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

<sup>72</sup> 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.

Exhibit 4 Page 00260

<sup>&</sup>lt;sup>70</sup> 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.

<sup>&</sup>lt;sup>71</sup> 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.

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5982 Page 147 of 349

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.<sup>73</sup> 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.<sup>74</sup> 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

<sup>73</sup> We weighted the regression by state population to adjust for heteroskedasticity and to avoid giving undue weight to small states.

<sup>74</sup> 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.

Exhibit 4 Page 00261

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5983 Page 148 of 349

Model 2 did produce a larger estimated ban effect, a statistically significant reduction of 10.3 percent in the states without their own bans.

Model	Subgroup for 1995 impact	Coefficient	Percent change	test statistic
1	All Usable (N = 42) $\cdot$	-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
8	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

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.<sup>75</sup> 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

<sup>&</sup>lt;sup>75</sup> 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.

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5984 Page 149 of 349

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.

	Gun homicide data 1980–95
Alabama	✓
Alaska	· · · · · ·
Arizona	√
Arkansas	· ·
California	✓
Colorado	· ↓
Connecticut	1

Table 6-2. Years for which gun-related homicide data are not available\_

Exhibit 4 Page 00263

#### 83

## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 47 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5985 Page 150 of 349

	Gun homicide data 1980–95
Delaware	No usable data
District of Columbia	No usable data
Florida	1988–91
Georgia	. 1980–81
Hawaii	
Idaho	1
Illinois	No usable data
Indiana	1989–1991
Iowa	1991–1993
Kansas	No usable data
Kentucky	1987-89; 1994
Louisiana	199091
Maine	1990–92
Maryland	1
Massachusetts	1988–90
Michigan	1
Minnesota	1
Mississippi	No usable data
Missouri	· •
Montana	No usable data
Nebraska	No usable data
Nevada	1
New Hampshire	1
New Jersey	· ·
New Mexico	No usable data
New York	· · · ·
North Carolina	1
North Dakota	1994
Ohio	
Oklahoma	✓
	65.0

Exhibit 4 Page 00264

### 84

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5986 Page 151 of 349

e and a second se	Gun homicide data 1980–95
Pennsylvania	
Rhode Island	
South Carolina	1
South Dakota	No usable data
Tennessee	1
Texas	1
Utah	1
Vermont	1980-83
Virginia	1
Washington	
West Virginia	. 1
Wisconsin	1
Wyoming	1

### 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.<sup>76</sup> The SHR does not contain information

Exhibit 4 Page 00265

<sup>&</sup>lt;sup>76</sup> 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

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5987 Page 152 of 349

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.<sup>77</sup>



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),<sup>78</sup> 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.

<sup>77</sup> 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.

<sup>78</sup> See discussion in Chapters 2 (p.8) and 5 (p.58) and in Section 6.3 (p.87) of this chapter.

Exhibit 4 Page 00266

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5988 Page 153 of 349

with gun equipped with large-capacity magazines banned by the Crime Act.<sup>79</sup> Hence, trends in the use of largecapacity 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.<sup>80</sup>

### 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.<sup>81</sup> 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

<sup>79</sup> 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).

<sup>80</sup> See Appendix A for an investigation of assault weapon use in mass murders.

<sup>81</sup> 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.

> Exhibit 4 Page 00267

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5989 Page 154 of 349

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.<sup>82</sup> 83

21 21	Casos	Avarana	Standard	Twalue	Planal
10	Cuses	Averuge	ueviation	1 vuine	<u>r ievei</u>
Milwaukee County (N = 418)					
Pre-ban: January '92 - August '94	282	2.28	2.34		
Post-ban: September '94 - December '95	136	2.52	2.90		
Difference		+ 0.24		0.85*	.40
a					
Seattle and King County (N = 275)					5
Pre-ban: January '92 - August '94	184	2.08	1.78		
Post-ban: September '94 - June '96	91	2.46	2.22		
Difference		+ 0.38		1.44*	.15
ж		51 22			
Jersey City (N =44)					
Pre-ban: January '92 - August '94	24	1.58	1.56	\fb	
Post-ban: September '94 - May '96	20	1.60	1.79		
Difference		+ 0.02		0.03	.97

Table 6-3. Gunshot wounds per gun homicide victim, Milwaukee, Scattle, and Jersey City

\* T values were computed using formula for populations having unequal variances

<sup>&</sup>lt;sup>82</sup> 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.

<sup>&</sup>lt;sup>83</sup> 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.

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5990 Page 155 of 349

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,<sup>84</sup> and the efforts to model the Seattle data were inconclusive.<sup>85</sup> Because the ban produced no effects in Milwaukee or Seattle, it was not necessary to draw inferences about Jersey City as a comparison site.





<sup>84</sup> We tested the Milwaukee data under various theories of impact but failed to find evidence of an effect from the ban.

<sup>85</sup> 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).

Exhibit 4 Page 00269

### Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 53 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5991 Page 156 of 349



Exhibit 4 Page 00270

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90

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5992 Page 157 of 349

#### 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.<sup>86</sup>

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.<sup>87</sup> 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.<sup>88</sup> Since multiple wound victims can be expected to have a greater chance of dying at the scene, WRISS

<sup>87</sup> For a discussion of error rates in the determination of wound counts by hospital staff, see Randall (1993).

<sup>88</sup> 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.

Exhibit 4 Page 00271

#### 91

<sup>&</sup>lt;sup>86</sup> 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.

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5993 Page 158 of 349

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.

Exhibit 4 Page 00272

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5994 Page 159 of 349

ane o-4. Froportion of guisnot victures receiving in	Cases	Proportion with multiple wounds	Standard deviation
San Diego komicides (N = 668)			
Pre-ban: January '92 - August '94	445	.41	.49
Post-ban: September '94 - June '96	223	.43	.50
Difference		.02	
$\xi^{2} = 0.177$	a		
<i>P</i> level = .674			8
Boston Gun homicides (N = 53)			
Pre-ban: January '92 - August '94	. 32	.50	.50
Post-ban: September '94 - December '95	21	.38	.50
Difference		12	
$\xi^2 = 0.725$			
$P \ level = .39$			
Boston non-fatal gunshot victims (N = 762)			
Pre-ban: January '92 - August '94	518	.18	.39
Post-ban: September '94 - December '95	244	.24	.43
Difference		.06	
$\xi^2 = 3.048$			
P  level = .08		,	5
Boston total gunshot victims (N = 815)			
Pre-ban: January '92 - August '94	550	.20	.40
Post-ban: September '94 - December '95	265	.27	.44
Difference		.07	12
$\xi^2 = 4.506$			24
P  level = .03		625	

Exhibit 4 Page 00273

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5995 Page 160 of 349

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.<sup>89</sup> 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.<sup>90</sup> Thus, overall, the Boston data appear inconclusive.



<sup>89</sup> 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.

<sup>90</sup> 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.

94

Exhibit 4 Page 00274

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5996 Page 161 of 349







Exhibit 4 Page 00275

### Figure 6-7. Proportion of non-fatal gunshot wound cases with multiple wounds by month, Boston, January 1992– December 1995

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5997 Page 162 of 349

### 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).<sup>91</sup> 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.

	Cases	Average	Standard deviation	T value	P level
Assault weapons v. other firearms (N = 147)				5	18
Assault weapons	7	3.14	3.08		
Other firearms	140	2.21	2.87		
Difference		0.93		0.83	.41
Firearms with banned large-capacity magazines v. other firearms $(N = 132)$					a.
Large-capacity firearms	30	3.23	4.29		
Other firearms	102	2.08	2.48	-1	
Difference		1.15		1.41*	.17

Table 6-5. Gunshot wounds per gun homicide victim: Assault weapon and large-capacity magazine cases, Milwaukee

\*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

<sup>91</sup> 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.

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5998 Page 163 of 349

banned by Title XI. As is shown in the bottom of Table 6-5, offenders killed with guns having banned largecapacity magazines received over three wounds on average. In contrast, persons killed with firearms having nonbanned 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.<sup>92</sup> 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.<sup>93</sup> 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 threequarters) are not committed with guns having large-capacity magazines. Further, victims killed with largecapacity 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 nonlethal gun violence and provide further guidance by which to assess this aspect of the Crime Act legislation.

<sup>92</sup> Note that two cases involving attached tubular .22 caliber large-capacity magazines were included in the nonbanned 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.

Exhibit 4 Page 00277

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.5999 Page 164 of 349

### 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.<sup>94</sup> 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.

Year	Total gun murders of police officers	Officers killed with assault weapons	Proportion of victims killed with assault weapons (minimum estimate)	Proportion of victims killed with assault weapons for cases in which gun make is known
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%

Table 6-6. Murders of police officers with assault weapons

\*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

<sup>&</sup>lt;sup>94</sup> These data are compiled annually by the FBI based on reports submitted by law enforcement agencies throughout the country.

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6000 Page 165 of 349

assessment of all guns which may have failed the features test of the Crime Act as produced by their manufacturers.<sup>95</sup> 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.<sup>96 97</sup> 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.<sup>98</sup>

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

<sup>95</sup> 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.

<sup>96</sup> 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).

<sup>97</sup> 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.

<sup>98</sup> 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.

> Exhibit 4 Page 00279

### 99

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6001 Page 166 of 349

combination of both is unclear. However, there have been no recorded murders of police with assault weapons since the early part of 1995.<sup>99</sup>

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 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 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.

<sup>99</sup> 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 preban 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).

Exhibit 4 Page 00280

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6002 Page 167 of 349

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Exhibit 4 Page 00281

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6003 Page 168 of 349

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Exhibit 4 Page 00282

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6004 Page 169 of 349

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Exhibit 4 Page 00283

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6005 Page 170 of 349

## 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:

- 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.
- 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).<sup>1</sup>

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.

<sup>1</sup> 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.

**A-**1

Exhibit 4 Page 00284

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6006 Page 171 of 349

#### 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.<sup>2</sup> 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.<sup>3</sup> 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.

9	1992	1993	1994	1995	1996	Total
<u>Semiautomatics</u>						
Handgun	4 .	3	1	7	1	16
Rifle	0	. 0	0	2	0	2
Generic weapon types					21	
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

Table A-1. Mass murder newspaper reports, by weapon type and year of event

<sup>2</sup> As Holmes and Holmes (1994, pp.71-73) have noted, most scholars set the victim criterion for mass murder at three or four victims.

<sup>3</sup> Table A-1 excludes 1 of the 52 for which we were unable to ascertain the date of the mass murder.

A-2

Exhibit 4 Page 00285

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6007 Page 172 of 349

### Total cases 14 11 3 20 3 51

### 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.<sup>4</sup> 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

Exhibit 4 Page 00286

<sup>&</sup>lt;sup>4</sup> 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.

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6008 Page 173 of 349

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	= 2	3.
		<b>`</b>					

Table A-2. 1992 H	R/Nexis comparisons	
<u>NEXIS</u>	SHR	NEXIS & SHR
14	15	9
		NUMBER OF
NEXIS ONLY	,	VICTIMS
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
		NUMBER OF
FBI ONLY		<b>VICTIMS</b>
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
· 8		NUMBER OF
<u>NEXIS &amp; FBI</u>		<u>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,

Exhibit 4 Page 00287

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6009 Page 174 of 349

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 capturerecapture 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.

Exhibit 4 Page 00288

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6010 Page 175 of 349

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.<sup>5</sup>

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 eases, 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.

<sup>5</sup> 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.

A-6

Exhibit 4 Page 00289
Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6011 Page 176 of 349

#### **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.

Exhibit 4 Page 00290

### A-7

### Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 74 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6012 Page 177 of 349

# **Exhibit** C

Exhibit 4 Page 00291

Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 75 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6013 Page 178 of 349

The author(s) shown below used Federal funds provided by the U.S. Department of Justice and prepared the following final report:

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> > Exhibit 4 Page 00292

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6014 Page 179 of 349

### 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

#### By

**Christopher S. Koper** (Principal Investigator)

With

Daniel J. Woods and Jeffrey A. Roth

### June 2004

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Exhibit 4 Page 00293

### Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 77 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6015 Page 180 of 349

#### **TABLE OF CONTENTS**

	Preface	i	
	Acknowledgments	ii	
	2	×	
	1. Impacts of the Federal Assault Weapons Ban, 1994-2003: Key Findings	and	
	Conclusions	1	
	2. Provisions of the Assault Weapons Ban	4	
	2.1. Assault Weapons	4	
	2.2. Large Capacity Magazines	6	
	2.3. Foreign Rifles Capable of Accepting Large Capacity Magazine	s for	
	Military Rifles	8	
	2.4. Ban Exemptions	10	
	2.5. Summary	11	
	3. Criminal Use of Assault Weapons and Large Capacity Magazines Before	e the	
	Ban	14	
	3.1. Criminal Use of Assault Weapons	15	
	3.2. Criminal Use of Large Capacity Magazines	18	
	3.3. Summary	19	
	4. Overview of Study Design, Hypotheses, and Prior Findings	20	
	4.1. Logical Framework for Research on the Ban	20	
6	4.2. Hypothesized Market Effects	21	
	4.3. Prior Research on the Ban's Effects	23	
	5. Market Indicators for Assault Weapons: Prices and Production	25	
	5.1. Price Trends for Assault Weapons and Other Firearms	25	
	5.2. Production Trends for Assault Weapons and Other Firearms	33	
2	5.3. Summary and Interpretations	36	
	6. Criminal Use of Assault Weapons After the Ban	. 39	
	6.1. Measuring Criminal Use of Assault Weapons: A Methodologic	al	
	Note	39	
	6.2. National Analysis of Guns Reported By Police to the Federal		
	Bureau of Alcohol, Tobacco, and Firearms	40	12
	6.3. Local Analyses of Guns Recovered By Police	46	
	6.4. Summary	51	
	7. Market Indicators for Large Capacity Magazines: Prices and Importation	n 61	
	7.1. Price Trends for Large Capacity Magazines	61	
	7.2. Post-Ban Importation of Large Capacity Magazines	65	
	7.3. Summary and Interpretations	65	
	T/ P.		

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### Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 78 of 299

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6016 Page 181 of 349

### TABLE OF CONTENTS (CONTINUED)

8. Criminal Use of Large Capacity Magazines After the Ban	68			
8.1. Baltimore	69			
8.2. Anchorage	73			
8.3. Milwaukee	75			
8.4. Louisville	77			
8.5. Summary	78			
9. The Consequences of Crimes With Assault Weapons and Large Capacity				
Magazines	80			
9.1. The Spread of Semiautomatic Weaponry and Trends in Lethal and	•			
Injurious Gun Violence Prior to the Ban				
9.2. Shots Fired in Gun Attacks and the Effects of Weaponry on Attack				
Outcomes	83			
9.3. Post-Ban Trends in Lethal and Injurious Gun Violence	91			
9.4. Summary	96			
10. Looking to the Future: Research Recommendations and Speculation About				
the Possible Consequences of Reauthorizing, Modifying, or Lifting the Assault				
Weapons Ban				
10.1. Research Recommendations and Data Requirements	98			
10.2. Potential Consequences of Reauthorizing, Modifying, or Lifting				
the Assault Weapons Ban	100			
References				

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### Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 79 of 299

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6017 Page 182 of 349

#### 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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Exhibit 4 Page 00296

### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6018 Page 183 of 349

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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.

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Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6019 Page 184 of 349

## 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'

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Exhibit 4 Page 00298

1

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6020 Page 185 of 349

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

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Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6021 Page 186 of 349

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 Victimizations, 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.

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Exhibit 4 Page 00300

3

#### Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 84 of 299

### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6022 Page 187 of 349

#### 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).<sup>1</sup> 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.<sup>2</sup> 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.<sup>3</sup>

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.

<sup>2</sup> 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).

<sup>3</sup> This is based on AWs identified by ATF's Firearms Technology Branch as of December 1997.

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<sup>&</sup>lt;sup>1</sup> 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.

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 <sup>1</sup>
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 <sup>2</sup>
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) <sup>2</sup>
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	

### Table 2-1. Firearms Banned by the Federal Assault Weapons Ban

<sup>1</sup> Imports were halted in 1994 under the federal embargo on the importation of firearms from China.

<sup>2</sup> Imports banned by federal executive order, April 1998.

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Case 3:17-cv-01017-BEN-JLB

Document 53-5 349

Filed 04/09/18

PageID.6023

Page 188 of

5

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6024 Page 189 of 349

Weapon Category	Military-Style Features (Two or more qualify a firearm as an assault weapon)
Semiautomatic pistols accepting detachable magazines:	<ol> <li>ammunition magazine that attaches outside the pistol grip</li> <li>threaded barrel capable of accepting a barrel extender, flash hider, forward handgrip, or silencer</li> <li>heat shroud attached to or encircling the barrel</li> <li>weight of more than 50 ounces unloaded</li> <li>semiautomatic version of a fully automatic weapon</li> </ol>
Semiautomatic rifles accepting detachable magazines:	<ol> <li>folding or telescoping stock</li> <li>pistol grip that protrudes beneath the firing action</li> <li>bayonet mount</li> <li>flash hider or threaded barrel designed to accommodate one</li> <li>grenade launcher</li> </ol>
Semiautomatic shotguns:	<ol> <li>folding or telescoping stock</li> <li>pistol grip that protrudes beneath the firing action</li> <li>fixed magazine capacity over 5 rounds</li> <li>ability to accept a detachable ammunition magazine</li> </ol>

<b>Fable 2-2.</b>	Features	Test of	the Federal	Assault	Weapons	Ban

#### 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).<sup>4</sup> 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.

6

<sup>&</sup>lt;sup>4</sup> Technically, the ban prohibits any magazine, belt, drum, feed strip, or similar device that has the capacity to accept more than 10 rounds or 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.

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### Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 87 of 299

### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6025 Page 190 of 349

#### Figure 2-1. Features of Assault Weapons: The Intratec TEC-9 Assault Pistol

Threaded Barrel /Designed to accommodate a silencer

#### **Barrel Shroud**

Cools the barrel of the weapon so it will not overheat during rapid firing. Allows the shooter to grasp the barrel area during rapid fire without incurring serious burns.

> Large Capacity Magazine Outside Pistol Grip Characteristic of an assault weapon, not a sporting handgun.

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.

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Exhibit 4 Page 00304

7

### Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 88 of 299

### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6026 Page 191 of 349

#### Figure 2-2. Features of Assault Weapons: The AK-47 Assault Rifle

#### \_ Flash Suppressor Reduces the flash from the barrel

of the weapon, allowing the shooter to remain concealed when shooting at night.

Barrel Mount Lord Designed to accommodate a bayonet, serves no sporting purpose.

> Folding Stock Sacrifices accuracy for concealability and mobility in combat situations.

Large Capacity Detachable Magazine Permits shooter to fire dozens of rounds of ammunition without reloading.

**Pistol Grip** Allows the weapon to be "spray fired" from the hip. Also helps stabilize the weapon during rapid fire.

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).<sup>5</sup> 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.<sup>6</sup>

Exhibit 4 Page 00305

8

<sup>&</sup>lt;sup>5</sup> 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.

<sup>&</sup>lt;sup>6</sup> Importation of some LCMM rifles, including a number of guns patterned after the AK-47, was halted in

<sup>1994</sup> due to trade sanctions against China (U.S. Department of the Treasury, 1998).

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ER000581

Figure 2-3. Foreign Semiautomatic Rifles Capable of Accepting Large Capacity Military

Case 3:17-cv-01017-BEN-JLB

Document 53-5 349

Filed 04/09/18

PageID.6027

Page 192 of

### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6028 Page 193 of 349

#### 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.<sup>7</sup> 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.

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<sup>&</sup>lt;sup>7</sup> 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).

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6029 Page 194 of 349

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 postban 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 AWtype 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.<sup>8</sup>

#### 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.

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<sup>&</sup>lt;sup>8</sup> 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.

### Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 92 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6030 Page 195 of 349

Introducing The AB-10 Stainless Steel **Smm Platoll** The New non-threaded AB-10 Stainless Steel Frearm is now available with a 32-round Stabless Steel capacity magazine. This new addion is and of the most affordable and reliable firearms on the mucket! In Standard Blue or Stainless Steal, the AB-10 series makes an ideal firearm for soil-defense or recreation. A super prolit-maker! Sport -22 Non-Threaded Barrol "Gat""" 10-Round Magazino Omm, Luger Magazine 741 "Gat"-9/.380 Auto "Cat" .45 Magazina 7+1 45 A.C.P. Magazino Bel Pro-liteon-tor Berlon Protoc 250, 0-Round Mag. 12405 S.W. 130th St., Miarni, FL 33185 http://amiline.com/intratec.html Fax: (305) 253-7207 Protoc 25KB, 8-Round Mag.

Figure 2-4. Post-Ban, Modified Versions of Assault Weapons: The Intratec AB ("After Ban") Model (See Featured Firearm)

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12 Exhibit 4 Page 00309

### Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 93 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6031 Page 196 of 349

Figure 2-5. Post-Ban, Modified Versions of Assault Weapons: The Colt Match Target HBAR Model



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13 Exhibit 4 Page 00310

### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6032 Page 197 of 349

## 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.<sup>9</sup>

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.

Exhibit 4 Page 00311

<sup>&</sup>lt;sup>9</sup> A number of localities around the nation also passed AW bans during this period.

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### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6033 Page 198 of 349

#### **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).<sup>10</sup>

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%<sup>11</sup>
- National (gun thefts reported to police, 1992-Aug. 1994): 2%
- National (guns used in murders of police, 1992-1994): 7-9%<sup>12</sup>
- National (guns used in mass murders of 4 or more persons, 1992-1994): 4-13%<sup>13</sup>

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

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<sup>&</sup>lt;sup>10</sup> 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.

<sup>&</sup>lt;sup>11</sup> 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.

<sup>&</sup>lt;sup>12</sup> 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).

 $<sup>^{13}</sup>$  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.

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6034 Page 199 of 349

estimates, which correspond to particularly rare events such 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).<sup>14</sup>

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

Exhibit 4 Page 00313

<sup>&</sup>lt;sup>14</sup> 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).

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Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6035 Page 200 of 349

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.

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Exhibit 4 Page 00314

### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6036 Page 201 of 349

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%<sup>15</sup>
- Washington, DC (guns recovered from juveniles, 1991-1993): 16%<sup>16</sup>
- National (guns used in murders of police, 1994): 31%-41%<sup>17</sup>

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).

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Exhibit 4 Page 00315

<sup>&</sup>lt;sup>15</sup> 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).

<sup>&</sup>lt;sup>16</sup> Note that Washington, DC prohibits semiautomatic firearms accepting magazines with more than 12 rounds (and handguns in general).

<sup>&</sup>lt;sup>17</sup> 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.

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6037 Page 202 of 349

#### 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.

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### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6038 Page 203 of 349

#### 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 shortterm (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).<sup>18</sup> 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 nonfatal 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

Exhibit 4 Page 00317

<sup>&</sup>lt;sup>18</sup> The report to Congress was the Roth and Koper (1997) report.

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## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6039 Page 204 of 349

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 nonlicensed individuals.<sup>19</sup> 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

<sup>&</sup>lt;sup>19</sup> Persons who make only occasional sales of firearms are not required to obtain a federal firearms license (ATF, 2000, p. 11).

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## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6040 Page 205 of 349

market almost entirely unregulated and, accordingly, a better source of guns for criminal users.<sup>20</sup> 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.

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Exhibit 4 Page 00319

<sup>&</sup>lt;sup>20</sup> 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.

<sup>&</sup>lt;sup>21</sup> 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.

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6041 Page 206 of 349

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.<sup>22</sup>

<sup>22</sup> To our knowledge, there have been two other studies of changes in AW and LCM use during the postban 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

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Exhibit 4 Page 00320

### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6042 Page 207 of 349

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.

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Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6043 Page 208 of 349

## 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-15type 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.<sup>23</sup>-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

<sup>&</sup>lt;sup>23</sup> 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.

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### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6044 Page 209 of 349

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.<sup>24</sup> For non-banned firearms, we used MSRP.<sup>25</sup> 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).<sup>26, 27</sup>

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<sup>&</sup>lt;sup>24</sup> 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.

<sup>&</sup>lt;sup>25</sup> We utilized prices for the base model of each AW and comparison firearm (in contrast to model variations with special features or accessories).

<sup>&</sup>lt;sup>26</sup> 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).
<sup>27</sup> Several of the selected weapons began production in 1985 or later. In other cases, available production

Several of the selected weapons began production in 1985 of rater. 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 nonsemiautomatic 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.

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6045 Page 210 of 349

#### 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.<sup>28</sup>

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.<sup>29</sup>

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Exhibit 4 Page 00324

<sup>&</sup>lt;sup>28</sup> 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.

<sup>&</sup>lt;sup>29</sup> 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.

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6046 Page 211 of 349

	Assault Pis	Assault Pistols (n=40) Comparison (n=3		Handguns 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				
SWD	-0.64	-11.49***			
Davis P32	//////////////////////////////////////		0.09	3.63***	
Davis P380	***************		0.20	8.20***	
Lorcin L380	99992999999999999999999999999999999999		0.29	11.35****	
F value	27.79		16.24		
(p value)	<.01		<.01		
Adi R-square	0.89		0.83		

Table 5-1.	Regression	of Assault	<b>Pistol</b> and	Comparison	Handgun	Prices on	Annual
Time Indic	ators, 1990-	1999, Con	trolling for	Gun Model			

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<=.10.

\*\* Statistically significant at p<=.05.

\*\*\* Statistically significant at p<=.01.

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Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6047 Page 212 of 349



Assault pixtol prices based on TEC9, TEC22, SWD M11/9, and Calico M950. SNS prices based on Davis P32 and P380 and Lorein 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.

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Exhibit 4 Page 00326

### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6048 Page 213 of 349

#### 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.<sup>30</sup> 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 cach year and modeled the trends in these average prices over time, weighting by each company's total rifle production.<sup>31</sup>

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.

Exhibit 4 Page 00327

<sup>&</sup>lt;sup>30</sup> 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.
<sup>31</sup> Prices for the different models are delemented by a service of the different model.

<sup>&</sup>lt;sup>31</sup> Prices for the different models made by a given manufacturer tended to follow comparable trends, thus strengthening the argument for averaging prices.

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Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6049 Page 214 of 349

9	Assault Rifles (n=36)		Comparison	Rifles (n=27)
a a	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				20.07***
Remington	*****		0.29	21.69***
F statistic	50.52			63.62
(p value)	<.01			<.01
Adj. R-square	0.94	*******	<i></i>	0.96

# Table 5-2. Regression of Assault Rifle and Comparison Semiautomatic Rifle Prices on Annual Time Indicators, 1991-1999, Controlling for Gun Make

Time indicators interpreted relative to 1994. Assault rifle makes interpreted relative to Feather. Comparison rifle makes interpreted relative to Marlin.

\* Statistically significant at p<=.10.

\*\* Statistically significant at p<=.05.

\*\*\* Statistically significant at p<=.01.

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Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6050 Page 215 of 349



#### 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

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Exhibit 4 Page 00329

### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6051 Page 216 of 349

previously (Roth and Koper, 1997, Chapter 4) for some non-banned semiautomatic rifles (including the Ruger Mini-14) during 1994 and early 1995.<sup>32</sup>

#### 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

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 –

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<sup>&</sup>lt;sup>32</sup> 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).

<sup>&</sup>lt;sup>33</sup> 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).

<sup>&</sup>lt;sup>34</sup> 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.

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6052 Page 217 of 349

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.<sup>35</sup>



Figure 5-3. Assault Pistol Production, 1985-2001

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Exhibit 4 Page 00331

34

<sup>&</sup>lt;sup>35</sup> 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.

### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6053 Page 218 of 349

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%
	3. 3.		2
Total Rifles	22%	8%	18%
Assault Rifles (or Post-Ban Models)	81%	-51%	156%
Comparison Rifles	15%	13%	-16%

#### Table 5-3. Production Trends for Assault Weapons and Other Firearms, 1990-2000\*

\* 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.<sup>36</sup> 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%.<sup>37</sup> Total rifle production increased much more modestly during this time (18%), while production of the comparison rifles declined.

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Exhibit 4 Page 00332

<sup>&</sup>lt;sup>36</sup> 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).

<sup>&</sup>lt;sup>37</sup> 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).

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6054 Page 219 of 349



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

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### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6055 Page 220 of 349

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.<sup>38</sup> 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 a 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

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.

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<sup>&</sup>lt;sup>38</sup> 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.

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6056 Page 221 of 349

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.

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### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6057 Page 222 of 349

#### 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.

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### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6058 Page 223 of 349

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,<sup>39</sup> 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

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<sup>&</sup>lt;sup>39</sup> 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.

### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6059 Page 224 of 349

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),<sup>40</sup> 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.<sup>41</sup>

<sup>&</sup>lt;sup>40</sup> 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.

<sup>&</sup>lt;sup>41</sup> 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.

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Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6060 Page 225 of 349

#### 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.<sup>42</sup>





Includes Intratec group, SWD group, AR-15 group, and selected Calico and Feather models.

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<sup>&</sup>lt;sup>42</sup> 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 identity 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.

### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6061 Page 226 of 349

Year	Gun	All	AW	AP	AR	AW and	Violent	AW	LCMM
	<b>Murders</b>	Traces	Traces*	Traces	Traces	AW	Crime	Violent	Rifle
	(1)	(2)	(3)	(4)	(5)	Substitute	Traces	Crime	Traces**
						Traces	(7)	Traces	(9)
1001	007	1.407	1.407	0.407		(6)	100/	(8)	
1991	9%	14%	14%	(1775)	-0%	14%	19%	20%	
		(42281)	(2378)	(1775)	(605)	(2378)	(0394)	(344)	
1992	-1%	6%	1%	4%	-7%	1%	3%	7%	
		(44992)	(2398)	(1838)	(560)	(2398)	(6558)	(367)	
		()	()	()	()	()	(0000)	()	
1993	5%	20%	25%	20%	42%	25%	26%	41%	252%
		(54189)	(2994)	(2199)	(795)	(2994)	(8248)	(516)	(183)
1994	-4%	53%	11%	23%	-21%	11%	22%	-18%	223%
		(82791)	(3337)	(2706)	(631)	(3337)	(10083)	(424)	(592)
1005	100/	<i>c</i> 0 <i>t</i>	100/	0.407	00/	100/	220/	1 60 /	100/
1995	-10%	-6%	-19%	-24%	8%	-18%	23%	-15%	-10%
	28	(77503)	(2730)	(2051)	(679)	(2747)	(12439)	(362)	(530)
1006	_0%	66%	12%	13%	10%	17%	67%	27%	40%
1770	-970	(128653)	(3059)	(2309)	(750)	(3214)	(20816)	(459)	(743)
•••••	er alle significantes in	(120000)	(5055)	(2302)	(1 <u>20</u> )		(400.40)		(110)
1997	-7%	42%	31%	31%	34%	36%	11%	13%	24%
	9	(183225)	(4019)	(3017)	(1002)	(4362)	(23147)	(519)	(925)
		` ´			3		•		
1998	-11%	5%	0%	-9%	26%	7%	3%	-22%	33%
		(192115)	(4014)	(2751)	(1263)	(4681)	(23844)	(404)	(1227)
					1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.				
1999	-8%	-2%	-11%	-12%	-8%	-6%	3%	0%	-18%
		(188296)	(3581)	(2414)	(1167)	(4406)	(24663)	(404)	(1003)
2000	10/	20/	110/	160/	0.04	60/	120/	250/	1.40/
2000	1%	-3%	-11%	-10%	(1160)	-0%	-13%	(205)	-14%
		(102901)	(3190)	(2027)	(1109)	(4143)	(21403)	(303)	(039)
2001	-1%	18%	1%	5%	-6%	3%	20%	6%	-3%
2001	1/0	(215282)	(3238)	(2138)	(1100)	(4273)	(25822)	(322)	(833)
2	30 <b>0</b> 3	(210202)	(0400)	(4100)	(1100)	(1210)	(20022)	(000)	(000)
2002	6%	7%	19%	4%	48%	12%	20%	65%	4%
		(229525)	(3839)	(2214)	(1625)	(4765)	(30985)	(531)	(865)

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)

\* 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.)

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### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6062 Page 227 of 349

#### 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).<sup>43</sup>

#### 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).<sup>44</sup>

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.<sup>45</sup>

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

offenses (ATF, 1999). Therefore, traces associated with violent crimes are likely understated to some degree.

Exhibit 4 Page 00341

 <sup>&</sup>lt;sup>43</sup> 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).
 <sup>44</sup> A caveat is that requests without specific crime type information are often grouped with weapons

<sup>&</sup>lt;sup>45</sup> 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).

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### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6063 Page 228 of 349

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 postban 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%.<sup>46</sup> Traces for APs and ARs then

<sup>&</sup>lt;sup>46</sup> 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-

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### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6064 Page 229 of 349

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)<sup>47</sup>

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.

<sup>47</sup> 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.

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### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6065 Page 230 of 349

- Guns recovered during murder investigations in Milwaukee County from 1991 to 1998 (N=592)<sup>48</sup>
- 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)<sup>49</sup>

The selection of these particular locations and samples reflects data availability.<sup>50</sup> 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.<sup>51</sup> 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.<sup>52</sup> The number of AW recoveries declined by 28% to 82% across these

<sup>50</sup> 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.

<sup>51</sup> 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.

<sup>52</sup> 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

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<sup>&</sup>lt;sup>48</sup> 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.

<sup>&</sup>lt;sup>49</sup> 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).

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6066 Page 231 of 349

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.<sup>53</sup>

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%.<sup>54, 55</sup> 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.<sup>56</sup> An exception was in St. Louis, where

state AP ban that took effect a few months prior to the federal AW ban.

<sup>53</sup> 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 prepost 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.

<sup>54</sup> 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.

<sup>55</sup> 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 federallydefined 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.

<sup>56</sup> 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.

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Exhibit 4 Page 00345

### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6067 Page 232 of 349

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)<sup>a</sup>

Locality and Time Period	AWs	AWs (Linked to Violence)	APs	ARs	AWs and Post-Ban Substitutes
Baltimorc (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)	Ň/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

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### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6068 Page 233 of 349

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 postban, 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).<sup>57</sup>

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<sup>&</sup>lt;sup>57</sup> 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

### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6069 Page 234 of 349

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.<sup>58</sup>

#### 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.<sup>59, 60</sup> 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.

<sup>58</sup> 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.

<sup>59</sup> 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.

<sup>60</sup> 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

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### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6070 Page 235 of 349

reductions as high as 70%.<sup>61</sup> 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.<sup>62</sup> 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).

<sup>61</sup> 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.

<sup>62</sup> 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.

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Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6071 Page 236 of 349

1772-2000			***	
	Pre-Ban Period	Post-Ban Period	Change	· ·
A. All Recoveries	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 A We and				×
Substitutes	135	300		
Annual Mean	67.5	51.5	-24%	Ê
AWs/Subs as % of Guns	1.88%	1.33%	-29%**	÷
B. Recoveries Linked				
to Violent Crimes				
Total AWs	28	. 47		
Annual Mean	14	7.83	-44%	
AWs as % of Violent Crime Guns	2.1%	1.24%	-41%*	12 <sup>41</sup>

 Table 6-3. Trends in Police Recoveries of Domestic Assault Weapons in Baltimore, 1992-2000 a

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).

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### Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 134 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6072 Page 237 of 349



Figure 6-2. Police Recoveries of Assault Weapons in

Includes Intratec group, SWD group, AR-15 group, and selected Calico and Feather models.

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Exhibit 4 Page 00351

### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6073 Page 238 of 349

((10-Dauc), 1990-2000			
	Pre-Ban Period	Post-Ban Period	Change
A. All Recoveries	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%***
Rs	43	72	
nnual Mean	10.75	12	12%
Rs as % of Guns	0.27%	0.37%	37%*
otal AWs and			•
ubstitutes	403	343	34
nnual Mean	100.75	57.17	-43%
Ws/Subs as % of Guns	2.53%	1.78%	-30%***
. Recoveries Linked Violent Crimes <sup>b</sup>	5 81		ii ii
Fotal AWs	69	32	al
nnual Mean	17.25	5.33	-69%
Ws as % of Violent rime Guns	2.28%	1.39%	-39%**

 Table 6-4. Trends in Police Recoveries of Domestic Assault Weapons in Miami (Metro-Dade), 1990-2000 <sup>a</sup>

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)

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### Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 136 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6074 Page 239 of 349





Includes Intratec group, SWD group, AR-15 group, and selected Calico and Feather models.

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Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6075 Page 240 of 349

2	Pre-Ban Period	Post-Ban Period	Change
A. All Recoveries	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%**
		2.2000 10	
APs	87	187	
Annual Mean	43.5	20.78	-52%
APs as % of Guns	1.23%	0.81%	-34%**
	in R		
ARs	7	25	
Annual Mean	3.5	2.78	-21%
ARs as % of Guns	0.1%	0.11%	10%
Total-AWa-and	3	•	
Substitutes	. 04		
Annual Mean	94	254	150/
AWs/Subs as % of Guns	1.33%	1.01%	-24%*
<b>B.</b> Recoveries Linked		<b>a</b> 5	
to Violent Crimes <sup>b</sup>			
Total AWs	0	00	8 10
Annual Mean	8	20	4504
AWs as % of Violent	4	2.2	-45%
Crime Guns	0.8%	0.81%	1%

 Table 6-5. Trends in Police Recoveries of Domestic Assault Weapons in St. Louis,

 1992-2003 a

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)

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Exhibit 4 Page 00354

57

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6076 Page 241 of 349



Figure 6-4. Police Recoveries of Assault Weapons in St. Louis, 1992-2003

....Includes\_Intratec\_group, SWD.group, AR=15 group, and selected Calico and Feather models.....

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Exhibit 4 Page 00355

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6077 Page 242 of 349

ivinwaukee, and Anchora	ge (Alaska)			1
	Pre-Ban Period	Post-Ban Period	Change	
Boston	Jan. 1991-Dec. 1993	Jan. 2000-Dec. 2002		
(All Gun Traces)				
AWs	60	11	2	
Annual Mean	20	3.7	-82%	
AWs as % of Guns	2.16%	0.6%	-72%*	8
AWs and Substitutes	60	16	2	,
Annual Mean	20	5.3	-74%	
AWs/Subs as % of Guns	2.16%	0.87%	-60%*	
	а			
<u>Milwaukee</u>	Jan. 1991-Dec. 1993	Jan. 1995-Dec. 1998		
(Guns Recovered in				12
Murder Cases)				
-AWs				-
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%	
Anchorage	Jan. 1987-Dec. 1993	Jan. 1995-Dec. 2000		
(Guns Tested for		2) <sup>22</sup>		
Evidence)		22		
AWs	16	8		
Annual Mean	2.29	1.33	-42%	
AW's as % of Guns	3.57%	2.13%	-40%	
1000070701 (32 and 16 Minute 11		R .		
AWs and Substitutes	N/A	N/A		
				1

 Table 6-6. Trends in Police Recoveries of Domestic Assault Weapons in Boston,

 Milwaukee, and Anchorage (Alaska) <sup>a</sup>

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)

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Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6078 Page 243 of 349



Figure 6-5. Assault Weapons Recovered in Milwaukee County Murder Cases, 1991-1998

#### Figure 6-6. Police Recoveries of Assault Weapons in Anchorage (Alaska), 1987-2000



Includes Intratec group, SWD group, AR-15 group, and selected Callco and Feather models.

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Exhibit 4 Page 00357

### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6079 Page 244 of 349

# 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.<sup>63</sup> Those prices are available to any gun dealer, and primary market retailers generally re-sell within 15% of the distributors' prices.<sup>64</sup> 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.<sup>65</sup> 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,

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<sup>&</sup>lt;sup>63</sup> The *Blue Book of Gun Values*, which served as the data source for the AW price analysis, does not contain ammunition magazine prices.

<sup>&</sup>lt;sup>64</sup> 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).
<sup>65</sup> The design to fease on first of month issues use mode prior to dete collection for price applying.

<sup>&</sup>lt;sup>65</sup> 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.

### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6080 Page 245 of 349

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 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.<sup>67</sup>

#### 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.

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Exhibit 4 Page 00359

<sup>&</sup>lt;sup>66</sup> 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.

<sup>&</sup>lt;sup>67</sup> 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.

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6081 Page 246 of 349

2 1	Handgu (n=1	n LCMs ,277)	Rifle LCM	Is (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				
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	

 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

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<=.10.

\*\* Statistically significant at p<=.05.

\*\*\* Statistically significant at p<=.01.

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Exhibit 4

Page 00360

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6082 Page 247 of 349



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,<sup>68</sup> 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.

Exhibit 4 Page 00361

<sup>&</sup>lt;sup>68</sup> 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.

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Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6083 Page 248 of 349

### 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.<sup>69</sup> 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.<sup>70</sup> 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.<sup>71, 72</sup>

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.<sup>73</sup>

<sup>73</sup> 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.

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<sup>&</sup>lt;sup>69</sup> 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. <sup>70</sup> 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.

<sup>&</sup>lt;sup>71</sup> The statistics in Table 7-2 do not include belt devices used for machine guns.

<sup>&</sup>lt;sup>72</sup> 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.

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6084 Page 249 of 349

for Importation for Commercial Sale, 1994-2000					
Year	Imported	Approved			
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			
Total	4,798,443	47,207,883			

Table 7-2.	Large Capacity	Magazines	Imported int	o the United	States or App	roved
For Impor	tation for Comn	ercial Sale,	1994-2000			

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.<sup>74</sup> Perhaps the

<sup>&</sup>lt;sup>74</sup> 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

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# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6085 Page 250 of 349

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.

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Exhibit 4 Page 00364

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6086 Page 251 of 349

### 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.<sup>75,76</sup> 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.<sup>77</sup> 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.)

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Exhibit 4 Page 00365

<sup>&</sup>lt;sup>75</sup> For the pre-ban period, one can usually infer magazine capacity based on the firearm model. For postban 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.

<sup>&</sup>lt;sup>76</sup> 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.

<sup>&</sup>lt;sup>77</sup> 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.

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6087 Page 252 of 349

#### 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).<sup>78,79,80</sup> This change was attributable to a 36% drop in LCM handguns (Table 8-1, panel B). 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).<sup>81</sup>

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).<sup>82</sup> 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).<sup>83</sup> Neither violent uses of LCM

<sup>79</sup> 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.

<sup>80</sup> 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.

<sup>81</sup> 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.

<sup>83</sup> 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

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<sup>&</sup>lt;sup>78</sup>-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.

<sup>&</sup>lt;sup>82</sup> 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.

## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 150 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6088 Page 253 of 349

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,<sup>84</sup> 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).

<sup>84</sup> 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.

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Exhibit 4 Page 00367

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6089 Page 254 of 349

	Pre-Ban Period	Post-Ban Period	<u>Change</u>
A. All LCM Guns	JanDec. 1993	Jan. 1995-Nov. 2003	
Total	473	3703	
Annual Mean	473	445.86 <sup>a</sup>	-6%
LCM Guns as % of All Guns	13.51%	12.38%	-8%*
B. All LCM Guns	JanNov. 1993	JanNov. 2002-2003	
			A
Total	430	626	and the state of the
Annual Mean	430	313	-27%
LCM Guns as % of All Guns	13.47%	10.3%	-24%***
C. LCM Handguns	JanNov. 1993	JanNov. 2002-2003	
Total	359	440	
Annual Mean	359	220	-39%
LCM Handguns as % of All Guns	11.25%	7.24%	-36%***
D. LCM Rifles	JanNov. 1993	JanNov. 2002-2003	
LCM Rifles	71	183	×
Annual Mean	71	91.5	29% ·
LCM Rifles as % of All Guns	2.22%	3.01%	36%**

 Table 8-1. Trends in All Police Recoveries of Firearms Equipped With Large Capacity Magazines, Baltimore, 1993-2003

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)

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# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6090 Page 255 of 349

	Pre-Ban Period	Post-Ban Period	Change <sup>a</sup>	
A. All LCM Guns	JanDec. 1993	Jan. 1995-Nov. 2003		
Total	87	711		
Annual Mean	87	81.86 <sup>b</sup>	-6%	
LCM Guns as % of All Guns	14.01%	14.44%	3%	
B. All LCM Guns	JanNov. 1993	JanNov. 2002-2003		Å
Total	79	104		
Annual Mean	79	52	-34%	
LCM Guns as % of All Guns	13.96%	13.65%	-2%	
C. LCM Handguns	JanNov. 1993	JanNov. 2002-2003	,	
Total	62	81		
Annual Mean	62	40.5	-35%	
LCM Handguns as % of	10.95%	10.63%	-3%	
All Guns	*	a	a 5	
D. LCM Rifles	JanNov. 1993	JanNov. 2002-2003		
20			8	
LCM Rifles	17	23		
Annual Mean	17	11.5	-32%	
LCM Rifles as % of All Guns	3%	3.02%	1%	
81				

 Table 8-2. Trends in Police Recoveries of Firearms Equipped With Large Capacity

 Magazines in Violent Crime Cases, Baltimore, 1993-2003

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).

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# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6091 Page 256 of 349

### 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.<sup>85</sup> 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



<sup>85</sup> To make these determinations, we consulted gun catalogs such as the *Blue Book of Gun Values* and *Guns Illustrated*.

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# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6092 Page 257 of 349

	Pre-Ban Period	Post-Ban Period	<u>Change<sup>b</sup></u>
A. All LCM Guns	N/A	Jan. 1995-Dec. 2002	
Total		80	
Annual Mean		10	N/A
LCM Guns as % of All		19.75%	N/A
Guns		1. a	
B. LCM Handguns	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%	-1-5%
C. LCM Handguns	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%
	ii.	3	

Fable 8-3.	<b>Trends in Police</b>	<b>Recoveries of Firearms</b>	s Equipped With Lar	ge Capacity
Magazines	in Violent Crim	e Cases, Anchorage (Ala	aska), 1992-2002 <sup>a</sup>	

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

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Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6093 Page 258 of 349

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).<sup>86</sup> 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.<sup>87</sup> Examination of the types and models of guns with

<sup>86</sup> 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).

Exhibit 4 Page 00372

<sup>&</sup>lt;sup>87</sup> Magazine capacity was missing for less than 4% of the records in earlier years.

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# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6094 Page 259 of 349

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.	<b>Trends in Police</b>	<b>Recoveries of Firear</b>	ms Equipped	With Large Capacity
Magazines	in Murder Cases	, Milwaukee County	, 1991-1998	

	Pre-Ban Period	Post-Ban Period	Change
A. All LCM Guns	Jan. 1991-Dec. 1993	Jan. 1995-Dec. 1998	
Total	51	83	
Annual Mean	17	20.75	22%
LCM Guns as % of All Guns	20.9%	32.42%	55%*
B. LCM Handguns	Jan. 1991-Dec. 1993	Jan. 1995-Dec. 1998	
(m , 1		=1	
Total	40	71	
Annual Mean	13.33	17.75	33%
LCM Handguns as % of All Guns	16.39%	27.73%	69%*
C. LCM Rifles	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)

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Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18, PageID.6095 Page 260 of 349



## 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 prepost 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.

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Exhibit 4 Page 00374

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6096 Page 261 of 349

## 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).<sup>88</sup> 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.<sup>89</sup> These trends have been driven primarily by LCM handguns, which are used in crime roughly three times as

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Exhibit 4 Page 00375

<sup>&</sup>lt;sup>88</sup> 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).

<sup>&</sup>lt;sup>89</sup> 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.

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6097 Page 262 of 349

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);<sup>90</sup> 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;<sup>91</sup> 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;<sup>92</sup> thefts of LCM firearms (see Roth and Koper, 1997, Chapter 4); or some combination of these factors.<sup>93</sup> 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.

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<sup>&</sup>lt;sup>90</sup> 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).

<sup>&</sup>lt;sup>91</sup> 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.

<sup>&</sup>lt;sup>92</sup> 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.

<sup>&</sup>lt;sup>93</sup> 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.

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6098 Page 263 of 349

## 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.<sup>94</sup>

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

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Exhibit 4 Page 00377

<sup>&</sup>lt;sup>94</sup> 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.

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6099 Page 264 of 349

obscured, by the wider effects of LCM use, which themselves are likely to be small at best, as we argue below.<sup>95</sup>

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.<sup>96</sup> 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.<sup>97</sup>

<sup>95</sup> 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. 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.

<sup>97</sup> 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).

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## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6100 Page 265 of 349

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.<sup>98</sup> 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).





Based on gun homicides, gun robberles, and gun assaults reported in the Uniform Crime Reports and Supplemental Homicide Reports.

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Exhibit 4 Page 00379

<sup>&</sup>lt;sup>98</sup> 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.

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6101 Page 266 of 349

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.<sup>99</sup>

<sup>&</sup>lt;sup>99</sup> 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).

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## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6102 Page 267 of 349

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).<sup>100</sup> 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.

<sup>100</sup> 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.

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Exhibit 4 Page 00381

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6103 Page 268 of 349

magazin		· · · · · · · · · · · · · · · · · · ·
Data Source	Measure	Outcome
Gun attacks with semiautomatic pistols and	Shots Fired	Avg. = 3.2 – 3.7 (n=165 pistol cases) *
revolvers, Jersey City, 1992- 1996 <sup>a</sup>	â	Avg. = $2.3 - 2.6$ (n=71 revolver cases) *
Gun homicides with	Shots Fired	Avg = 1.6 (n=21 pistol cases, 1985)
semiautomatic pistols and revolvers, Philadelphia, 1985		Avg. = $1.9$ (n=57 revolver cases, 1985)
and 1990 b		Avg. $= 2.7$ (n=95 pistol cases, 1990)
		Avg. = $2.1$ (n=108 revolver cases, 1990)
Gun attacks with	Victims Hit	Avg. = $1.15$ (n=95 pistol cases) *
semiautomatic pistols and		
revolvers, Jersey City, 1992-		Avg. = $1.0$ (n=40 revolver cases) *
1996 <sup>a</sup>	8	,
S.		
Mass shootings with AWs,	Victims Hit	Avg. = 29 (n=6 AW/LCM cases)
semiautomatics having LCMs,		
or other guns, 6+ dead or 12+		Avg. = 13 (n=9 non-AW/LCM cases)
shot, United States,		
1984-1993 °		c
Self-reported gunfire attacks	% of Attacks	19.5% (n=72 AW or machine gun cases)
by state prisoners with AWs,	With Victims	
other semiautomatics, and non-	Hit	22.3% (n=419 non-AW, semiautomatic
semiautomatic firearms,		cases)
United States, 1997 or earlier <sup>d</sup>		
°.		23.3% (n=608 non-AW, non-
		semiautomatic cases)

Fable 9-1.	<b>Shots Fired and</b>	Victims Hit in	<b>Gunfire Attacks</b>	By Type of Gun and
Magazine				

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.

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# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6104 Page 269 of 349

Data Source	Measure	Outcome
Gun attacks with semiautomatic pistols and revolvers, Jersey City, 1992-1996 <sup>a</sup>	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 <sup>b</sup>	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 <sup>c</sup>	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)**

## Table 9-2. Gunshot Wounds Per Victim By Type of Gun and Magazine

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.<sup>101</sup>

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

Exhibit 4 Page 00383

<sup>&</sup>lt;sup>101</sup> See the discussion of self-reports and AW use in Chapter 3.

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# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6105 Page 270 of 349

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).<sup>102</sup> 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.

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Exhibit 4 Page 00384

<sup>&</sup>lt;sup>102</sup> 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).

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6106 Page 271 of 349

 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</u>	<u>% Difference</u> (#2 Relative to #1) <sup>1</sup>	35 1
ж.	<u>Hem</u>	(#2 Relative to #1)	
A. Handguns Used in Violent Crimes With and Without Gunshot Injury		z	
<ol> <li>9mm and .38: violence, no gunshot victims</li> <li>9mm and .38: violence with gunshot victims</li> </ol>	23.21% 34.87%	50%*	R F
<ol> <li>9mm: violence, no gunshot victims</li> <li>9mm: violence with gunshot victims</li> </ol>	52.92% 63.24%	20%*	
<b>B.</b> Handguns Used in Gunfire Cases With and Without Gunshot Injury			
<ol> <li>9mm and .38: gunfire, no gunshot victims</li> <li>9mm and .38: gunfire with gunshot victims</li> </ol>	27.66% 34.87%	26%	540
<ol> <li>9mm: gunfire, no gunshot victims</li> <li>9mm: gunfire with gunshot victims</li> </ol>	54.17% 63.24%	17%	
C. Handguns Used in Fatal Versus Non- Fatal Gunshot Victimizations		2	
<ol> <li>9mm and .38: non-fatal gunshot victims</li> <li>9mm and .38: homicides</li> </ol>	32.58% 38.18%	17%	
<ol> <li>9mm: non-fatal gunshot victims</li> <li>9mm: homicides</li> </ol>	61.14% 66.04%	8%	

\* Statistically significant difference at p<.01 (chi-square).

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Exhibit 4 Page 00385

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# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6107 Page 272 of 349

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.<sup>103</sup> 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).<sup>104</sup>

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.

<sup>104</sup> 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.)

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<sup>&</sup>lt;sup>103</sup> 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 (c.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.

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6108 Page 273 of 349

### 9.2.1. Will a 10-Round Magazine Limit Reduce Gunshot Victimizations?

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.<sup>105</sup> 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).<sup>106</sup> 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.<sup>107</sup> 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

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<sup>&</sup>lt;sup>105</sup> Although the focus of the discussion is on attacks with more than 10 shots fired, a gun user with a postban 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.

<sup>&</sup>lt;sup>106</sup> 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.

<sup>&</sup>lt;sup>107</sup> 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.

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6109 Page 274 of 349

for every wound inflicted, suggesting that perhaps fewer persons would have been wounded had the offenders not been able to fire as often.<sup>108</sup>

## 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* 

<sup>&</sup>lt;sup>108</sup> These figures are based on a supplemental analysis not contained in the published study. We thank Darin Reedy for this analysis.

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# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6110 Page 275 of 349

*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.<sup>109</sup>

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).<sup>110</sup> 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 postban 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).<sup>111</sup> 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).<sup>112</sup> Of course, changes in offender behavior or other changes in crime

<sup>112</sup> 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

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Exhibit 4 Page 00389

<sup>&</sup>lt;sup>109</sup> 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.

<sup>&</sup>lt;sup>110</sup> 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.

<sup>&</sup>lt;sup>111</sup> 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).

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6111 Page 276 of 349

weaponry (such as an increase in shootings with large caliber handguns) may have influenced these trends. Yet 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).<sup>113</sup> 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).<sup>114</sup>

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. <sup>113</sup> The NCVS estimates are based on a compilation of 1992-2002 data recently produced by the Inter-

<sup>113</sup> 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 nonfatal 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. <sup>114</sup> We thank David Huffer for this analysis.

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Exhibit 4 Page 00390

## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 174 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6112 Page 277 of 349



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).

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Exhibit 4 Page 00391

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6113 Page 278 of 349

Measure and	Pre-Ban Period	Post-Ban Period	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%*

Table 9-4. Short-Term, Post-Ban Changes in the Lethality and Injuriousness of Gun Violence: National and Local Indicators, 1994-1998<sup>a</sup>

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.

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Exhibit 4 Page 00392

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6114 Page 279 of 349

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.





#### 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 nonbanned 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.

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Exhibit 4 Page 00393

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6115 Page 280 of 349

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 nontrivial 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.

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Exhibit 4 Page 00394

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6116 Page 281 of 349

## 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.<sup>115</sup>

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.<sup>116</sup> 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.<sup>117</sup>

<sup>&</sup>lt;sup>115</sup> 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.

<sup>&</sup>lt;sup>116</sup> However, more research is needed on the full range of factors that cause variation in these indicators over time and between places.

<sup>&</sup>lt;sup>117</sup> 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 searchers; see Duwe, 2000, Roth and Koper, 1997, Appendix A), and controlling for factors like the use of bullet-proof vests by police.

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# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6117 Page 282 of 349

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

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Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6118 Page 283 of 349

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.<sup>118</sup> 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).

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<sup>&</sup>lt;sup>118</sup> 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.
# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6119 Page 284 of 349

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.<sup>119</sup> 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.

<sup>&</sup>lt;sup>119</sup> 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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Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6120 Page 285 of 349

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Exhibit 4 Page 00399

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6121 Page 286 of 349

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Exhibit 4 Page 00400

## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 184 of 299

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6122 Page 287 of 349

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Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6123 Page 288 of 349

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Exhibit 4 Page 00402

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 \* PageID.6124 Page 289 of 349

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Exhibit 4 Page 00404

## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 188 of 299

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6126 Page 291 of 349

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Exhibit 4 Page 00405

# Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 189 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6127 Page 292 of 349

# **Exhibit D**

Exhibit 4 Page 00406

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6128 Page 293 of 349

# Reducing Gun Violence in America

Informing Policy with Evidence and Analysis

# EDITED BY

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Exhibit 4 Page 00407

## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 191 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6129 Page 294 of 349

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Exhibit 4 Page 00408

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6130 Page 295 of 349

12

# America's Experience with the Federal Assault Weapons Ban, 1994–2004

Key Findings and Implications

Christopher S. Koper

In 1994, the federal government imposed a ten-year ban on military-style semi-automatic firearms and ammunition-feeding devices holding more than ten rounds of ammunition. This legislation, commonly known as the federal assault weapons ban, was intended in the broadest sense to reduce gunshot victimizations by limiting the national stock of semi-automatic firearms with large ammunition capacities and other features conducive to criminal uses. Reflecting America's general political divisions over the issue of gun control, the debate over the law was highly contentious. Ten years later, Congress allowed the ban to expire.

More recently, there have been growing calls for a reexamination of the assault weapons issue. This debate has been fueled by a series of mass shooting incidents involving previously banned firearms or magazines. Since 2007, for example, there have been at least 11 incidents in which offenders using

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Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6131 Page 296 of 349

## 158 Christopher S. Koper

assault weapons or other semi-automatics with magazines larger than 10 rounds have wounded or killed eight or more people (Violence Policy Center 2012). Some of the most notorious of these incidents have been a 2007 shooting on the college campus of Virginia Tech that left 33 dead and 17 wounded; a 2011 shooting in an Arizona parking lot that killed 6 and wounded 13, including Congresswoman Gabrielle Giffords; a 2012 shooting in an Aurora, Colorado, movie theatre that left 12 dead and 58 wounded; and, most recently, a shooting in a Newtown, Connecticut, elementary school that left 26 victims dead, 20 of whom were children (an additional victim was killed elsewhere).

To help inform the new dialogue on this issue, this essay examines America's experience with the 1994 assault weapons law. During the course of the ban, the National Institute of Justice (NIJ) funded a series of studies on the law's impacts for the U.S. Department of Justice and the U.S. Congress (Koper 2004; Koper and Roth 2001, 2002; Roth and Koper 1997, 1999). I present highlights from those studies, with an emphasis on findings from the final evaluation reported in 2004 (Koper 2004). These studies sought to assess the law's impacts on (1) the availability of assault weapons (AWs) and largecapacity magazines (LCMs) as measured by price and production (or importation) indices in legal markets; (2) trends in criminal uses of AWs and LCMs; and (3) trends in the types of gun crimes that seemed most likely to be affected by changes in the use of AWs and LCMs. (The latter two issues are emphasized in this summary.) Finally, the research team examined studies of gun attacks more generally in order to estimate the ban's potential to produce longer-term reductions in shootings.

In summary, the ban had mixed effects in reducing crimes with the banned weaponry because of various exemptions and loopholes in the legislation. The ban did not appear to affect gun crime during the time it was in effect, but some evidence suggests it may have modestly reduced gunshot victimizations had it remained in place for a longer period. The ban's most important provision was arguably its prohibition on ammunition magazines holding more than 10 rounds. Policymakers considering a new version of the ban might particularly focus on this aspect of the previous legislation and reconsider the exemptions and loopholes that undermined the effectiveness of the original ban.

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6132 Page 297 of 349

America's Experience with the Federal Assault Weapons Ban, 1994–2004 159

## Provisions of the Assault Weapons Ban

Enacted on September 13, 1994, Title XI, Subtitle A of the Violent Crime Control and Law Enforcement Act of 1994 imposed a ten-year ban on the "manufacture, transfer, and possession" of certain semi-automatic firearms designated as assault weapons. The AW ban did not prohibit all semi-automatics; rather, it was directed at semi-automatics having features that appear to be 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. The law specifically prohibited 18 models and variations by name (e.g., the Intratec TEC-9 pistol and the Colt AR-15 rifle), as well as revolving cylinder shotguns (see Koper 2004, 5). This list included a number of foreign rifles that the federal government had banned from importation into the country beginning in 1989 (e.g., Avtomat Kalashnikov models). In addition, the ban contained a generic "features test" provision that generally prohibited other semi-automatic firearms having two or more military-style features, as described in Table 12.1. In total, the federal Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) identified 118 model and caliber variations that met the AW criteria established by the ban.

The law also banned "copies or duplicates" of the named gun makes and models, but federal authorities emphasized exact copies. Relatively cosmetic changes, such as removing a flash hider or bayonet mount, were thus sufficient to transform a banned weapon into a legal substitute. In this sense, the law is perhaps best understood not as a gun ban but as a law that restricted weapon accessories. A number of gun manufacturers began producing modified, legal versions of some of the banned guns, though not all of these substitute weapons proved as popular as the banned versions.<sup>1</sup> In other respects (e.g., type of firing mechanism, ammunition fired, and the ability to accept a detachable magazine), the banned AWs did not differ from other legal semi-automatic weapons.

The other major component of the assault weapons legislation was a ban on most ammunition-feeding devices holding more than 10 rounds of ammunition (referred to as large-capacity magazines).<sup>2</sup> The LCM ban was arguably the most important part of the assault weapons law for two reasons. First, an LCM is the most functionally important feature of an AW-type firearm. 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

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6133 Page 298 of 349

## 160 Christopher S. Koper

Tuble 12.1 Features test of the rederar assault weapons ban				
Weapon category	Military-style features (2 or more qualified a firearm as an assault weapon)			
Semi-automatic pistols accepting detachable magazines	<ol> <li>ammunition magazine that attaches outside the pistol grip</li> <li>threaded barrel capable of accepting a barrel extender, flash hider, forward handgrip, or silencer</li> <li>heat shroud attached to or encircling the barrel</li> <li>weight of more than 50 ounces unloaded</li> <li>semiautomatic version of a fully automatic weapon</li> </ol>			
Semi-automatic rifles accepting detachable magazines	<ol> <li>folding or telescoping stock</li> <li>pistol grip that protrudes beneath the firing action</li> <li>bayonet mount</li> <li>flash hider or a threaded barrel designed to accommodate one</li> <li>grenade launcher</li> </ol>			
Semi-automatic shotguns	<ol> <li>folding or telescoping stock</li> <li>pistol grip that protrudes beneath the firing action</li> <li>fixed magazine capacity over 5 rounds</li> <li>ability to accept a detachable ammunition magazine</li> </ol>			

Table 12.1 Features test of the federal assault weapons ban

many as 50 or 100 rounds (United States Department of the Treasury 1998, 14). Removing LCMs from these weapons thus greatly limits their firepower.

Second, the reach of the LCM ban was much broader than that of the AW ban because many semi-automatics that were not banned by the AW provision could accept LCMs. Approximately 40 percent of the semi-automatic handgun models and a majority of the semi-automatic rifle models that were 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 and the Editors of Gun Digest 1994). Still others could accept LCMs made for other firearms and/or by other manufacturers. A national survey of gun owners in 1994 found that 18% of all civilian-owned firearms and 21% of civilian-owned handguns were equipped with magazines having 10 or more rounds (Cook and Ludwig 1996, 17). The AW provision did not affect most LCM-compatible guns, but the LCM provision limited the capacities of their magazines to 10 rounds.

The AW ban also contained important exemptions. AWs and LCMs manufactured before the effective date of the ban were "grandfathered" and thus legal to own and transfer. Though not precise, estimates suggest there were

> Exhibit 4 Page 00412

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6134 Page 299 of 349

#### America's Experience with the Federal Assault Weapons Ban, 1994–2004 161

upward of 1.5 million privately owned AWs in the United States when the ban took effect (American Medical Association Council on Scientific Affairs 1992; Cox Newspapers 1989, 1; Koper 2004, 10). Gun owners in America possessed an estimated 25 million guns that were equipped with LCMs or 10-round magazines in 1994 (Cook and Ludwig 1996, 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, 30). Moreover, an additional 4.8 million pre-ban LCMs were imported into the country from 1994 through 2000 under the grandfathering exemption, with the largest number arriving in 1999. During this same period, importers were also authorized to import another 42 million pre-ban LCMs that may have arrived after 2000.

# Criminal Use of Assault Weapons and Large-Capacity Magazines Prior to the Ban

During the 1980s and early 1990s, AWs and other semi-automatic firearms equipped with LCMs were involved in a number of highly publicized mass shootings that raised public concern about the accessibility of high-powered, military-style weaponry and other guns capable of rapidly discharging high numbers of bullets (Cox Newspapers 1989; Kleck 1997, 124-126, 144; Lenett 1995; Violence Policy Center 2012). Perhaps most notably, AWs or other semiautomatics with LCMs were used in 6, or 40%, of 15 particularly severe mass shooting incidents between 1984 and 1993 that resulted in at least 6 deaths or at least 12 killed or wounded (Kleck, 1997, 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, 4; also see Roth and Koper 1997, chap. 5), fueling a perception that AWs were guns of choice among drug dealers and other particularly violent groups. These events intensified concern over AWs and other semi-automatics with LCMs and helped spur the 1989 federal import ban on selected semi-automatic rifles (implemented by executive order) and the passage of the 1994 federal AW ban (the states of California, New Jersey, Connecticut, Hawaii, and Maryland also passed AW legislation between 1989 and 1994).

Looking at the nation's gun crime problem more broadly, numerous studies of AW-type weapons conducted prior to the federal ban found that AWs

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6135 Page 300 of 349

### 162 Christopher S. Koper

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, Anglin, and Pratts 1994; Hutson et al. 1995; McGonigal et al. 1993; New York State Division of Criminal Justice Services 1994; Roth and Koper 1997, chap. 2; Zawitz 1995). A compilation of 38 sources indicated that AWs accounted for about 2% of crime guns on average (Kleck 1997, 112, 141–143). 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 the NIJ-funded studies summarized here (Koper 2004, 15).

As with crime guns in general, the majority of AWs used in crime were assault pistols rather than assault rifles. Among AWs reported by police to ATF during 1992 and 1993, for example, assault pistols outnumbered assault rifles by a ratio of three to one.

The relative rarity of AW use in crime can be attributed to a number of factors. Many of these models are long guns, which are used in crime much less often than handguns. Also, as noted, a number of the rifles named in the 1994 law were banned from importation into the United States in 1989. Further, AWs in general are more expensive and more difficult to conceal than the types of handguns that are used most frequently in crime.

Criminal use of guns equipped with LCMs had not been studied as extensively as criminal use of AWs at the time of the ban. However, the overall use of guns with LCMs, which is based on the combined use of AWs and nonbanned 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 13% to 26% of most gun crimes prior to the ban, though they appeared to be used in 31% to 41% of gun murders of police (see summary in Koper 2004, 18; also see Adler et al. 1995; Fallis 2011; New York Division of Criminal Justice Services 1994).

# The Ban's Effects on Crimes with Assault Weapons and Large-Capacity Magazines

Although there was a surge in production of AW-type weapons as Congress debated the ban in 1994, the law's restriction of the new AW supply and the interest of collectors and speculators in these weapons helped to drive prices higher for many AWs (notably assault pistols) through the end of the 1990s

# Exhibit 4 Page 00414

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6136 Page 301 of 349

America's Experience with the Federal Assault Weapons Ban, 1994–2004 163

City	Pre-ban	Post-ban	% change	
Baltimore, MD	1.88% (1992–1993)	1.25% (1995–2000)	-34%	
Boston, MA 2.16% (1991–1993		0.6% (2000–2002)	-72%	
Miami, FL	2.53% (1990–1993)	1.71% (1995–2000)	-32%	
St. Louis, MO	1.33% (1992–1993)	0.91% (1995–2003)	-32%	
nchorage, AK 3.57% (1987–1993)		2.13% (1995–2000)	-40%	
Milwaukee, WI	5.91% (1991–1993)	4.91% (1995–1998)	-17%	

#### Table 12.2 Assault weapons as a percentage of guns recovered by police

*Note:* Figures for Baltimore, Boston, Miami, and St. Louis are based on all recovered guns. Figures for Anchorage and Milwaukee are based on, respectively, guns tested for evidence and guns recovered in murder cases. Changes in Baltimore, Boston, Miami, and St. Louis were statistically significant at p < .05. See Koper (2004) for further details about the data and analyses.

and appeared to make them less accessible and/or affordable to criminal users.<sup>3</sup> Analyses of several national and local databases on guns recovered by police indicated that crimes with AWs declined following the ban.

To illustrate, the share of gun crimes involving the most commonly used AWs declined by 17% to 72% across six major cities 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 (Table 12.2). (The number of AW recoveries also declined by 28% to 82% across these locations and time periods; the discussion here focuses on changes in AWs as a share of crime guns in order to control for general trends in gun crime and gun seizures.) Similar patterns were found in a national analysis of recovered guns reported by law enforcement agencies around the country to ATF for investigative gun tracing.<sup>4</sup> The percentage of gun traces that were for AWs fell 70% between 1992–1993 and 2001–2002 (from 5:4% to 1.6%), though the interpretation of these data was complicated by changes that occurred during this time in gun tracing practices (see Koper 2004 for further discussion).

The decline in crimes with AWs was due primarily to a reduction in the use of assault pistols. Assessment of trends in the use of assault rifles was complicated by the rarity of crimes with such rifles and by the substitution in some cases of post-ban rifles that were very similar to the banned models. In general, however, the decline in AW use was only partially offset by substitution of post-ban AW-type models. Even counting the post-ban models as AWs, the share of crime guns that were AWs fell 24% to 60% across most of the local

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6137 Page 302 of 349

#### 164 Christopher S. Koper

jurisdictions studied. Patterns in the local data sources also suggested that crimes with AWs were becoming increasingly rare as the years passed.

The decline in crimes with AWs appeared to have been offset throughout at least the late 1990s by steady or rising use of other semi-automatics equipped with LCMs. Assessing trends in LCM use was difficult because there is no national data source on crimes with LCMs and few contacted jurisdictions maintained such information. It was possible, nonetheless, to examine trends in the use of guns with LCMs in four jurisdictions: Baltimore, Milwaukee, Anchorage, and Louisville (KY). Across the different samples analyzed from these cities (some databases included all recovered guns and some included only guns associated with particular crimes), the share of guns with an LCM generally varied from 14% to 26% prior to the ban. In all four jurisdictions, the share of crime guns equipped with LCMs rose or remained steady through the late 1990s (Table 12.3). These trends were driven primarily by handguns with LCMs, which were used in crime roughly three times as often as rifles with LCMs (though crimes with rifles having LCMs also showed no general decline). Generalizing from such a small number of jurisdictions must be done very cautiously, but the consistency of the findings across these geographically diverse locations strengthens the inference that they reflected a national pattern.

Failure to reduce LCM use for at least several years after the ban was likely because of the immense stock of exempted pre-ban magazines, which, as noted, was enhanced by post-ban imports. The trend in crimes with LCMs may have been changing by the early 2000s, but the available data were too limited and inconsistent to draw clear inferences (post-2000 data were available for only two of the four study sites).

		1 1	
City	Pre-ban	Late 1990s	Early 2000s
Baltimore, MD	14.0% (1993)	15.5% (1998)	15.7% (2003)
Anchorage, AK	26.2% (1992–1993)	30.0% (1999–2000)	19.2% (2001–2002)
Milwaukee, WI	22.4% (1993)	36.4% (1998)	N/A
Louisville, KY	N/A	20.9 (1996)	19.0% (2000)

Table 12.3	Guns with large-capacity magazines as a percentage of guns recovered
	by police (selected years)

*Note:* Figures for Baltimore and Milwaukee are based on, respectively, guns associated with violent crimes and with murders. Figures for Anchorage and Louisville are based on guns submitted for evidentiary testing. The Anchorage figures are based on handguns only. See Koper (2004) for further details about the data and analyses.

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6138 Page 303 of 349

### America's Experience with the Federal Assault Weapons Ban, 1994–2004 165

A later media investigation of LCM use in Richmond, Virginia, suggests that the ban may have had a more substantial impact on the supply of LCMs to criminal users by the time it expired in 2004. In that city, the share of recovered guns with LCMs generally varied between 18% and 20% from 1994 through 2000 but fell to 10% by 2004 (Fallis 2011). It is not clear whether the Richmond results represented a wider national or even regional trend. (The data from this study also show that after the ban was lifted, the share of Richmond crime guns with an LCM rose to 22% by 2008.)

## The Ban's Impacts on Gun Violence

Because offenders could substitute non-banned guns and small magazines for banned AWs and LCMs, there was not a clear rationale for expecting the ban to reduce assaults and robberies with guns. But by forcing this weapon substitution, it was conceivable that the ban would reduce the number and severity of shooting deaths and injuries by reducing the number of shots fired in gun attacks (thus reducing the number of victims per-gunfire incident and the share of gunshot victims sustaining multiple wounds). Based on this logic, the research team examined several indicators of trends in the lethality and injuriousness of gun violence for different portions of the 1995–2002 post-ban period. These included national-level analyses of gun murders, the percentage of violent gun crimes resulting in death, the share of gunfire cases resulting in wounded victims, the percentage of gunshot victimizations resulting in death, and the average number of victims per gun homicide incident. For selected localities, the team also examined trends in wounds per gunshot victim or the percentage of gunshot victims sustaining multiple wounds.

On balance, these analyses showed no discernible reduction in the lethality or injuriousness of gun violence during the post-ban years (see Koper 2004, Koper and Roth 2001, and Roth and Koper 1997). Nationally, for example, the percentage of violent gun crimes resulting in death (based on gun homicides, gun assaults, and gun robberies reported to the Uniform Crime Reports) was the same for the period 2001–2002 (2.9%) as it was for the immediate pre-ban period 1992–1993 (Koper 2004, 82, 92). Accordingly, it was difficult to credit the ban with contributing to the general decline in gun crime and gun homicide that occurred during the 1990s.

However, the ban's exemption of millions of pre-ban AWs and LCMs meant that the effects of the law would occur only gradually. Those effects were still

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6139 Page 304 of 349

#### 166 Christopher S. Koper

unfolding when the ban was lifted and may not have been fully realized until several years beyond that, particularly if importation of foreign, pre-ban LCMs had continued in large numbers. In light of this, it was impossible to make definitive assessments of the ban's impact on gun violence.

It was also difficult to judge the ban's effects on the more specific problem of mass shootings. The research team attempted to assess changes in mass shootings during the first few years of the ban, but this effort was hampered by the difficulty of counting these incidents (results can be sensitive to the definitions and data sources used) and identifying the specific types of guns and magazines used in them (Roth and Koper 1997, app. A). There is no national data source that provides detailed information on the types of guns and magazines used in shooting incidents or that provides full counts of victims killed and wounded in these attacks. Studying mass shootings in particular poses a number of challenges with regard to defining these events, establishing the validity and reliability of methods for measuring their frequency and characteristics (particularly if done through media searches, as is often necessary), and-modeling-their-trends,-as-they-are-particularly-rare events-(e.g., see Duwe 2000; Roth and Koper 1997, app. A).

Nonetheless, the issue of mass shootings continues to be a catalyst to the debate surrounding AW legislation. A recent media compilation of 62 mass shooting incidents that involved the death of four or more people over the period 1982–2012, for instance, suggests that 25% of the guns used in these attacks were AW-type weapons (these were not precisely defined) and another 48% were other types of semi-automatic handguns (Follman, Aronsen, and Pan 2012). Continuing improvements in media search tools and greater attention to the types of guns and magazines used in multiple-victim attacks may improve prospects for examining this issue more rigorously in future studies.

# Assessing the Potential Long-Term Effects of Banning Assault Weapons and Large-Capacity Magazines

Although available evidence is too limited to make firm projections, it suggests that the ban may have reduced shootings slightly had it remained in place long enough to substantially reduce crimes with both LCMs and AWs. A small number of studies suggest that gun attacks with semi-automatics including AWs and other guns equipped with LCMs—tend to result in more shots fired, more persons wounded, and more wounds inflicted per victim

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6140 Page 305 of 349

## America's Experience with the Federal Assault Weapons Ban, 1994–2004 167

than do attacks with other firearms (see reviews in Koper 2004; Koper and Roth 2001; also see McGonigal et al. 1993; Richmond et al. 2003; Reedy and Koper 2003; Roth and Koper 1997). For example, in mass shooting incidents that resulted in at least 6 deaths or at least 12 total gunshot victims from 1984 through 1993, offenders who clearly possessed AWs or other semi-automatics with LCMs (sometimes in addition to other guns) wounded or killed an average of 29 victims in comparison to an average of 13 victims wounded or killed by other offenders (see Koper and Roth's [2001] analysis of data compiled by Kleck [1997, 144]).

Similarly, a study of handgun attacks in Jersey City, New Jersey, during the 1990s found that the average number of victims wounded in gunfire incidents involving semi-automatic pistols was in general 15% higher than in those involving revolvers (Reedy and Koper 2003). The study also found that attackers using semi-automatics to fire more than 10 shots were responsible for nearly 5% of the gunshot victims in the sample. Used as a tentative guide, this implies that the LCM ban could have eventually produced a small reduction in shootings overall, perhaps up to 5%, even if some gun attackers had the foresight to carry more than one small magazine (or more than one firearm) and the time and poise to reload during an attack.

Effects of this magnitude might be difficult to measure reliably, but they could nonetheless yield significant societal benefits. Consider that in 2010 there were 11,078 gun homicides in the United States and another 53,738 nonfatal assault-related shootings according to the federal Centers for Disease Control and Prevention (see the CDC's web-based injury statistics query and reporting system at http://www.cdc.gov/injury/wisqars/index.html). At these levels, reducing shootings by just 1% (arguably a reasonable ballpark estimate for the long-term impact of substantially reducing AW and LCM use) would amount to preventing about 650 shootings annually. The lifetime medical costs of assault-related gunshot injuries (fatal and nonfatal) were estimated to be about \$18,600 per injury in 1994 (Cook et al. 1999). Adjusting for inflation, this amounts to \$28,894 in today's dollars. Moreover, some estimates suggest that the full societal costs of gun violence-including medical, criminal justice, and other government and private costs (both tangible and intangible)--could be as high as \$1 million per shooting (Cook and Ludwig 2000). Hence, reducing shootings by even a very small margin could produce substantial long-term savings for society, especially as the shootings prevented accrue over many years.

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6141 Page 306 of 349

168 Christopher S. Koper

## Lessons and Implications from the 1994 Ban

Studies of America's previous assault weapons ban provide a number of lessons that can inform future policymaking. A new law similar to the old ban will have little impact on most gun crimes, but it may prevent some shootings, particularly those involving high numbers of shots and victims. It may thus help to reduce the number and severity of mass shooting incidents as well as produce a small reduction in shootings overall.

The most important feature of the previous ban was the prohibition on large-capacity ammunition magazines. A large magazine is arguably the most critical feature of an assault weapon, and restrictions on magazines have the potential to affect many more gun crimes than do those on military-style weapons. Restrictions focused on magazine capacity may also have a greater chance of gaining sufficient public and political support for passage than would new restrictions on assault weapons, though current polling suggests that both measures are supported by three-quarters of non-gun owners and nearly half of gun owners (Barry et al., in this volume). To enhance the potential impact of magazine restrictions, policymakers might also consider limiting magazine capacity to fewer than 10 rounds for all or selected weapons (for example, lower limits might be set for magazines made for semi-automatic rifles).<sup>5</sup> It is unknown whether further restrictions on the outward features of semi-automatic weapons, such as banning weapons having any military-style features, will produce measurable benefits beyond those of restricting magazine capacity.

Policymakers must also consider the implications of any grandfathering provisions in new legislation. Assessing the political and practical difficulties of registering all assault weapons and large magazines or establishing turn-in or buyback programs for them is beyond the scope of this essay. Policymakers should note, however, that it may take many years to attain substantial reductions in crimes with banned weapons and/or magazines if a new law exempts the existing stock (which has likely grown considerably since the time of the original ban). Policies regarding exemptions must also explicitly address the status of imported guns and magazines.

Past experience further suggests that public debate on reinstating the ban or crafting a new one will raise prices and production of the guns and magazines likely to be affected. This could temporarily saturate the market for the guns and magazines in question (particularly if close substitutes emerge) and delay desired reductions in crimes with some categories of the banned weap-

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6142 Page 307 of 349

America's Experience with the Federal Assault Weapons Ban, 1994–2004 169

onry (this appeared to happen with assault rifles that were banned by the 1994 law and may have contributed as well to the observed trends in use of large magazines).

A new ban on assault weapons and/or large-capacity magazines will certainly not be a panacea for America's gun violence problem nor will it stop all mass shootings. However, it is one modest measure that, like federal restrictions on fully automatic weapons and armor-piercing ammunition, can help to prevent the further spread of particularly dangerous weaponry.

#### NOTES

1. In general, the AW ban did not apply to semi-automatics possessing no more than one military-style feature listed under the ban's features test provision. Note, however, that firearms imported into the country still had to meet the "sporting purposes test" established under the federal Gun Control Act of 1968. In 1989, ATF determined that foreign semi-automatic 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 was 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).

2. Technically, the ban prohibited 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 exempted attached tubular devices capable of operating only with .22 caliber rimfire (i.e., low velocity) ammunition.

3. See Koper (2004), Koper and Roth (2002), and Roth and Koper (1997) for more extensive discussions of the ban's impacts on prices and production of AWs, non-banned firearms, and LCMs.

4. A gun trace is an investigation into the sales history of a firearm (e.g., see ATF 2000).

5. To support the formulation and evaluation of policy in this area, there are also a number of research needs worth noting. For one, it is important to develop better data on crimes with guns having LCMs. Policymakers should thus encourage police agencies to record information about magazines recovered with crime guns. Likewise, ATF should consider integrating ammunition magazine data into its national gun tracing system and encourage reporting of magazine data by police agencies that trace firearms. Second, there is a need for more studies that contrast the outcomes of attacks with different types of guns and magazines. Such studies would help to refine predictions of the change in gun deaths and injuries that would follow reductions in attacks with firearms having large-capacity magazines.

## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 205 of 299

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6143 Page 308 of 349

170 Christopher S. Koper

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## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 206 of 299

# Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6144 Page 309 of 349

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Exhibit 4 Page 00423

# Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 207 of 299

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CORRECTION TO THIS ARTICLE An earlier version of this story incorrectly reported the limit on the capacity of gun magazines in Maryland. The limit is 20. This version has been corrected.

# Va. data show drop in criminal firepower during assault gun ban

By David S. Fallis and James V. Grimaldi Washington Post Staff Writers Sunday, January 23, 2011; 9:17 AM

The number of guns with high-capacity magazines seized by Virginia police dropped during a decade-long federal prohibition on assault weapons, but the rate has rebounded sharply since the ban was lifted in late 2004, according to a Washington Post analysis.

More than 15,000 guns equipped with high-capacity magazines - defined under the lapsed federal law as holding 11 or more bullets - have been seized by Virginia police in a wide range of investigations since 1993, the data show.

The role of high-capacity magazines in gun crime was thrust into the national spotlight two weeks ago when 22-yearold <u>Jared Lee Loughner allegedly opened fire</u> with a semiautomatic handgun outside a Tucson grocery store, killing six and wounding 13, including Rep. Gabrielle Giffords (D-Ariz.). Authorities say Loughner used a legally purchased 9mm Glock 19 handgun with a 31-round clip and was tackled while changing magazines.

Of the seized Virginia weapons, 2,000 had magazines with a capacity of 30 or more bullets. Some states still limit magazine capacity. California, for example, limits them to 10 and Maryland to 20.

Last year in Virginia, guns with high-capacity magazines amounted to 22 percent of the weapons recovered and reported by police. In 2004, when the ban expired, the rate had reached a low of 10 percent. In each year since then, the rate has gone up.

"Maybe the federal ban was finally starting to make a dent in the market by the time it ended," said Christopher Koper, head of research at the Police Executive Research Forum, who <u>studied the assault weapons ban</u> for the National Institute of Justice, the research arm of the Justice Department.

Congress is considering legislation to reinstitute the assault weapon ban's prohibition on high-capacity magazines, a measure strongly opposed by gun rights advocates.

The analysis of the <u>Virginia records</u>, <u>obtained under the state's public information</u> law, provides a rare window into the firepower of guns used in crimes. The Bureau of Alcohol, Tobacco, Firearms and Explosives, which traces guns for local police agencies and regulates the firearms industry, does not track magazine sizes. Academic researchers said they were unaware of any other comprehensive study of firearms magazines.

The pattern in Virginia "may be a pivotal piece of evidence" that the assault weapons ban eventually had an impact on the proliferation of high-capacity magazines on the streets, said Garen Wintemute, <u>head of the Violence Prevention</u> <u>Research Program</u> at the University of California at Davis.

"Many people, me included, were skeptical about the chances that the magazine ban would make a difference back in 1994," Wintemute said. "But what I am seeing here is that after a few years' lag time the prevalence of high-capacity magazines was declining. The increase since the ban's repeal is quite striking."

Guns with high-capacity magazines have appeared in Virginia crimes ranging from the mundane to the murderous. The Post found that 200 guns with high-capacity magazines figured in Virginia homicides, including these incidents:

• In Richmond in 2003, Michael Antoine Wilson, 21, used his semiautomatic rifle with its 30-round magazine to shoot his 17-year-old girlfriend to death in front of children and relatives. Then he went to a nearby convenience

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# Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 209 of 299

# Va. data show dop in Srining at hispower during assault gin ban Document 53-5 Filed 04/09/18 PageID.6147 Page 312 of

store, killed two workers and stole a van before turning the gun on himself.

- In Roanoke in 2004, Marcus Jerome Nance, 22, used his legally purchased 9mm Glock 17 handgun with a highcapacity magazine to spray 33 bullets into a crowd that had gathered outside a Roanoke gas station after a nightclub closing, killing one and wounding two.
- In Newport News last year, Antonio Johnson, 34, began shooting at police during a traffic stop with a 9mm semiautomatic handgun outfitted with a 15-round magazine. "Subject shot police officer and then killed himself with weapon," state records say.

In the Arizona shootings, Loughner allegedly used a Glock 19 that he had legally purchased at a Tucson sporting goods store in November. The gun's capacity allowed Loughner to squeeze off more than 30 shots without reloading, authorities said.

The federal assault weapons ban from late 1994 through late 2004 prohibited the manufacturing of magazines capable of holding more than 10 rounds. But the act permitted the sale of magazines manufactured before the ban.

The federal prohibition was spurred by a mass killing in 1989 in Stockton, Calif., where Patrick Edward Purdy, 24, a mentally unbalanced drug addict, fired 110 shots from an AK-47 into a schoolyard, killing five children and wounding 29 others and a teacher. He used a 75-round rotary clip and a 35-round banana clip, one of four he was carrying.

## New legislative interest

Rep. Carolyn McCarthy (N.Y.) and 57 other Democrats proposed legislation last week to ban the sale or transfer of high-capacity magazines, no matter when they were manufactured. McCarthy's husband and five others were killed in <u>1993 on the Long Island Rail Road by a gunman armed with a semiautomatic pistol and four 15-round magazines.</u> He fired 30 shots before being subdued while changing magazines.

The bill's prospects are considered slim in the Republican-controlled House. In the Senate, the National Rifle Association says it has a solid <u>50-senator pro-gun block</u> that could delay any legislation.

The NRA has announced its opposition to proposals that limit magazine capacity.

"These magazines are standard equipment for self-defense handguns and other firearms owned by tens of millions of Americans," according to a statement on its politics Web page, and in a letter circulating to members of Congress. "Law-abiding private citizens choose them for many reasons, including the same reason police officers do: to improve their odds in defensive situations."

The firearms industry also opposes the proposal. "The tragedy in Tucson was not about firearms, ammunition or magazine capacity," said Ted Novin, a spokesman for the National Shooting Sports Foundation, a gun industry group. "It was about the actions of a madman. Period."

The analysis by The Post is possible because of a little-known database of guns seized in Virginia. The database, called the Criminal Firearms Clearinghouse, has information on more than 100,000 firearms recovered by more than 200 local police departments since 1993. A federal <u>law in 2003, known as the Tiahrt Amendment</u> after the congressman who sponsored it, banned the release of federal data on guns recovered in crimes.

Last year. The Post mined the database to pierce the secrecy imposed by Congress on federal gun-tracing records. The analysis found that a fraction of licensed dealers in Virginia sell most of guns later seized by police. The vast majority of the guns in the database were confiscated because of illegal-possession charges. But thousands were swept up in the wake of assaults, robberies and shootings.

Two months before the ban expired in September 2004, Marcus Nance bought an extended magazine and a 9mm Glock 17 handgun at <u>a Roanoke gun store</u>. Three nights later, down the street from the store, Nance opened fire on a crowded parking lot after arguing and fighting with people in the crowd.

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# Va. data show drop in criminal incrower during assault gun ban Occument 53-5 Filed 04/09/18 PageID.6148 Page 313 of 349

A police officer called to investigate a disturbance heard shots and saw Nance holding a gun at arm's length and firing "randomly into the mass of people" before shooting several rounds into the air.

A police car's dashboard camera recorded the jackhammer sound of gunfire. In a car parked nearby; police found a Glock gun box and two boxes of ammunition, one of them partially empty.

Police went to the gun shop and confirmed that Nance had bought the handgun (\$555), a laser sight (\$380) and two extended magazines (\$135), paying cash in an entirely legal transaction. Police noted: "The magazines in question were manufactured before 1994 and not considered prohibited."

Nance, who said he had been attacked by members of the crowd and shot in self-defense, was convicted of second-degree murder and is in prison.

## The 2004 study

Koper's 108-page 2004 study for the National Institute of Justice found the ban on assault weapons had mixed results.

"Assault weapons were rarely used in gun crimes even before the ban," he said in the report. But he also concluded that the prohibition on high-capacity magazines might have affected public safety, because such magazines allow shooters to inflict more damage.

"Tentatively I was able to show that guns associated with large-capacity magazines tended to be associated with more serious crimes, more serious outcomes," he said.

Some gun rights activists argue that a ban on high-capacity magazines would violate the Second Amendment right to bear arms. One prominent gun rights activist who takes a less absolute position is Robert A. Levy, chairman of the Cato Institute. He is also the <u>lawyer who brought the case</u> that overturned D.C.'s handgun ban.

But Levy said the government would need to prove that such a ban was effective.

"The burden is on the government, not on the individual to show that the regulation isn't unduly intrusive," Levy said.

Colin Goddard, a lobbyist for the Brady Campaign to Prevent Gun Violence and a victim of the <u>2007 Virginia Tech</u> <u>shootings</u>, said the high-capacity ban could save lives. The Virginia Tech shooter, Seung Hui Cho, used several 15-round magazines to fire 174 shots and kill 32 people in the worst gun-related mass murder by an individual in U.S. history.

"When you double and triple the amount of the clip size, you don't double or triple the number of deer you kill, you double and triple the amount of innocent people who are killed in shootings like this," said Goddard, 25, who was shot four times by Cho.

Bradley A. Buckles, ATF director from 1999 to 2004, said bureau officials advised Congress to focus on high-capacity magazines, which were "completely unregulated" and had almost no sporting purpose.

"The whole thing with magazine capacity came out of ATF," Buckles said. "It wasn't so much guns, but it was firepower. What made them more deadly than a hunting rifle was the fact that you could have a 20-round, 30-round clip, when most hunting rifles wouldn't have more than five rounds."

Buckles said lawmakers should have extended the ban on high-capacity magazines in 2004. Banning them now, he said, just puts everyone back at square one.

"There are so many millions of them out there, it probably wouldn't make any immediate difference over the course of 20 years," Buckles said. "It is not a short-term solution to anything."

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# Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 211 of 299

Va. data show drop in criminal firepower during assault gun ban Occument 53-5 Filed 04/09/18 PageID.6149 Page 314 of 349

Research editor Alice Crites and staff writer Sari Horwitz contributed to this story.

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# Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 212 of 299

Case 3:17-cv-01017-BEN-JLB	Document 53-5 349	Filed 04/09/18	PageID.6150	Page 315 of
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# The Washington Post

Investigations

# Data indicate drop in high-capacity magazines during federal gun ban

By David S. Fallis January 10, 2013

During the 10-year federal ban on assault weapons, the percentage of firearms equipped with high-capacity magazines seized by police agencies in Virginia dropped, only to rise sharply once the restrictions were lifted in 2004, according to an analysis by The Washington Post.\_\_\_\_\_

The White House is leading a push to reinstate a national ban on large-capacity magazines and assault weapons after a gunman armed with an AR-15 and 30-round magazines killed 20 children and seven adults in Connecticut. Vice President Biden has been holding advisory meetings to hammer out a course of action that will address the issue of the larger magazines, which under the lapsed federal ban were those that held 11 or more rounds of ammunition.

In Virginia, The Post found that the rate at which police recovered firearms with high-capacity magazines — mostly handguns and, to a smaller extent, rifles — began to drop around 1998, four years into the ban. It hit a low of 9 percent of the total number of guns recovered the year the ban expired, 2004.

The next year, the rate began to climb and continued to rise in subsequent years, reaching 20 percent in 2010, according to the analysis of a little-known Virginia database of guns recovered by police. In the period The Post studied, police in Virginia recovered more than 100,000 firearms, more than 14,000 of which had high-capacity magazines.

# **Researchers see impact**

To some researchers, the snapshot in Virginia suggests that the federal ban may have started to curb the widespread availability of the larger magazines.

"I was skeptical that the ban would be effective, and I was wrong," said Garen Wintemute, head of the Violence Prevention Research Program at the University of California at Davis School of Medicine. The database analysis offers "about as clear an Exhibit 4

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# Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 214 of 299

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The analysis is based on an examination of the Criminal Firearms Clearinghouse, a database obtained from state police under Virginia's public information law. The data, which were first studied by The Post in 2011, offer a rare glimpse into the size of the magazines of guns seized during criminal investigations. The Bureau of Alcohol, Tobacco, Firearms and Explosives, which traces guns and regulates the industry, tracks details about the guns seized after crimes but not the magazine size.

The initial Post analysis was prompted by a mass shooting in Tucson. Jared Lee Loughner — armed with a legally purchased 9mm semiautomatic handgun and a 33-round magazine — opened fire outside a grocery store, killing six people and wounding 13, including Rep. Gabrielle Giffords (D-Ariz.).

In the following two years, a succession of mass shootings has occurred, including several in which the gunmen reportedly had high-capacity magazines.

At the Dec. 14 shooting in Newtown, Conn., the gunman was reported to have been armed with two handguns, an AR-15 rifle and numerous 30-round magazines. He killed himself at the scene. The guns were legally purchased by his mother.

The federal ban that expired in 2004 prohibited the manufacture of magazines capable of holding more than 10 rounds. But the law-permitted the sale of magazines manufactured before the ban. By some estimates, 25 million of the large-capacity magazines were still on the market in 1995.

Many semiautomatic rifles and semiautomatic handguns accept magazines of various sizes. Larger magazines increase a gun's firepower, enabling more shots before reloading.

The Virginia database analyzed by The Post lists about three-quarters of guns recovered by police, missing the rest because some agencies failed to report their recoveries to the state. The database contains details about more than 100,000 guns recovered by 200 police departments in a wide range of investigations from 1993 through August 2010, when The Post last obtained it.

In recent weeks, The Post conducted additional analysis into the type of guns confiscated with large-capacity magazines. The guns included Glock and TEC-9 handguns and Bushmaster rifles. Most had magazines ranging from 11 to 30 rounds.

Of 14,478 guns equipped with large-capacity magazines that were confiscated by police, more than 87 percent - 12,664 - were classified as semiautomatic pistols. The remainder were mostly semiautomatic rifles.

The Post also identified and excluded from the counts more than 1,000 .22-caliber rifles with large-capacity tubular magazines, which were not subject to the ban.

In Virginia, handguns outfitted with large-capacity magazines saw the biggest fluctuation during and after the ban.

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Data indicated appinding a states willing federal guntant 5.3-5https://www.abb/ig@npbsager/investgations/data points data points and 349 In 1997, three years into the ban, police across the state reported seizing 944 handguns with large-capacity magazines. In 2004, the year the ban ended, they confiscated 452. In 2009, the last full year for which data were available, the number had rebounded to 986 handguns, analysis showed.

Of these, the single biggest group were handguns equipped with 15-round magazines, accounting overall for 4,270 firearms over the 18 years.

## Effect hard to measure

Nationwide, researchers who studied the federal ban had difficulty determining its effect, in part because weapons and magazines manufactured before the ban could still be sold and in part because most criminals do not use assault weapons.

Christopher Koper, who studied the ban's effect for the National Institute of Justice, the research arm of the Justice Department, noted in a 2004 report that the "success in reducing criminal use of the banned guns and magazines has been mixed."

He found that gun crimes involving assault weapons declined between 17 and 72 percent in the six cities covered in the study — Anchorage, Baltimore, Boston, Miami, Milwaukee and St. Louis. But he said he found no decline in crimes committed with <u>other guns with large-capacity magazines</u>, most likely "due to the immense stock of exempted pre-ban magazines."

Koper's study tracked guns through 2003. He said that The Post's findings, which looked at magazine capacity of guns recovered in Virginia before and after 2003, suggests that "maybe the federal ban was finally starting to make a dent in the market by the time it ended."

Koper, now an associate professor of criminology at George Mason University, also noted the ban on high-capacity magazines might improve public safety because larger magazines enable shooters to inflict more damage.

The use of high-capacity magazines is a contentious point in the gun debate.

"Anyone who's thought seriously about armed self-defense knows why honest Americans — private citizens and police alike — choose magazines that hold more than 10 rounds. Quite simply, they improve good people's odds in defensive situations," Chris W. Cox, the executive director of the National Rifle Association's legislative institute wrote in a piece posted online. He called the ban a "dismal failure."

The federal prohibition on high-capacity magazines and assault weapons was spurred in part by the 1989 mass killing in Stockton, Calif. Patrick Edward Purdy, a mentally unbalanced drug addict, fired 110 rounds from an AK-47 into a schoolyard, killing five children and wounding 29 others and a teacher. Purdy used a 75-round drum magazine and a 35-round banana clip, one of four he carried.

Some states still limit magazine size. Maryland limits the size to 20 rounds; California limits it to 10. Connecticut, the location Exhibit 4 3 of 4 Page 00432 <sub>6/1/17, 12:24 PM</sub>

# Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 216 of 299

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After Giffords's shooting, Rep. Carolyn McCarthy (N.Y.) and other Democrats proposed legislation to ban the sale or transfer of high-capacity magazines. McCarthy's husband and five others were killed in 1993 on the Long Island Rail Road by a gunman armed with a semiautomatic pistol and four 15-round magazines. He fired 30 shots before being subdued as he swapped magazines.

In the wake of the Newtown shooting, President Obama and lawmakers urged that a ban on assault weapons and high-capacity magazines be made permanent.

The NRA and the National Shooting Sports Foundation, a gun industry group, have historically opposed any restrictions on magazine capacity. The NRA did not respond to requests for comment, and the sports foundation declined to comment.

David S. Fallis is the Deputy Editor for the Washington Post's Investigations Unit. **Y** Follow @DavidSFallis

Exhibit 4 Page 00433 <sub>6/1/17, 12:24 PM</sub>
## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 217 of 299

Case 3:17-cv-01017-BEN-JLB	Document 53-5 349	Filed 04/09/18	PageID.6155	Page 320 of	
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## **Exhibit 5**

Exhibit 5 Page 00434

#### Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 218 of 299

#### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6156 Page 321 of Stephen Helsley December 18, 2017

IN THE UNITED STATES DISTRICT COURT FOR THE SOUTHERN DISTRICT OF CALIFORNIA VIRGINIA DUNCAN, et al., 1 Plaintiffs, Case No.: 17-cv-1017-BEN-JLB vs. XAVIER BECERRA, in his official capacity as Attorney General of the State of California; and DOES 1-10, Defendants. DEPOSITION OF STEPHEN HELSLEY Monday, December 18, 2017 9:56 a.m. 1300 I Street Sacramento, California REPORTED BY: Kimberly A. Barrette CSR No. 6671

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## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 219 of 299

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6157 Page 322 of Stephen Helsley December 18, 2017

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## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 220 of 299

#### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6172 Page 337 of Stephen Helsley December 18, 2017

1	(The record was read as requested.)
2	BY MR. ECHEVERRIA: Q. Can you answer that
3	question?
4	MR. BRADY: Objection, confusing, vague and
5	ambiguous.
6	THE WITNESS: I'm struggling with the
7	construction of the question.
8	BY MR. ECHEVERRIA: Q. Sure. So when you use
9	the phrase, scholarly foundation for your opinions, what
10	is the scholarly foundation that you're referring to
11	concerning your second opinion that large capacity
1-2-	magazines-have-utility for-self-defense?
13	A. The scholarly foundation is all of the reading
14	that I've done, some writing not a lot, but a lot of
15	reading and talking to peace officers or other people who
16	have been involved in shootings and learning what was
17	involved in those events.
18	Q. Okay. Is it your understanding that
19	conversations with peace officers and other types of
20	research that you just described, is it your
21	understanding that that would qualify as scholarship?
22	MR. BRADY: Objection, misstates testimony,
23	vague and ambiguous.
24	THE WITNESS: Well, your question is what I
25	meant and that's what I mean.

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## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 221 of 299

#### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6173 Page 338 of StepHen Helsley December 18, 2017

1	concealed weapon permit holder want a pistol that can
2	hold significantly more cartridges than a revolver for
3	the same reason a law enforcement office" it says
4	office "or soldier wants one, to increase his or her
5	chances of staying alive," is that correct?
6	A. Correct.
7	Q. What is the meaning of the phrase
8	significantly more?
9	A. Well, there's sort of a break point between a
10	revolver and with your now there's some of them with
11	seven-round capacities. But basically you want to have
12 -	all-the-cartridges-you-can-have-when-you're being
13	threatened.
14	Q. Isn't another benefit of a magazine, even if
15	it holds no more than 10 rounds, that it can reload the
16	firearm faster than a revolver can be reloaded?
17	A. Theoretically, yes. It's a matter of
18	training.
19	There are some people that are very quick with
20	a revolver, but it's harder to be quick with a revolver
21	than it is with a semi-auto pistol with a detachable
22	magazine.
23	Q. Okay. And you write, "for virtuous citizens
24	buy their guns to protect themselves from the same
25	criminals that police carry guns to protect the citizens,

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## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 222 of 299

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 RageID.6174 Page 339 of StepHen Helsley December 18, 2017

1	THE WITNESS: If they think they are to
2	protect themselves, yes.
3	BY MR. ECHEVERRIA: Q. And you are aware that
4	the purchase of large capacity magazines has been illegal
5	in the State of California since 2000?
6	A. I'm aware of that.
7	Q. And that's with exception to those large
8	capacity magazines that were grandfathered in under the
9	statute, correct?
10	MR. BRADY: Objection, calls for a legal
11	conclusion.
12	THE-WITNESS: Correct.
<u>1</u> 3	BY MR. ECHEVERRIA: Q. So from the year 2000
14	to the present, have Californians been unable to defend
15	themselves with firearms that have magazine capacities of
16	10 rounds or fewer?
17	MR. BRADY: Objection, argumentative, calls
18.	for speculation, vague and ambiguous.
19	THE WITNESS: Some may have.
20	BY MR. ECHEVERRIA: Q. Do you know of any
21	examples in which a Californian has been unable to
22	successfully defend themselves with a firearm that did
23	not have a large capacity magazine?
24	A. I do not.
25	Q. And you base your well, strike that. In

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## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 223 of 299

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6175 Page 340 of StepHen Helsley December 18, 2017

1	MR. BRADY: Objection, calls for speculation,	
2	beyond the scope of what the witness is called to testify	
3	about, vague and ambiguous.	
4	THE WITNESS: Well, I know that I read about	
5	them frequently.	
6	I don't know that all of them are reported	
7	and, of course, I'd only read about the ones that occur	
8	in the range of where the Sacramento Bee records, but	-
9	they are certainly not an uncommon event.	
10	BY MR. ECHEVERRIA: Q. And you go on to	
11	discuss off duty police officers and private law abiding	
12-	citizens, correct?	i an a
13	A. Yes.	
14	Q. You state that "Off-duty officers and private	÷.
15	law abiding citizens are unlikely to have much, if any,	
16	spare ammunition on their person or elsewhere readily	
17	accessible, " correct?	
18	A. Correct.	
19	Q. And what is the basis of your statement that	
20 ·	they are unlikely to do so?	
21	A. Well, for instance, if it's at night and	
22	someone hears something they believe is a threat, in my	
23	own case, for instance, if if I think somebody is	
24	breaking in my house, I'm getting out of bed, I have my	
25	boxer shorts on, I've got a flashlight in one hand and	

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## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 224 of 299

#### Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6176 Page 341 of Stephen Helsley December 18, 2017

1	the Glock in the other hand and I really don't have any
2	place to put that spare magazine.
3	Q. Have you been a victim of a home invasion?
4	A. No, no.
5	Q. So the situation you just described has never
6	happened to you?
7	A. I have heard things that caused me alarm that
8	I responded to.
9	There was nobody breaking into the house, but
10	when I responded, I thought there was.
11	Q. Okay. And you state that "For off-duty
1-2	officers-and private-law abiding-citizens, the ability to
13	have a pistol already loaded with a significant amount of
14	ammunition is all the more important," correct?
15	A. That's my belief.
16	Q. What is your definition of the word
17	significant in that sense?
18	A. You mean significant number of rounds?
19	Q. Yes.
20	A. Well, to me personally it's as many as I can
21	have, but I've chosen to have the Glock with 20 rounds.
22	Q. So 20 rounds is a significant amount of
23	ammunition in your opinion?
24	A. I'd rather have 40, but 20 is a good start.
25	Q. Would you rather have 50?

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## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 225 of 299

## Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6177 Page 342 of StepHen Helsley December 18, 2017

1	A. I think that anybody who has been in a gun
2	fight would come away saying you can't have too many
3	rounds and so I am a believer.
4	If when I got up at night I had somewhere to
5	carry all that in my boxer shorts, I'd take two or three
6	magazines along.
7	Q. You would take two or three large capacity
8	magazines?
9	A. Yes.
10	Q. Do you have an opinion on whether there is any
11	permissible limit on magazine size that would be
-1-2	- acceptable to you?
13	A. Well, there is a practical limit, I suppose,
14	to what will function.
15	The spring has to be able to push the rounds
16	up to a point to feed and so the practical limit is in
17	terms of high caps for handguns is in the 20-round range,
18	although there is a 32, 33-round magazine for a Glock.
19	The only restriction that I would see is
20	reliable functioning.
21	Q. And is there a practical limit in your opinion
22	as to the magazine size for a rifle?
23	A. Again, the same thing. Functioning.
24	Q. And can you provide a number as to what the
25	practical limit would be for a rifle?

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## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 226 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6178 Page 343 of 349

## **Exhibit 6**

Exhibit 6 Page 00457

Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 227 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6180 Page 345 of 349

BLAKE G	VS BECERRA	2017
	UNITED STATES DISTRICT COURT	1102
	SOUTHERN DISTRICT OF CALIFORNIA	
VIRGI	NIA DUNCAN, RICHARD LEWIS,	
CHRIS	TOPHER WADDELL, CALIFORNIA	
a Cal:	ifornia corporation,	
	Plaintiffs,	
	vs. CASE NO. 17-cv-1017-BEN-J	LB
XAVIE	R BECERRA, in his official	
State	of California; and DOES 1-10,	
	Defendants.	
~~~~~		
65.	а. К	
3	х н <sub>а</sub>	
	DEPOSITION OF	
	BLAKE GRAHAM	
	* a * a	
	December 19, 2017	
25	10:05 a.m.	
	1300 I Street Suite 1700	
	Sacramento, California	
	JENNIFER SCHUMACHER, CSR No. 9763	
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## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 228 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6181 Page 346 of 349

For the Plaintiffs VIRGINIA DUNCAN, RICHA al.: MICHEL & ASSOCIATES BY: SEAN A. BRADY, Esq. 180 E. Ocean Boulevard, Suite 200 Long Beach, California 90802 (562) 216-4444 Sbrady@michellawyers.com For the Defendant XAVIER BECERRA: STATE OF CALIFORNIA OFFICE OF THE ATTORNEY GENERAL BY: ANTHONY P. O'BRIEN, Esq. 1300 I Street Sacramento, California 94244 (916)-210-6002 Anthony.obrien@doj.ca.gov Also Present: STATE OF CALIFORNIA OFFICE OF THE ATTORNEY GENERAL CIVIL LAW DIVISION BY: ROBERT D. WILSON, Esq. P.O. Box 160487 Sacramento, California 95816 (916) 227-4003 Robert.wilson@doj.ca.gov	RD LEWI	S, et
<pre>For the Plaintiffs VIRGINIA DUNCAN, RICHA al.:     MICHEL &amp; ASSOCIATES     BY: SEAN A. BRADY, Esq.     180 E. Ocean Boulevard, Suite 200     Long Beach, California 90802     (562) 216-4444     Sbrady@michellawyers.com For the Defendant XAVIER BECERRA:     STATE OF CALIFORNIA     OFFICE OF THE ATTORNEY GENERAL     BY: ANTHONY P. O'BRIEN, Esq.     1300 I Street     Sacramento, California 94244     (916) -210-6002     Anthony.obrien@doj.ca.gov Also Present:     STATE OF CALIFORNIA     OFFICE OF THE ATTORNEY GENERAL     CIVIL LAW DIVISION     BY: ROBERT D. WILSON, Esq.     P.O. Box 160487     Sacramento, California 95816     (916) 227-4003     Robert.wilson@doj.ca.gov </pre>	RD LEWI	S, et
<pre>For the Plaintiffs VIRGINIA DUNCAN, RICHA al.:     MICHEL &amp; ASSOCIATES     BY: SEAN A. BRADY, Esq.     180 E. Ocean Boulevard, Suite 200     Long Beach, California 90802     (562) 216-4444     Sbrady@michellawyers.com For the Defendant XAVIER BECERRA:     STATE OF CALIFORNIA     OFFICE OF THE ATTORNEY GENERAL     BY: ANTHONY P. O'BRIEN, Esq.     1300 I Street     Sacramento, California 94244     (916)-210-6002     Anthony.obrien@doj.ca.gov Also Present:     STATE OF CALIFORNIA     OFFICE OF THE ATTORNEY GENERAL     CIVIL LAW DIVISION.     BY: ROBERT D. WILSON, Esq.     P.O. Box 160487     Sacramento, California 95816     (916) 227-4003     Robert.wilson@doj.ca.gov    000</pre>	RD LEWI	S, et
MICHEL & ASSOCIATES BY: SEAN A. BRADY, Esq. 180 E. Ocean Boulevard, Suite 200 Long Beach, California 90802 (562) 216-4444 Sbrady@michellawyers.com For the Defendant XAVIER BECERRA: STATE OF CALIFORNIA OFFICE OF THE ATTORNEY GENERAL BY: ANTHONY P. O'BRIEN, Esq. 1300 I Street Sacramento, California 94244 (916)-210-6002 Anthony.obrien@doj.ca.gov Also Present: STATE OF CALIFORNIA OFFICE OF THE ATTORNEY GENERAL CIVIL LAW DIVISION BY: ROBERT D. WILSON, Esq. P.O. Box 160487 Sacramento, California 95816 (916) 227-4003 Robert.wilson@doj.ca.gov		ж
<pre>BY: SEAN A. BRADY, Esq. 180 E. Ocean Boulevard, Suite 200 Long Beach, California 90802 (562) 216-4444 Sbrady@michellawyers.com For the Defendant XAVIER BECERRA: STATE OF CALIFORNIA OFFICE OF THE ATTORNEY GENERAL BY: ANTHONY P. O'BRIEN, Esq. 1300 I Street Sacramento, California 94244 (916)-210-6002 Anthony.obrien@doj.ca.gov Also Present: STATE OF CALIFORNIA OFFICE OF THE ATTORNEY GENERAL CIVIL LAW DIVISION BY: ROBERT D. WILSON, Esq. P.O. Box 160487 Sacramento, California 95816 (916) 227-4003 Robert.wilson@doj.ca.gov 000</pre>		×.
Also Present: STATE OF CALIFORNIA OFFICE OF THE ATTORNEY GENERAL BY: ANTHONY P. O'BRIEN, Esq. 1300 I Street Sacramento, California 94244 (916)-210-6002 Anthony.obrien@doj.ca.gov Also Present: STATE OF CALIFORNIA OFFICE OF THE ATTORNEY GENERAL CIVIL LAW DIVISION BY: ROBERT D. WILSON, Esq. P.O. Box 160487 Sacramento, California 95816 (916) 227-4003 Robert.wilson@doj.ca.gov 000		v 1
<pre>(562) 216-4444 Sbrady@michellawyers.com For the Defendant XAVIER BECERRA: STATE OF CALIFORNIA OFFICE OF THE ATTORNEY GENERAL BY: ANTHONY P. O'BRIEN, Esq. 1300 I Street Sacramento, California 94244 (916)-210-6002- Anthony.obrien@doj.ca.gov Also Present: STATE OF CALIFORNIA OFFICE OF THE ATTORNEY GENERAL CIVIL LAW DIVISION BY: ROBERT D. WILSON, Esq. P.O. Box 160487 Sacramento, California 95816 (916) 227-4003 Robert.wilson@doj.ca.gov 000</pre>		¥
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Also Present: STATE OF CALIFORNIA OFFICE OF THE ATTORNEY GENERAL CIVIL LAW DIVISION BY: ROBERT D. WILSON, Esq. P.O. Box 160487 Sacramento, California 95816 (916) 227-4003 Robert.wilson@doj.ca.gov 000		
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## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 229 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6182 Page 347 of 349

	BLAKE GRAHAM December 19, 2017 DUNCAN vs BECERRA 5
1	DEPOSITION OF BLAKE GRAHAM
2	December 19, 2017
3	
4	BLAKE GRAHAM,
5	having been first duly sworn, testified as follows:
6	
7	EXAMINATION
8	BY MR. BRADY:
9	Q. Good morning. Could you state your name for
10	the record, please.
11	A. Blake Graham, G-r-a-h-a-m.
12 -	Q. And do you know why you are here today,
13	Mr. Graham?
14	A. Yes.
15	Q. And why is that?
16	A. To give a deposition.
17	Q. And do you know what case you are here to give
18	a deposition in?
19	A. Duncan v Becerra.
20	Q. Do you know the nature of this case?
21	A. This case deals with large capacity magazines
22	and the I guess, the legality of the law at this
23	point.
24	Q. So speaking of large capacity magazines, I'm
25	sure do you mind if we use the terminology LCM so we
	<b>ESQUIRE</b> BOO.211.DEPO (3376) EsquireSolutions.com

Exhibit 6 Page 00461 Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 230 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6183 Page 348 of 349

	BLAKE GRAHAMDecember 19, 2017DUNCAN vs BECERRA60
1	Topete case is the one you're most familiar with out of
2	this list that you provided, or that you were most
3	involved with?
4	A. Yeah, I think that's fair.
5	Q. What is your basis for saying that an LCM
6	significantly increased Topete's ability to kill and
7	injure large numbers of people quickly?
8	A. Well, as I recall, he fired 17 rounds at the
9	deputy, so there's when he was firing at the deputy,
10	because of the placement of Topete and the vehicle
11	Topete had been driving, I believe he had his young
12	-child-in his own car, and his own child was actually
13	exposed to his actual bullets that he was firing out of
14	the assault weapon as well. So that ties into the

ability of somebody with a large cap mag and a
semiautomatic weapon to potentially injure multiple
people.

18 Q. Isn't it possible he could have done the19 identical damage with two ten-round magazines?

20MR. O'BRIEN: Objection. Calls for21speculation.

THE WITNESS: Possibility, I don't know. All I can say it was -- from what I recall, it was pretty much a single stream of 17 rounds. I don't remember a pause when I listened to the audio, or maybe it's audio or

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Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 231 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-5 Filed 04/09/18 PageID.6184 Page 349 of 349

	BLAKE GRAHAM December 19, 2017 DUNCAN vs BECERRA 61
1	dash cam, I forget which it was. But the deputy is dead
2	because this particular guy had an assault weapon and a
3	large cap mag, and it was loaded. It wasn't even fully
4	loaded, it just had 17 rounds, and he fired everything
5	in it, as I recall.
6	BY MR. BRADY:
7	Q. Do they know what rounds, which number in
8	other words strike that.
9	Is it known whether rounds from the first ten
10	shots hit the deputy?
11	. MR. O'BRIEN: Objection. Calls for
12	-speculation.
13	THE WITNESS: I don't recall which that may
14	be available in the transcripts of that particular case.
15	I don't recall, but there was some discussion about him
16	only being hit one time out of all those rounds. But I
17	don't remember if they identified, you know, if it was
18	round 1 through 17, I don't recall.
19	BY MR. BRADY:
20	Q. It could have been round 1 through 10, though,
21	correct?
22	A. It's possible, but I don't remember. That
23	wasn't why I was involved in the case. It was more
24	about the weapon itself.
25	Q. If it was round 1 through 10, then wouldn't the
	Source

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Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6191 Page 7 of 76

# Exhibit 7

Exhibit 7 Page 00464

#### Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 233 of 299

#### Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6192 Page 8 of 76

Atkinson-Baker Court Reporters www.depo.com

IN THE UNITED STATES DISTRICT COURT 1 2 FOR THE SOUTHERN DISTRICT OF CALIFORNIA 3 -----: 4 VIRGINIA DUNCAN, et al., : 5 Plaintiff, :Case No. 6 :17-cv-1017-BEN-JLB v. 7 XAVIER BECERRA, in his : 8 official capacity as : 9 Attorney General of the : 10 State of California, et : : 11 al., Defendants.: 1213 -----: Deposition of CARLISLE MOODY taken at the 14 15 offices of Kirkland & Ellis, LLP, 655 Fifteenth 16 Street, NW, Washington, DC on Tuesday, January 2, 17 2018, beginning at 10:00 a.m. before Sydney R. Crawford, a Notary Public in and for the District of 18 Columbia. 19 20 ATKINSON-BAKER, INC. COURT REPORTERS 21 (800) 288-3376 www.depo.com 22 REPORTED BY: Sydney R. Crawford

> Carlisle Moody January 2, 2018

> > Exhibit 7 Page 00465

> > > ER000725

1

## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 234 of 299

## Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6193 Page 9 of 76

Atkinson-Baker Court Reporters www.depo.com

1	APPEARANCES:
2	
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9	
10	
11	ON BEHALF OF THE DEFENDANT:
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13	Deputy Attorney General
14	455 Golden Gate Avenue
15	Suite 1100
16	San Francisco, California 94102
17	
18	
19	
20	
21	
22	

2

Carlisle Moody January 2, 2018

Exhibit 7 Page 00466

#### Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 235 of 299

#### Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6194 Page 10 of 76

Atkinson-Baker Court Reporters www.depo.com PROCEEDINGS 1 2 3 WHEREUPON, 4 CARLISLE MOODY 5 called as a witness, having been first duly 6 sworn to tell the truth, the whole truth, and 7 nothing but the truth, was examined and testified as 8 follows: 9 10 EXAMINATION BY COUNSEL FOR THE DEFENDANT BY MS. GORDON: 11 Good morning, Professor Moody. 12 Ο. Do you 13 prefer Professor Moody or Dr. Moody? Α. Either one. 14 15 Ο. Either one? 16 Α. Professor is what I hear most of at the 17 school, so let's go with that. 18 I'm Alexandra Robert Gordon, and I Q. 19 represent the defendant, Attorney General Xavier Becerra in this matter. We haven't met before 20 today; correct? 21 22 Α. Correct.

4

Carlisle Moody January 2, 2018

> Exhibit 7 Page 00467

## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 236 of 299

## Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6195 Page 11 of 76

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1	number?
2	A. Yes. Yes.
3	Q. And what is what is a P value?
4	A. P value is that number, .05. In other
5	words, if you're two standard deviations away from
6	the mean, the P value is .05, which simply means
7	that there's less than, there's a 5 percent chance.
8	Only a 5 percent chance that the number would be
9	that far away from the mean and still actually be
10	zero.
11	Q. Okay. So can you infer let's say you
12	have a P value greater than .05. Can you infer an
13	absence of causation from that?
14	A. It is indicative of no causation.
15	Q. Is it possible that something could have a
16	real world effect, though, and not be statistically
17	significant?
18	A. Yes.
19	Q. Okay. Does the size of sample, sample
20	size of data affect the calculation of statistical
21	significance?
22	A. Uh-hum. Yes, it does.

Carlisle Moody January 2, 2018

Exhibit 7 Page 00468

ER000728

80

## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 237 of 299

## Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6199 Page 15 of 76

Atkinson-Baker Court Reporters www.depo.com

1	(Exhibit No. 12 was marked for
2	identification.)
3	BY MS. GORDON:
4	Q. Is this the paper that we've been talking
5	about, about your sort of study on large capacity
6	magazines?
7	A. Yes.
8	Q. Okay. I understand that, you know, you
9	feel that we're not talking about this, and we're
10	going to move off of this momentarily, but could you
11	please go to page 6, and do you see where it says
12	"Summary and Conclusion," Roman numeral III?
13	A. Yes.
14	Q. Could you just read the first full
15	sentence, please?
16	A. Repeat, please.
17	Q. The first sentence. It starts, "Firearms
18	fitted with large capacity magazines."
19	A. "Firearms fitted with large capacity
20	magazines can be used to cause death and injury in
21	public shooting incidents, and can also result in
22	more rounds fired and more homicides in general than

194

Carlisle Moody Vol. II January 4, 2018

Exhibit 7 Page 00472

## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 238 of 299

## Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6200 Page 16 of 76

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1	similar firearms with smaller magazines."
2	Q. Okay. And just in the interest of
3	fairness and completeness, you do go on in that
4	paragraph to include other ways that people can
5	wreak havoc as well; right?
6	A. Yes.
7	Q. Okay. But I'm just curious, do you agree
8	with the first that sentence that that you
9	just read?
10	A. Yes. Yes.
11	Q. And what was the basis for that statement?
12	How did you arrive at that conclusion?
13	A. Just theoretically.
14	Q. Theoretically.
15	A. Theoretically, if you have more rounds in
16	a single place, you might be able to do a better job
17	of creating mayhem.
18	Q. Did you so this is this is dated
19	February 2015. So you would have written this
20	before you did your expert report in Colorado;
21	correct?
22	A. Correct.

195

Carlisle Moody Vol. II January 4, 2018

> Exhibit 7 Page 00473

## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 239 of 299

## Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6205 Page 21 of 76

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Atkinson-Baker Court Reporters www.depo.com

1	research I did in this case presented in my report.
2	Q. Okay. What which research precisely
3	that you did for this case presented?
4	A. Reading. Reading all the reports, trying
5	to get, you know, some idea where these LCMs came
6	from, and whether they were likely to be somebody
7	who's three at the time in the year 2000 would
8	probably not store up a, not get an LCM as a present
9	from grandma and store it up until he shoots
10	somebody in 2012.
11	Q. I should I should not hope not, yeah.
12	Have you looked at mass shootings that
13	occurred nationally during the federal assault
14	weapon ban?
15	A. No.
16	Q. So you don't know which mass shootings
17	occurred using grandfathered weapons; right, during
18	the assault weapon ban?
19	A. No.
20	Q. But you are aware that there were a
21	significant number of grandfathered weapons during
22	the federal assault weapon ban; correct?

Carlisle Moody Vol. II January 4, 2018

> Exhibit 7 Page 00478

> > ER000731

351

## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 240 of 299

## Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6206 Page 22 of 76

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1	A. I I I do not have that data. I
2	don't recall that data.
3	Q. Okay. So
4	A. I have no reason to disbelieve you.
5	Q. Okay. But so, then, just to be clear, the
6	data about how many grandfathered LCMs there were
7	during the assault weapons ban is not a factor in
8	any of the analysis that you've done?
9	A. No.
10	Q. Okay. Is it possible that a stolen large
11	capacity magazine that was legally possessed within
12	California could be taken to another jurisdiction
13	and used in a mass shooting?
14	A. It's possible, I suppose.
15	Q. And so would that constitute a danger
16	created by a legally-possessed large capacity
17	magazine?
18	A. What's a danger? I mean, did this person
19	actually shoot somebody with it?
20	Q. Yes.
21	A. Oh, then it is a danger.
22	Q. It's a hypothetical. I'm not saying that

352

Carlisle Moody Vol. II January 4, 2018

> Exhibit 7 Page 00479

Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 241 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6208 Page 24 of 76

# Exhibit 8

Exhibit 8 Page 00481

#### Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 242 of 299

#### Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6209 Page 25 of 76

Atkinson-Baker Court Reporters www.depo.com

IN THE UNITED STATES DISTRICT COURT 1 2 FOR THE SOUTHERN DISTRICT OF CALIFORNIA -----: 3 4 VIRGINIA DUNCAN, et al., : 5 Plaintiff, :Case No. б :17-cv-1017-BEN-JLB v. XAVIER BECERRA, in his 7 : 8 official capacity as : Attorney General of the 9 : State of California, et 10 : 11 al., : 12 Defendants.: -----: 13 14 Deposition of GARY KLECK taken at the offices of Kirkland & Ellis, LLP, 655 Fifteenth 15 16 Street, NW, Washington, DC on Wednesday, January 3, 17 2018, beginning at 9:00 a.m. before Sydney R. Crawford, a Notary Public in and for the District of 18 19 Columbia. 20 ATKINSON-BAKER, INC. COURT REPORTERS (800) 288-3376 21 www.depo.com REPORTED BY: Sydney R. Crawford 22 FILE NO: AB0D9A1

1

Gary Kleck January 3, 2018

> Exhibit 8 Page 00482

## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 243 of 299

## Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6210 Page 26 of 76

Atkinson-Baker Court Reporters www.depo.com

1	APPEARANCES:
2	
3	ON BEHALF OF THE PLAINTIFF:
4	ANNA M. BARVIR, ESQUIRE
5	Michel & Associates
6	180 East Ocean Boulevard
7	Suite 200
8	Long Beach, California 90802
9	
10	
11	ON BEHALF OF THE DEFENDANT:
12	JOSE ZELIDON-ZEPEDA, ESQUIRE
13	Deputy Attorney General
14	455 Golden Gate Avenue
15	Suite 11000
16	San Francisco, California 94102
17	
18	
19	
20	
21	
22	

2

Exhibit 8 Page 00483

#### Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 244 of 299

#### Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6211 Page 27 of 76

Atkinson-Baker Court Reporters

www.depo.com 1 PROCEEDINGS 2 3 WHEREUPON, 4 GARY KLECK 5 called as a witness, having been first duly 6 sworn to tell the truth, the whole truth, and nothing but the truth, was examined and testified as 7 8 follows: 9 10 EXAMINATION BY COUNSEL FOR THE DEFENDANT BY MR. ZELIDON-ZEPEDA: 11 Good morning. 12 Q. Good morning. 13 Α. My name is Jose Zelidon-Zepeda. 14 Ο. I'm a 15 Deputy Attorney General for the State of California. 16 You understand that you're here for your deposition 17 in a case called Duncan versus Becerra. 18 Α. Okay. 19 MR. ZELIDON-ZEPEDA: Could counsel please 20 identify themselves for the record? 21 MS. BARVIR: Anna Barvir, B-A-R-V-I-R, 22 counsel for the plaintiffs.

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Gary Kleck January 3, 2018

> Exhibit 8 Page 00484

#### Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 245 of 299

#### Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6212 Page 28 of 76

Atkinson-Baker Court Reporters www.depo.com

the fraction that will involve large capacity 1 2 magazines. That much is true, something that both 3 advocates and opponents agree on. 4 Q. And then the opposite is true as well; 5 right? б Objection. MS. BARVIR: Form. Vague and 7 ambiguous. Go ahead and answer. 8 THE WITNESS: What opposite? I mean the -- the opposite that it's frequent, that are 9 10 frequently involved? BY MR. ZELIDON-ZEPEDA: 11 12 Ο. No. the opposite of if you define the -if you define gun massacres in terms of a -- a lower 13 number of individuals who are dead, obviously that's 14 going to impact the percentage, and it goes that --15 16 Α. Yes. Sorry. Go ahead. 17 No. No. I was done. Ο. The lower -- the lower your 18 Α. Yes. criterion, your cutoff for what constitutes a mass 19 20 shooting, the less likely it is large capacity magazines will be involved. 21 22 Because the one thing that advocates of

163

Gary Kleck January 3, 2018

> Exhibit 8 Page 00485

## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 246 of 299

## Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6213 Page 29 of 76

Atkinson-Baker Court Reporters www.depo.com

1	bans on large capacity magazines are correct about
2	is the statistical point that large capacity
3	magazines are more likely to show up not likely,
4	but relatively more likely to show up in cases with
5	larger numbers of victims.
б	Q. Do you think large capacity magazine have
7	an impact on crimes other than mass massacres?
8	MS. BARVIR: Object to the form. Vague
9	and ambiguous. Go ahead.
10	BY MR. ZELIDON-ZEPEDA:
11	Q. You know, let me reframe my question.
12	Do you think that LCM use has an impact in
13	crimes other than gun massacres?
14	A. I know of no affirmative evidence to
15	suggest that's the case, that there is such an
16	effect.
17	Q. Have you affirmatively researched that
18	issue?
19	A. No. No. That's not been a focus of any
20	of my research. Others, however, have kind of
21	indirectly approached it by looking at whether bans
22	on large capacity magazines affect other kinds of

164

Gary Kleck January 3, 2018

Exhibit 8 Page 00486

## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 247 of 299

## Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6217 Page 33 of 76

Atkinson-Baker Court Reporters www.depo.com

1	offender, and to shoot all let's say four offenders,
2	you'd obviously need a correspondingly larger number
3	of rounds.
4	Q. Are you aware of any research that yields
5	these numbers regarding the rate at which defensive
б	gun requires the use of 10 or more bullets?
7	A. To my knowledge no one has studied the
8	issue. Me or anyone else.
9	Q. So what is your basis for saying that this
10	is a scenario that's likely?
11	A. Well, there are two solid reasons. Number
12	one, we know that crime, violent crimes in which
13	victims face multiple offenders are commonplace, and
14	we know that from the National Crime Victimization
15	survey.
16	And number two, we know that it requires
17	considerably more than one round to shoot any one
18	offender. We know that from two sources of
19	information well, really that's basically all one
20	source of information or one category of
21	information, which is how good police officers are
22	in their marksmanship in real world combat

309

Gary Kleck January 3, 2018

Exhibit 8 Page 00490

Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 248 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6220 Page 36 of 76

# Exhibit 9

Exhibit 9 Page 00493

#### Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 249 of 299

Page 1 1 UNITED STATES DISTRICT COURT 2 SOUTHERN DISTRICT OF CALIFORNIA 3 -----X 4 VIRGINIA DUNCAN, et al., 5 Plaintiffs, б Case No. v. 7 17-cv-1017-BEN-JLB XAVIER BECERRA, in his 8 official capacity as Attorney 9 General of the State of 10 California, 11 Defendant. 12 -----x 13 14 15 DEPOSITION OF CHRISTOPHER S. KOPER, PH.D. 16 Washington, D.C. 17 Friday, January 5, 2018 18 19 20 21 Reported by: 22 Michele E. Eddy, CRR, RPR, CLR 23 JOB NO. 135559 24 25

Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6221 Page 37 of 76

## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 250 of 299

Case	5.17-CV-01017-BEN-3EB DOCUMENT 55-0 Flied 04/03/16 FageiD.0222 Fage 36 0170
	Page 2
1	
2	
3	
4	Friday, January 5, 2018
5	9:55 A.M.
б	
7	
8	Deposition of CHRISTOPHER S. KOPER,
9	PH.D., held at the offices of Kirkland & Ellis
10	LLP, 655 Fifteenth Street, Northwest, Washington,
11	D.C., pursuant to notice, before Michele E.
12	Eddy, a Registered Professional Reporter,
13	Certified Realtime Reporter, and Notary Public
14	of the state of Maryland, Commonwealth of
15	Virginia, and the District of Columbia.
16	
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23	
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Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6222 Page 38 of 76

## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 251 of 299

## Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6223 Page 39 of 76

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Page 3
1
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3
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     180 E. Ocean Boulevard, Suite 200
4
5
    Long Beach, California 90802
б
    BY: ANNA BARVIR, ESQUIRE
7
8
     STATE OF CALIFORNIA DEPARTMENT OF JUSTICE
9
    Attorneys for Defendants
10
     455 Golden Gate Avenue
11
     San Francisco, CA 94102
12
     BY: JOSE ZELIDON-ZEPEDA, ESQUIRE
13
14
15
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#### Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 252 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6224 Page 40 of 76

Page 4 1 PROCEEDINGS 2 Washington, D.C. 3 January 5, 2018 4 5 CHRISTOPHER S. KOPER, Ph.D., б having been duly sworn, testified as follows: 7 MS. BARVIR: Good morning. We're 8 here for the deposition of Dr. Christopher 9 Koper. 10 EXAMINATION 11 BY MS. BARVIR: 12 Could you state your name, your Ο 13 title, and your business address for the 14 record, please. 15 Α Christopher Shawn Koper. I'm an 16 associate professor at George Mason University 17 in Fairfax, Virginia. 18 Q And just -- do you prefer if I call 19 you Dr. Koper or Professor Koper? Which works 20 for you? 21 Either one. Either is fine. Α 22 My name is Anna Barvir. I'm an 0 23 attorney for the plaintiffs in this matter 24 captioned Duncan v. Becerra. 25 What is your understanding of what

TSG Reporting 877-702-9580

Exhibit 9 Page 00497
# Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 253 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6225 Page 41 of 76

Page 154 1 cases. What evidence, if any, do you have 2 0 3 that the presence of an LCM in a mass shooting 4 actually impacts the rate of fire, the amount 5 of time between shots in a mass shooting? б MR. ZELIDON-ZEPEDA: Objection. 7 Compound. 8 There is -- and I suppose it's cited Α 9 in here. I would have to look for it. But I 10 know that there was -- in some of my writings, 11 we -- I or my colleagues have shown, at least 12 for some cases where data were available, that 13 the number of shots fired in cases involving 14 LCMs was higher -- substantially higher than in 15 other cases. Then there's also the victim 16 The number of people shot and killed counts. 17 in those cases that involve high-capacity 18 semiautomatics tends to be substantially larger 19 than in other mass shooting incidents. 20 That suggests a higher number Ο Right. 21 of shots fired, right. But what about the rate 22 of fire, like how much time is -- it takes 23 between shots in a mass shooting incident? 24 Well, the problem there is that you Α 25 have to know exactly -- to make clear

TSG Reporting 877-702-9580

Exhibit 9 Page 00498 Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 254 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6229 Page 45 of 76

# Exhibit 10

Exhibit 10 Page 00502

# Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 255 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6231 Page 47 of 76

	LUCY P. ALLEN VIRGINIA DUNCAN vs XAVIER BECERRA	January 18, 2018 1
1		
2	UNITED STATES DISTRICT COURT	
3	SOUTHERN DISTRICT OF CALIFORNIA	
4		x
5	VIRGINIA DUNCAN, et al.,	
6	Plaintiffs,	
7	-against- No. 17-cv-1017-BEN-	JLB
8	XAVIER BECERRA, in his official capacity a	S
9	Attorney General of the State of Californi	a,
10	Defendant.	
11		x
12		
13		
14		
15	DEPOSITION OF LUCY P. ALLEN	
16	New York, New York	
17	Thursday, January 18, 2018	
18		
19		
20		
21		
22		
23	Reported by:	
24	Aydil M. Torres, CSR JOB NO. J1035413	
25		
	ESQUIRE 800 Esc	.211.DEPO (3376) guireSolutions.com Exhibit 10

Page 00504 ER000747

# Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 256 of 299

	LUCY P. ALLEN VIRGINIA DUNCAN vs XAVIER BECERRA	January 18, 2018 2
1		
2		
3	January 18, 2018	
4	9:53 a.m.	
5		
6		
7	Deposition of LUCY P. ALLEN,	
8	held at the offices of Esquire	
9	Deposition Solutions, LLC, 1384	
10	- Broadway, New York, New York,	
11	pursuant to Notice, before Aydil M.	
12	Torres, a Notary Public of the	
13	State of New York.	
14		
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	ESQUIRE DEPOSITION SOLUTIONS	800.211.DEPO (3376) EsquireSolutions.com Exhibit 10

Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6232 Page 48 of 76

Page 00505 ER000748

	LUCY P. ALLEN January 18, 2018 VIRGINIA DUNCAN vs XAVIER BECERRA 3
1	
2	
3	
4	APPEARANCES:
5	
6	MICHEL & ASSOCIATES, P.C.
7	Attorneys for Plaintiffs
8	180 East Ocean Boulevard, Suite 200
9	Long Beach, California 90802
10	BY: ANNA M. BARVIR, ESQ.
11	NICHOLAS W. STADMILLER, ESQ.
12	
13	
14	STATE OF CALIFORNIA
15	DEPARTMENT OF JUSTICE
16	OFFICE OF THE ATTORNEY GENERAL
17	Attorneys for Defendant
18	300 South Spring Street, Suite 1702
19	Los Angeles, California 90013
20	BY: JOHN D. ECHEVERRIA, ESQ.
21	
22	
23	
24	
25	
	ESQUIRE BEOLUTIONS SOLUTIONS BESQUIRESOLUTIONS EsquireSolutions.com Exhibit 10

Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6233 Page 49 of 76

ER000749

Page 00506

# Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 258 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6234 Page 50 of 76

	LUCY P. ALLEN January 18, 201 VIRGINIA DUNCAN vs XAVIER BECERRA
1	
2	STIPULATIONS
3	
1	IT IS HEREBY STIPULATED AND AGREED
5	by and between the attorneys for the
6	respective parties herein, that filing,
7	sealing and the same are hereby waived.
3	IT IS FURTHER STIPULATED AND AGREED
9	that all objections, except as to the form
C	of the question, shall be reserved to the
1	time of the trial.
2	IT IS FURTHER STIPULATED AND AGREED
3	that the within deposition may be sworn to
1	and signed before any officer authorized to
5	administer an oath, with the same force
5	and effect as if signed and sworn to before
7	the Court.
3	
9	
С	
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5	

squireSolutions.com Exhibit 10 Page 00507

# Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 259 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6235 Page 51 of 76

	LUCY P. ALLEN January 18, 2018 VIRGINIA DUNCAN vs XAVIER BECERRA 5
1	
2	LUCY P. ALLEN,
3	the witness herein, having been
4	first duly sworn by a Notary Public
5	of the State of New York, was
6	examined and testified as follows:
7	THE REPORTER: Please state
8	your name for the record.
9	THE WITNESS: Lucy Allen.
10	A-L-L-E-N.
11	THE REPORTER: Will you
12	please state your address for the
13	record.
14	THE WITNESS: 1166 Avenue of
15	the Americas, New York, New York.
16	That's my work address.
17	EXAMINATION BY
18	MS. BARVIR:
19	Q. Could you state your name, title,
20	and business address once more for the record
21	for me, please?
22	A. Lucy Allen, managing director, 1166
23	Avenue of the Americas, New York, New York,
24	NERA Economic Consulting.
25	Q. Thank you. So NERA, N-E-R-A, if I



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# Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 260 of 299

#### LUCY P. ALLEN January 18, 2018 VIRGINIA DUNCAN vs XAVIER BECERRA 214 Lucy P. Allen 1 that occur in a public place or primarily 2 3 occur in a public place. So do you know how many mass 4 Ο. shooting there would be per year if the 5 definitions were not limited to public 6 7 places? If you used a completely different 8 Α. 9 -- you use just a large -- like more than 10 three people being killed anywhere? Ο. Uh-huh. 11 12 Α. I don't know the answer to that. 13 How about if you use the definition Ο. that didn't limit the event to where four or 14 15 more people were killed and not connected with another crime? 16 17 Α. I don't know the answer. Do you know for sure whether the 18 Ο. Mother Jones and Citizens Crime Commission 19 data sets you use include every public mass 20 shooting event not connected to another crime 21 22 that occurred in the 36-year period that was studied? 23 24 Α. Is your question, do they include 25 everything that would meet their definition

Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6237 Page 53 of 76



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# Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 261 of 299

# Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6238 Page 54 of 76

	LUCY P. ALLENJanuary 18, 2018VIRGINIA DUNCAN vs XAVIER BECERRA215
1	Lucy P. Allen
2	or are you trying to change the definition?
3	Q. That would meet their definition.
4	Are you certain that they've included every
5	single incident of mass shooting that meets
6	their definition within that 36-year period?
7	A. I am not certain that they have
8	included everything. I have looked at the
9	mass shootings that Dr. Kleck says that they
10	failed to include, and I found that the vast
11	majority of them did not meet the
12	definitions, but I have not done anything
13	else to determine whether to find other
14	mass shootings that they may have excluded.
15	I don't believe I recall anything in regard
16	to that.
17	Q. So you don't know what percentage
18	of shootings with four or more people killed
19	were covered by those two sources; do you?
20	A. I'm not aware of other mass
21	shootings that meet their definition, which
22	is a in general is what I understand to be
23	the common a common definition of mass
24	shooting that are not included, you know,
25	with the exception of one incident, I



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# Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 262 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6239 Page 55 of 76

	LUCY P. ALLENJanuary 18, 2018VIRGINIA DUNCAN vs XAVIER BECERRA216
1	Lucy P. Allen
2	believe.
3	Q. So you assume they cover all of
4	them but you're not certain?
5	A. I have not assumed that. I have
6	I have looked to see what other sources there
7	are of mass shootings, and I have found that
8	these are and I have not found that other
9	sources include mass shootings that they have
10	I have found that their analysis is
11	comprehensive and systemic with, you know,
12	the minor exception here and there of one
13	that I'm not sure why they included or one
14	that I'm not sure why they excluded. So I
15	have some, you know, some minor exceptions I
16	have found that both of them have a
17	systematic and comprehensive approach.
18	Q. Are you familiar with the "Gun
19	Violence Archive"?
20	A. I'm aware that Dr. Kleck mentioned
21	it and I looked at the data that Dr. Kleck
22	said that Mother Jones had in a biased way or
23	mistakenly excluded, and I found that he was
24	incorrect, and that so that is my
25	familiarity with it, is looking into the



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LUCY P. ALLEN January 18, 2018 VIRGINIA DUNCAN vs XAVIER BECERRA 285 1 Lucy P. Allen 2 Ms. Allen. 3 THE WITNESS: Thank you. 4 (Whereupon, a discussion was held off the record at this time.) 5 6 MS. BARVIR: We are back on 7 record. We are opening the record again just to introduce as 8 9 Plaintiff's 7, I believe, the 10 updated pages of Lucy Allen's 11 expert report in this matter that 12 showed the new numbers with the Las 13 Vegas incident. THE WITNESS: Correct. 14 (Plaintiff's Exhibit 7, 15 Updated Pages, marked for identification, as of this 16 date.) 17 -000-(Whereupon, the examination 18 of LUCY P. ALLEN was adjourned at 5:39 p.m.) 19 LUCY P. ALLEN 20 Subscribed and sworn to 21 2.2 before me this day 23 of , 2010. 24 NOTARY PUBLIC 25 ESOUIRE 800.211.DEPO (3376) EsquireSolutions.com

Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6240 Page 56 of 76

Page 00513 ER000755

Exhibit 10

Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.624



both sources and searched news stories on each mass shooting to obtain data on shots fired where available.<sup>17</sup> See attached Appendix B for a summary of the combined data.

22. Based on the combined data we found that large-capacity magazines (those with a capacity to hold more than 10 rounds of ammunition) are often used in mass shootings. Magazine capacity is known in 83 out of the 96 mass shootings (86%) considered in this analysis. We found that large-capacity magazines were used in the majority of mass shootings since 1982 regardless of how mass shootings with unknown magazine capacity are treated. In particular, out of 83 mass shootings with known magazine capacity, 54 involved large-capacity magazines or 65% of mass shootings with known magazine capacity. Even assuming the mass shootings with unknown magazines, the majority of mass shootings involved large capacity magazines (*i.e.*, 54 out of 96 mass shootings or 56%).

23. The combined data on mass shootings indicates that it is common for offenders to fire more than ten rounds when using a gun with a large-capacity magazine in mass shootings. In particular, in mass shootings that involved use of large-capacity magazine guns, the average number of shots fired was 99.<sup>18</sup>

# 2. Casualties in mass shootings with large-capacity magazine guns compared with other mass shootings

24. Based on our analysis of the combined mass shootings data in the past 35 years, casualties were higher in the mass shootings that involved large-capacity magazine guns than in

17-cv-1017-BEN-JLB

14 Exhibit 10 Page 00514

to another crime (such as robbery or domestic violence). See "Mayhem Multiplied: Mass Shooters and Assault Weapons," Citizens Crime Commission of New York City, 2016.

The second source covers 33 mass shootings from 1984 to 2012, in which a shooter killed four or more people and the gun used by the shooter had a magazine capacity greater than ten. All but one of the mass shooting incidents in the second source are covered by the first, but the combination of the two sources provides additional detail, such as the number of shots fired. *See* "Mass Shooting Incidents in America (1984-2012)," *Citizens Crime Commission of New York City*, <u>http://www.nycrimecommission.org/mass-shooting-incidents-america.php</u>, accessed June 1, 2017.

<sup>&</sup>lt;sup>17</sup> The October 1, 2017 Las Vegas Strip mass shooting occurred a few days before the filing of this report, so numbers for this shooting have been updated based on Mother Jones data accessed January 17, 2018.

<sup>&</sup>lt;sup>18</sup> There were 36 mass shootings in which the magazine used was known to be a large capacity magazine and the number of shots fired were known. The October 1, 2017 Las Vegas Strip mass shooting occurred a few days before the filing of this report. Details on the Las Vegas shooting are updated based on Mother Jones data accessed January 17, 2018 and "Sheriff Says More than 1,100 Rounds Fired in Las Vegas," *Las Vegas Review Journal*, November 22, 2017.

Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6242 Page 58 of 76

other mass shootings. In particular, we found an average number of fatalities or injuries of 31 per mass shooting with a large-capacity magazine versus 9 for those without.<sup>19</sup>

#### 3. Percent of mass shooters' guns legally obtained

25. The combined data on mass shootings indicates that the majority of guns used in mass shootings were obtained legally.<sup>20</sup> According to the data, shooters in at least 71% of mass shootings in the past 35 years obtained their guns legally (at least 68 of the 96 mass shootings) and at least 76% of the guns used in these 96 mass shootings were obtained legally (at least 170 of the 224 guns).<sup>21</sup>

#### C. Rate in California that victims use a firearm in self-defense in the home

26. Plaintiffs claim the banned large-capacity magazines are commonly used in the home for self-defense.<sup>22</sup> We estimated how common it is in California for a person in their home to defend themselves with a gun against an armed robber.

27. Using California-specific crime data collected by the California Department of Justice,<sup>23</sup> we estimated the number of residential robberies committed with a firearm. This estimate was based on the average annual rate for the six-year period between 2011-2016 using

<sup>&</sup>lt;sup>19</sup> An analysis of the mass shootings detailed in an article by Plaintiffs' expert Gary Kleck yielded similar results (21 average fatalities or injuries in mass shootings involving large-capacity magazines versus 8 for those without). The article covered 88 mass shooting incidents between 1994 and 2013. See Kleck, Gary, "Large-Capacity Magazines and the Casualty Counts in Mass Shootings: The Plausibility of Linkages," 17 Justice Research and Policy 28 (2016).

A 2013 study by Mayors Against Illegal Guns found that when mass shootings involved assault weapons or high capacity magazines, the number of deaths was higher. The study was based on data from the FBI and media reports covering the period January 2009 through January 2013. The study found that mass shootings where assault weapons or high-capacity magazines were used resulted in an average of 14.4 people shot and 7.8 deaths versus other mass shootings that resulted in 5.7 people shot and 4.8 deaths. *See* "Analysis of Recent Mass Shootings," *Mayors Against Illegal Guns*, September 2013.

<sup>&</sup>lt;sup>20</sup> The determination of whether guns were obtained legally is based on Mother Jones reporting.

<sup>&</sup>lt;sup>21</sup> Mother Jones did not indicate whether the guns were obtained legally for 10% of mass shootings (9 out of the 91 mass shootings covered by Mother Jones).

<sup>&</sup>lt;sup>22</sup> Complaint at 47.

<sup>&</sup>lt;sup>23</sup> "Crime in California 2016," California Department of Justice: Criminal Justice Statistics Center.

# Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 266 of 299

			Comb	App App	endix B	tinge Dat	,					
				1982 – O	ss suou	2017	7					Case
					Large			Total		Gun(s)	Offenders'	3:17
	Case	Location	Date	Source	Cap. Mag.? <sup>a</sup>	Fatalities	h Injuries	Fatalities & Injuries	Shots Fired	Obtained Legally? <sup>c</sup>	Number of Guns	-cv-01
5	ω	(2)	(3)	(†)	(2)	(9)	6	(8)	(6)	(10)	E	.017-
-	Las Vegas Strip	I Las Vegas, NV	10/1/2017	ΜJ	Yes	58 d	546 d	604 d	1,100 d	Yes d	23 d	BEN
2.	San Francisco UPS	San Francisco, CA	6/14/2017	ſW	Yes	e	2	5	•	No	6	۱-JI
З.	Pennsylvania Supermarket	Tunkhannock, PA	6/7/2017	ſΜ	No	3	0	3	59 c		2	LB
4.	Fiamma Workplace	Orlando, FL	6/5/2017	ſW		5	0	5		x	-	D
5.	Ohio Nursing Home	Kirkersville, OH	5/12/2017	ſW		3	0	3		ä	2	οςι
6.	Fresno Downtown	Fresno, CA	4/18/2017	ſW	No	3	0	3	16 <sup>f</sup>		-	ume
٦.	Fort Lauderdale Airport	Fort Lauderdale, FL	1/6/2017	ſW		5	9	п	15 B	Yes	-	ent
8.	Cascade Mall	Burlington, WA	9/23/2016	ſW		5	0	5	•		-	53
9.	Baton Rouge Police	Baton Rouge, LA	7/17/2016	ſW	Yes	3	3	9	43 h		3	-6
10.	Dallas Police	Dallas, TX	7/7/2016	ſW	Yes	5	Ξ	16		Yes	8	Fi
11.	Orlando Nightclub	Orlando, FL	6/12/2016	MJ/CC	Yes	49/50	53	102/103	110 <sup>1</sup>	Yes	2	led
12.	Excel Industries	Hesston, KS	2/25/2016	ſW	Yes	3	14	17		Yes	2	04
13.	Kalamazoo	Kalamazoo County, MI	2/20/2016	IM		9	2	8	•	Yes	1	/09
14.	San Bernardino	San Bernardino, CA	12/2/2015	MJ/CC	Yes	14/16	21	35/37	150 J	Yes	4	/18
15.	Planned Parenthood Clinic	Colorado Springs, CO	11/27/2015	ſW		3	6	12	•		-	8 F
16.	Colorado Springs	Colorado Springs, CO	10/31/2015	ſW	Yes	3	0	3	×	Yes	3	Pag
17.	Umpqua Community College	Roseburg, OR	10/1/2015	MJ/CC	Yes	9/10	6	61/81	•	Yes	9	jel
18.	Chattanooga Military Center	Chattanooga, TN	7/16/2015	MJ/CC	Ycs	5/6	2/3	6/2		Yes	3	0.6
19.	Charleston Church	Charleston, SC	6/17/2015	MJ/CC	Yes	6	-	10		Yes	-	243
20.	Trestle Trail Bridge	Menasha, WI	6/11/2015	ſW		6	-	4	•	Yes	2	3 F
Th	Marysville High School	Marysville, WA	10/24/2014	MJ/CC	Yes	s	1	9	•	Stolen	<u>ا</u>	Pag
ibi	Isla Vista	Santa Barbara, CA	5/23/2014	ſW	Yes	9	13	19	50 k	Yes	3	je 5
E7	Fort Hood	Fort Hood, TX	4/3/2014	ſW		3	12	15	•	Yes	-	59 (
540	Alturas Tribal	Alturas, CA	2/20/2014	ſW		4	2	9	•		2	of 7
25.	Washington Navy Yard	Washington, D.C.	9/16/2013	MJ/CC	No	12/13	8/7	20	× T	Yes	2	6

Page 00516

ER000758

17-cv-1017-BEN-JLB

Page 1 of 5

# Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 267 of 299

			1987 - (	And and and						
				JCODEL	/ 107					
				Large			Total		Gun(s)	Offenders
Case	Location	Date	Source	Cap. Mag.? <sup>a</sup>	<sup>b</sup> Fatalities	Injuries <sup>b</sup>	Fatalities & <sup>b</sup> Injuries	Shots Fired	Obtained Legally? <sup>c</sup>	Number o Guns
0	(2)	(3)	(†)	(2)	(9)	3	(8)	(6)	(01)	Ē
cal Center	Los Angeles. CA	2/19/1995	CC	Yes	4	0	4			,
er Company	Corpus Christi, TX	4/3/1995	MJ/CC	No	9	0	9		Yes	2
se	Fairchild Base, WA	6/20/1994	MJ/CC	Yes	5/6	23	28/29	50 <sup>r</sup>	Yes	-
cese	Aurora, CO	12/14/1993	MJ/CC	No	4	1	5		•	-
Railroad	Garden City, NY	12/7/1993	MJ/CC	Yes	9	61	25	30	Yes	-
wrant	Fayetteville, NC	8/6/1993	MJ/CC	No	4	8	12	ļ	Yes	3
ia Street	San Francisco, CA	2/1/1993	MJ/CC	Yes	6	9	15	75	No	3
	Watkins Glen, NY	10/15/1992	MJ/CC	No	5	0	5	•	Yes	1
igh School	Olivehurst, CA	5/1/1992	MJ/CC	No	4	10	14	•	Yes	2
ostal	Royal Oak, MI	11/14/1991	MJ/CC	No	5	5/4	10/9	ŀ	Yes	-
f lowa	Iowa City, IA	1661/1/11	MJ/CC	No	9	-	7		Ycs	-
cria -	Killeen, TX	10/16/1991	MJ/CC	Yes	24	20	44	100	Yes	2
	Jacksonville, FL	0661/81/9	MJ/CC	Yes	10	4	14	14	Yes	2
avure Corporation	Louisville, KY	9/14/1989	MJ/CC	Yes	6	12	21	21	Yes	5
noolyard	Stockton, CA	6861/21/1	MJ/CC	Yes	9	29/30	35/36	901	Yes	2
	Sunnyvale, CA	2/16/1988	MJ/CC	No	7	4	=	,	Yes	7
cuters	Palm Bay, FL	4/23/1987	MJ/CC	Yes	9	14/10	20/16	40 <sup>S</sup>	Yes	3
s Postal Service	Edmond, OK	8/20/1986	MJ/CC	No	15	9	21	•	Yes	3
McDonald's	San Ysidro, CA	7/18/1984	MJ/CC	Yes	52	61	41	257	Yes	3
telub	Dallas, TX	6/29/1984	MJ/CC	Yes	9	-	2		No	-
do	Miami, FL	8/20/1982	ſW	No	8	3	=	•	Yes	-
		Large Capa	city Magazir	ne Average	10.2	20.3	30.6	£.99		

17-cv-1017-BEN-JLB

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Page 00517

Page 4 of 5

	Com	Api bined Ma 1982 – C	oendix E ass Shoo October	tings Dat 2017	ta				
			Large			Total		Gun(s)	0
Location	Date	Source	Cap. Mag.? <sup>a</sup>	Fatalities <sup>b</sup>	Injuries <sup>b</sup>	Fatalities & Injuries	Shots Fired	Obtained Legally? <sup>c</sup>	z
(2)	(3)	(†)	(2)	(9)	ε	(8)	(6)	(10)	
-210C 2001	Data from Moth.	er lanae' Invaet	antion " acce	0C I amil base	17) and the Ci	tizane Crima Comu	viccion of Nav	v Vorb City ("M	due
angs, 1962-2017. capons," 2016, an	d "Citizens Crim	e Commission	of New York	City, Mass Sho	oting Incidents	s in America (1984	-2012)," acce	ssed June 1, 201	7
ates Citizens Crin	te Commission o	of New York Ci	ty data. If sou	rrces differ on d	ata, "/" is adde	d between values.	In these instar	nces, values fror	n M
ta on shots fired o	btained from CC								
capacity to hold	more than 10 rou	nds of ammuni	tion.						
s and initries									

umber of ffenders'

Guns (11)

# Notes and Sources:

Case Ξ

ĉ Data from Mother Jones ("US Mass Shootings, 1 Multiplied: Mass Shooters and Assault Weapons MJ indicates Mother Jones data. CC indicates Ci are listed first. Except where noted, all data on sl

- <sup>a</sup> Large capacity magazines are those with a capaci
  - <sup>b</sup> Offender(s) included in counts of fatalities and inju
- <sup>c</sup> The determination of whether guns were obtained legally is based on Mother Jones reporting.
- <sup>d</sup> The October 1, 2017 Las Vegas Strip mass shooting occurred a few days before the filing of this report, so numbers for this shooting have been updated based on Mother Jones data accessed January 17, 2018. Shots fired from: "Sheriff Says More than 1,100 Rounds Fired in Las Vegas," Las Vegas Review Journal, November 22, 2017. Ð
  - Shots fired from: "Killer in Supermarket Shooting Posted Chilling Videos Online, Lauding Columbine Massacre," Washington Post, June 9, 2017.
    - Shots fired from: "Hate Crime is Suspected After Gunman Kills 3 White Men in Downtown Fresno," Los Angeles Times, April 19, 2017. 00
      - Shots fired from: "Fort Lauderdale Shooting Suspect Appears in Court, Ordered Held Without Bond," Washington Post, January 9, 2017. =
        - Shots fired from: "Baton Rouge Cop Killer Left Note, Fired At Least 43 Rounds," CNN, July 9, 2017.
- Shots fired from: "We Thought It Was Part of the Music': How the Pulse Nightclub Massacre Unfolded in Orlando," The Telegraph, June 13, 2016.
  - Shots fired from: "San Bernardino Suspects Left Trail of Clues, but No Clear Motive," New York Times, December 3, 2015. -
- Shots fired from: "Sheriff: Elliot Rodger Fired 50-plus Times in Isle Vista Rampage," Los Angeles Times, June 4, 2014. ×
- Shots fired from: "Shooter Set \$10,000 on Fire in Hialcah Shooting Rampage," NBC News , July 28, 2013. -
- Shots fired from: "Police Call Santa Monica Gunman 'Ready for Battle," New York Times, June 8, 2013. Ξ
- Shots fired from: "Hialeah Gunman's Rage Over Estranged Wife Leaved 5 Dead," Sun-Sentinel, June 7, 2010. F
  - Shots fired from: "Small Town Grieves for 6, and the Killer," Los Angeles Times, October 9, 2007. 0
- Shots fired from: "National Briefing | Midwest: Ohio: Shooter At Club May Have Reloaded," New York Times, January 15, 2005.
- Shots fired from: "5 Beach Workers in Florida are Slain by Ex-Colleague," New York Times, February 10, 1996.
- Shots fired from: "Man Bent On Revenge Kills 4, Hurts 23 Psychiatrist Is First Slain In Rampage At Fairchild Air Force Base," The Seattle Times, June 21, 1994. Exhibit 10
- - Shots fired from: "6 Dead in Florida Sniper Siege; Police Seize Suspect in Massacre," Chicago Tribune, April 25, 1987.

17-cv-1017-BEN-JLB

Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6245 Page 61 of 76

Page 00518

Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 269 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6246 Page 62 of 76

# Exhibit 11

Exhibit 11 Page 00519



# Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 271 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6248 Page 64 of 76

	LOUIS KLAREVAS January 19, 2018 DUNCAN vs BECERRA 1
1	
2	UNITED STATES DISTRICT COURT
3	SOUTHERN DISTRICT OF CALIFORNIA
4	x
5	VIRGINIA DUNCAN, et al.,
6	Plaintiffs,
7	-against- No. 17-cv-1017-BEN-JLB
8	XAVIER BECERRA, in his official capacity as
9	Attorney General of the State of California,
10	Defendant.
11	x
12	
13	
14	
15	DEPOSITION OF LOUIS KLAREVAS
16	New York, New York
17	Friday, January 19, 2018
18	
19	
20	
21	
22	
23	Reported by: Aydil M. Torres, CSR
24	JOB NO. J1035515
25	
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Page 00521

# Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 272 of 299

	LOUIS KLAREVAS DUNCAN vs BECERRA	January 19, 2018 2
1		
2		
3	January 19, 2018	
4	10:04 a.m.	
5		
6		
7	Deposition of LOUIS	
8	KLAREVAS, held at the offices of	
9	Esquire Deposition Solutions, LLC,	
10	1384 Broadway, New York, New York,	
11	pursuant to Notice, before Aydil M.	
12	Torres, a Notary Public of the	
13	State of New York.	
14		
15		
16		
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Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6249 Page 65 of 76

Page 00522 ER000764

# Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 273 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6250 Page 66 of 76

	LOUIS KLAREVAS January 19, 2018 DUNCAN vs BECERRA	3 3
1		
2	APPEARANCES:	
3		
4	MICHEL & ASSOCIATES, P.C.	
5	Attorneys for Plaintiffs	
6	180 East Ocean Boulevard, Suite 200	
7	Long Beach, California 90802	
8	BY: NICHOLAS W. STADMILLER, ESQ.	
9	ANNA M. BARVIR, ESQ.	
10		
11		
12		
13	STATE OF CALIFORNIA	
14	DEPARTMENT OF JUSTICE	
15	OFFICE OF THE ATTORNEY GENERAL	
16	Attorneys for Defendant	
17	300 South Spring Street, Suite 1702	
18	Los Angeles, California 90013	
19	BY: JOSE A. ZELIDON-ZEPEDA, ESQ.	
20		
21		
22		
23		
24		
25		
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Page 00523

# Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 274 of 299

	LOUIS KLAREVAS January 19, 2018 DUNCAN vs BECERRA 4
1	
2	
3	STIPULATIONS
4	
5	IT IS HEREBY STIPULATED AND AGREED
6	by and between the attorneys for the
7	respective parties herein, that filing,
8	sealing and the same are hereby waived.
9	IT IS FURTHER STIPULATED AND AGREED
10	that all objections, except as to the form
11	of the question, shall be reserved to the
12	time of the trial.
13	IT IS FURTHER STIPULATED AND AGREED
14	that the within deposition may be sworn to
15	and signed before any officer authorized to
16	administer an oath, with the same force
17	and effect as if signed and sworn to before
18	the Court.
19	
20	
21	
22	
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24	
25	
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Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6251 Page 67 of 76

Page 00524 ER000766

# Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 275 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6252 Page 68 of 76

	LOUIS KLAREVASJanuary 19, 2018DUNCAN vs BECERRA5
1	
2	LOUIS KLAREVAS,
3	the witness herein, having been
4	first duly sworn by a Notary Public
5	of the State of New York, was
6	examined and testified as follows:
7	THE REPORTER: Please state
8	your name for the record.
9	THE WITNESS: Louis,
10	L-O-U-I-S, Klarevas,
11	K-L-A-R-E-V-A-S.
12	THE REPORTER: Please state
13	your business address for the
14	record.
15	THE WITNESS: 69-12 62nd
16	Road, Middle Village, Queens, New
17	York. Sorry, Middle Village, New
18	York 11379.
19	MR. STADMILLER: So we are
20	all taking notes on how to
21	pronounce it but you've just
22	clarified that, Klarevas.
23	THE WITNESS: Yeah, it's a
24	long "E" and then try to imagine
25	the "A"s are, like, Klarevas.

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# Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 276 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6253 Page 69 of 76

	LOUIS KLAREVASJanuary 19, 2018DUNCAN vs BECERRA227
1	Louis Klarevas
2	those opportunities.
3	Q. Have you expressed any opinion that
4	the children in the Sandy Hook school
5	shooting incident escaped while the shooter
6	was changing magazines?
7	A. That is correct, they did.
8	Q. And what is that based on?
9	A. It's based on my review of the
10	witness statements that the children gave to
11	police officers immediately following the
12	Sandy Hook massacre. These were the
13	statements of the actual children who fled.
14	Q. Now, even assuming if what you
15	are saying is true, does that indicate that
16	the magazine change in question did provide
17	additional time for victims to escape, beyond
18	the time that elapsed between the shots when
19	the shooter was not firing?
20	A. It it it did provide the time
21	necessary.
22	Q. How do you make that determination?
23	A. Well, we know that he was firing
24	well, first of all we we I make that
25	determination based on what the witness



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# Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 277 of 299

## Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6254 Page 70 of 76

	LOUIS KLAREVASJanuary 19, 2018DUNCAN vs BECERRA228
1	Louis Klarevas
2	statements say. The students said, you know,
3	that when he was changing out his magazines,
4	one of the student recognized this as an
5	opportunity, he yelled for the other
6	students, and they all ran. And in I
7	believe in one of the witness statements, one
8	of the students actually even pushed him,
9	physically pushed him aside, or grazed by him
10	and bumped him, and then all the other
11	students ran out. Additional students ran
12	out behind that student.
13	Q. Would you agree with the statement
14	that
15	"the best available information indicates
16	that mass shooters generally fire their
17	weapons slowly and deliberately with
18	substantial intervals between shots?
19	A. I disagree with that statement,
20	because we know based on audio and video
21	recordings that, in general, when mass
22	shooters undertake their attacks, they tend
23	to fire in a different kind of pattern, which
24	is burst of fires at a very rapid pace,
25	usually two to three rounds per second, if



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# Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 278 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6255 Page 71 of 76

	LOUIS KLAREVASJanuary 19, 2018DUNCAN vs BECERRA229
1	Louis Klarevas
2	you're using a semiautomatic firearm,
3	followed by, if they're continuing their
4	shooting, long pauses, and then again bursts.
5	That assumes, of course, that someone is
6	going to fire more than one magazine's worth
7	of bullets.
8	Q. Okay. Would you agree with the
9	statement that "shooters can easily change
10	detachable magazines in approximately two to
11	four seconds, depending on experience"?
12	A. I would qualify that. I mean,
13	competitive shooters probably shoot at a rate
14	of, you know, magazine changes of around 3 or
15	4 seconds. Based on what we know from mass
16	shooters and, you know, the evidence that I
17	have seen, which would be looking again at
18	video and audio tape, usually it's a little
19	bit longer. I mean, these are high stress
20	situations, you have shooters that are under
21	duress. A good example would be one that I
22	cited in my exhibits. It's the audio
23	recording of a very recent active shooting
24	involving
25	Q. The list



800.211.DEPO (3376) EsquireSolutions.com Exhibit 11 Page 00528

# Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 279 of 299

## Case 3:17-cv-01017-BEN-JLB Document 53-6 Filed 04/09/18 PageID.6256 Page 72 of 76

LOUIS KLAREVAS	
DUNCAN vs BECERRA	

January 19, 2018 230

1	Louis Klarevas
2	A. Sorry, yeah, I will do the things.
3	Exhibit 6. It would be the very last link,
4	because they're presented chronologically.
5	It is a link to a recording that the active
6	shooter actually live fed this onto a site
7	called Parascope and while he was attacking
8	Douglas County Sheriff Deputies outside of
9	Denver, Colorado, and this is a military
10	veteran. It took him approximately ten
11	seconds to change magazines and you can hear
12	that. So the idea that somehow and also
13	we know the Las Vegas shooter, his shortest
14	interval of pause between firing burst of
15	rounds onto the concert attendants attendees
16	was, I believe, 25 seconds. So the idea that
17	it takes two to four seconds is really maybe
18	theoretical, but it's really something you
19	perhaps see in competitive shooting. It's
20	not something that we see, in terms of active
21	shooters.
22	Q. In terms of active shooters, do you
23	have any opinion on what the average time for
24	them to change a magazine attachment would
25	be?



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## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 280 of 299

#### Case 3:17-cv-01017-BEN-JLB Document 53-7 Filed 04/09/18 PageID.6268 Page 8 of 194



DEPARTMENT OF THE TREASURY BUREAU OF ALCOHOL, TOBACCO AND FIREARMS WASHINGTON, D.C. 20226

JUL 06 1989

MEMORANDUM T0:	Director	
FROM:	Associate Director (Compliance Operations)	
SUBJECT:	Report and Recommendation on the Importability of Certain Semiautomatic Rifles	

The working group has completed its evaluation of the semiautomatic rifles whose importation was suspended pending a determination as to whether these weapons are, as required by 18 U.S.C. § 925(d)(3), of a type "generally recognized as particularly suitable for or readily adaptable to sporting purposes".

Attached for your review and approval is the report and recommendation on the importability of these rifles.

mich. Black Daniel Black

Attachment shew E. Higgins 7/6/89 Approved. Disapprove:

Page 1

Report and Recommendation on the Importability of Certain Semiautomatic Rifles Exhibit 12 Page 00535

### Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 281 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-7 Filed 04/09/18 PageID.6269 Page 9 of 194

#### REPORT AND RECOMMENDATION OF THE ATF WORKING GROUP ON THE IMPORTABILITY OF CERTAIN SEMIAUTOMATIC RIFLES

#### SUSPENSION OF ASSAULT-TYPE RIFLE IMPORTATIONS

On March 14, 1989, ATF announced that it was suspending, effective immediately, the importation of several makes of assault-type rifles, pending a decision as to whether these weapons meet the statutory test that they are of a type generally recognized as particularly suitable for or readily adaptable to sporting purposes. The announcement stated that ATF would not approve, until further notice, the importation of AKS-type weapons, Uzi carbines, FN/FAL-type weapons, FN/FNC-type weapons and Steyr Aug semiautomatic weapons. On April 5, 1989, the suspension was expanded to include all similar assault-type rifles.

For purposes of this suspension, assault-type rifles were rifles which generally met the following criteria:

- a. military appearance
- b. large magazine capacity
- c. semiautomatic version of a machinegun

Based on these criteria, ATF suspended action on pending applications and suspended outstanding permits covering certain firearms listed in Attachment 1. These included both centerfire and .22 rimfire caliber firearms. At that time, ATF indicated that the reexamination of these weapons would take approximately 90 days.

This ATF working group was established to conduct the reevaluation of the importability of these semiautomatic rifles. This report represents the findings and recommendations of the working group.

#### BACKGROUND

Section 925(d)(3) of Title 18, United States Code, as amended, provides in pertinent part that:

The Secretary shall authorize a firearm...to be imported or brought into the United States...if the firearm...

(3) is of a type that does not fall within the definition of a firearm as defined in section 5845(a) of the Internal Revenue Code of 1954 and is generally recognized as particularly suitable for or readily

Page 2

Report and Recommendation on the Importability of Certain Semiautomatic Rifles Exhibit 12 Page 00536

#### Case 3:17-cv-01017-BEN-JLB Document 53-7 Filed 04/09/18 PageID.6270 Page 10 of 194

adaptable to sporting purposes, excluding surplus military firearms. . .

This provision was originally enacted by Title IV of the Omnibus Crime Control and Safe Streets Act of 1968, and was also contained in Title I of the Gun Control Act of 1968, which amended Title IV later that year. According to the Senate Report on Title IV, this provision was intended to "curb the flow of surplus military weapons and other firearms being brought into the United States which are not particularly suitable for target shooting or hunting." S. Rep. No. 1097, 90th Cong. 2d Sess. 80, 1968 U.S. Code Cong. and Admin. News 2112, 2167.

Moreover, there is legislative history which indicates that Congress intended the standard to allow the importation of traditional sporting rifles, while excluding military-type rifles. The Senate Report on the Gun Control Act observed that the importation standards "... are designed and intended to provide for the importation of quality made, sporting firearms, including ... rifles such as those manufactured and imported by Browning and other such manufacturers and importers of firearms." S. Rep. No. 1501, 90th Cong. 2d Sess. 38 (1968). Significantly, the rifles being imported by Browning at that time were semiautomatic and manually operated traditional sporting rifles of high quality.<sup>1</sup>

An explanation of the effect of this section by one of the sponsors of the bill specifically stated that military firearms would not meet the "sporting purposes" test for importation. The mere fact that a military firearm may be used in a sporting event does not make it importable as a sporting firearm<sup>2</sup>.

There is a reference in the Senate Report on Title IV which notes that the importation prohibition "... would not interfere with the bringing in of currently produced firearms, such as rifles ... of recognized quality which are used for hunting and for recreational purposes, or for personal protection." S. Rep. No. 1097, 90th Cong. 2d Sess. 80, 1968 U.S. Code Cong. and Admin. News 2112, 2167. However, this language is not inconsistent with the expressed purpose of restricting importation to firearms particularly suitable for target shooting or hunting since firearms particularly suitable for those purposes can obviously be used for other purposes such as recreational shooting and personal protection.

The determination of a weapon's suitability for sporting purposes "rest[s] directly with the Secretary of the Treasury." 114 Cong. Rec. 27465 (1968) (Statement of Sen. Murphy). While the legislative history suggests that the term "sporting purposes" refers to the traditional sports of target shooting, trap and skeet shooting, and hunting, the statute itself provides no criteria beyond the "generally recognized" language of section 925(d)(3). S. Rep. No. 1097, 90th Cong. 2d Sess. 80, 1968 U.S. Code Cong. and Admin. News 2167. The Senate Report on the Gun Control Act stated:

The difficulty of defining weapons characteristics to meet this target [of eliminating importation of weapons used in crime] without discriminating against sporting quality firearms, was a major reason why the Secretary of the Treasury has been given fairly broad discretion in defining and administering the import prohibition.

S. Rep. No. 1501, 90th Cong. 2d Sess. 38 (1968).

Page 3

Report and Recommendation on the Importability of Certain Semiautomatic Rifles Exhibit 12 Page 00537

#### Case 3:17-cv-01017-BEN-JLB Document 53-7 Filed 04/09/18 PageID.6271 Page 11 of 194

Following enactment of the Gun Control Act in 1968, the Secretary established a Firearms Evaluation Panel to provide guidelines for implementation of the "sporting purposes" test of section 925(d)(3). This panel was composed of representatives from the military, law enforcement, and the firearms industry. The panel focused its attention on handguns and recommended the adoption of factoring criteria to evaluate the various types of handguns. These factoring criteria are based upon such considerations as overall length of the firearm, caliber, safety features, and frame construction. An evaluation sheet (ATF Form 4590) was developed thereafter by ATF and put into use for evaluating handguns pursuant to section 925(d)(3). Attachment 2.

The 1968 Firearms Evaluation Panel did not propose criteria for evaluating rifles and shotguns under section 925(d)(3). Other than surplus military firearms which Congress addressed separately, long guns being imported prior to 1968 were generally conventional rifles and shotguns specifically intended for sporting purposes. Thus, in 1968, there was no cause to develop criteria for evaluating the sporting purposes of rifles and shotguns. Until recently, all rifles and shotguns were approved for importation so long as they were not otherwise excluded by section 925(d)(3). Only rifles and shotguns covered by the National Firearms Act (NFA), 26 U.S.C. S 5845(a) (for example, machineguns and short-barreled rifles and shotzuns), and surplus military rifles and shotguns had been denied importation.

The Firearms Evaluation Panel did briefly comment on whether a model BM59 Beretta, 7.62mm NATO Caliber Sporter Version Rifle was suitable for sporting purposes. Minutes of the Firearms Advisory Panel, December 10, 1968. Attachment 3. It was the consensus of the Panel that this rifle did have a particular use in target shooting and hunting. Accordingly, it was recommended that importation of the Beretta BM59, together with the SIG-AMT 7.62mm NATO Caliber Sporting Rifle and the Cetme 7.62mm NATO Caliber Sporting Rifle, be authorized for importation. (The Beretta BM59 and the Cetme, the predecessor to the HK91, are two of the rifles whose importation has been suspended. The SIG-AMT is no longer being produced.) However, the Panel recommended that importation of these weapons should include the restriction that they not possess combination flash suppressors/grenade launchers.

The working group found the Panel's consideration of these rifles to be superficial and unpersuasive. The vast majority of the work of the 1968 Panel was devoted to handguns and the establishment of the factoring criteria for the importation of handguns. Indeed, we found compelling evidence that these rifles are not generally recognized as particularly suitable for sporting purposes.

The first time that ATF looked beyond the restrictions on NFA and surplus military rifles and shotguns and undertook a meaningful analysis under the "sporting purposes" test was in 1984. At that time, ATF was faced with a new breed of imported shotgun. It was clear that the historical assumption that all shotguns were sporting was no longer viable. Specifically, ATF was asked to determine whether the Striker-12 shotgun was suitable for sporting purposes. This shotgun is a military/law enforcement weapon initially designed and manufactured in South Africa for riot control. When the importer was asked to provide evidence of sporting purposes for the weapon, ATF was provided information that the weapon was suitable for police/combat style competitions. ATF determined that this type of competition did not constitute "sporting purposes, such as hunting, and trap and skeet shooting. Accordingly, importation was denied. Attachment 4.

Page 4

#### Case 3:17-cv-01017-BEN-JLB Document 53-7 Filed 04/09/18 PageID.6272 Page 12 of 194

Thereafter, in 1986, the Gilbert Equipment Company requested that the USAS-12 shotgun be classified as a sporting firearm under section 925(d)(3). After examination and testing of the weapon, ATF found that it was a semiautomatic version of a selective fire military-type assault shotgun. In this case, ATF determined that, due to its weight, size, bulk, designed magazine capacity, configuration, and other factors, the USAS-12 was not particularly suitable for or readily adaptable to sporting purposes. Again, ATF refused to recognize police/combat competitions as a sporting purpose under section 925(d)(3). The shotgun was reviewed on the basis of its suitability for traditional shotgun sports of hunting, and trap and skeet shooting and its importation was denied. Attachment 5. This decision was upheld by the United States District Court in <u>Gilbert</u> Equipment Company, Inc. v. Higgins, 709 F. Supp. 1071 (S.D. Ala. 1989). The case is currently on appeal to the Eleventh Circuit.

These two cases involving shotguns represent ATF's first thorough examination of the suitability of certain combat-type weapons for sporting purposes. In these cases ATF adopted an interpretation of sporting as being limited to certain traditional sports and not simply any lawful activity in which the weapons might be employed.

#### ANALYSIS

#### A. Defining the type of weapon under review.

As noted above, section 925(d)(3) expressly provides that the Secretary shall authorize the importation of a firearm that is of a <u>type</u> that is generally recognized as particularly suitable for sporting purposes. The legislative history also makes it clear that the Secretary shall scrutinize types of firearms in exercising his authority under section 925(d). Specifically, in its explanation of section 925(d)(3), the Senate Report on the Gun Control Act stated:

This subsection gives the Secretary authority to permit the importation of ammunition and certain <u>types</u> of firearms--(1) those imported for scientific or research purposes or for use in competition or training under chapter 401 of title 10 of the United States Code; (2) an unserviceable firearm other than a machinegun; (3) those firearms not coming within the purview of the National Firearms Act (26 U.S.C. 5801, <u>et seq.</u>) and suitable for sporting purposes (in the case of surplus military weapons this type is limited to shotguns and rifles) and those taken out of the United States. (Emphasis added.)

S. Rep. No. 1501, 90th Cong. 2d Sess. 38 (1968).

In light of the statutory mandate that types of firearms be scrutinized, the working group first attempted to determine whether the semiautomatic rifles suspended from importation fall within a type of firearm.

The working group determined that the semiautomatic rifles in question are generally semiautomatic versions of true selective fire military assault rifles.<sup>3</sup> As a class or type of firearm they are often referred to as "assault rifles," "assault-type rifles," "military style rifles," or "paramilitary rifles."<sup>4</sup> Since we are only concerned with semiautomatic rifles, it is somewhat of a misnomer to refer to these weapons as "assault rifles." True assault rifles are selective fire

Page 5

#### Case 3:17-cv-01017-BEN-JLB Document 53-7 Filed 04/09/18 PageID.6273 Page 13 of 194

weapons that will fire in a fully automatic mode.<sup>5</sup> For the purposes of this paper, it was necessary to settle on one term that best describes the weapons under consideration, and we will refer to these weapons as "semiautomatic assault rifles." They represent a distinctive type of rifle distinguished by certain general characteristics which are common to the modern military assault rifle. The modern military assault rifle, such as the U.S. M16, German G3, Belgian FN/FAL, and Soviet AK47, is a weapon designed for killing or disabling the enemy and, as described below, has characteristics designed to accomplish this purpose.

We found that the modern military assault rifle contains a variety of physical features and characteristics designed for military applications which distinguishes it from traditional sporting rifles.<sup>6</sup> These military features and characteristics (other than selective fire) are carried over to the semiautomatic versions of the original military rifle. These features and characteristics are as follows:

1. Military Configuration.

- a. Ability to accept a detachable magazine. Virtually allmodern military firearms are designed to accept large, detachable magazines.<sup>7</sup> This provides the soldier with a fairly large ammunition supply and the ability to rapidly reload. Thus, large capacity magazines are indicative of military firearms. While detachable magazines are not limited to military firearms, most traditional semiautomatic sporting firearms, designed to accommodate a detachable magazine, have a relatively small magazine capacity. In addition, some States have a limit on the magazine capacity allowed for hunting, usually 8 rounds or less.<sup>8</sup> That a firearm is designed and sold with a large capacity magazine, e.g., 20-30 rounds, is a factor to be considered in determining whether a firearm is a semiautomatic assault rifle.
- b. Folding/telescoping stocks. Many military firearms incorporate folding or telescoping stocks.<sup>9</sup> The main advantage of this item is portability, especially for airborne troops. These stocks allow the firearm to be fired from the folded position, yet it cannot be fired nearly as accurately as with an open stock. With respect to possible sporting uses of this feature, the folding stock makes it easier to carry the firearm when hiking or backpacking. However, its predominant advantage is for military purposes, and it is normally not found on the traditional sporting rifle.
- c. Pistol grips. The vast majority of military firearms employ a well-defined pistol grip that protrudes conspicuously beneath the action of the weapon.<sup>10</sup> In most cases, the "straight line design" of themilitary weapon dictates a grip of this type so that the shooter can hold and fire the weapon. Further, a pistol grip can be an aid in one-handed firing of the weapon in a combat situation. Further, such grips were designed to assist in controlling machineguns during automatic fire. On the other hand, the vast majority of sporting firearms employ a more traditional pistol grip built into the wrist of the stock of the firearm since one-handed shooting is not usually employed in hunting or competitive target competitions.
- d. Ability to accept a bayonet. A bayonet has distinct military purposes.<sup>11</sup> First, it has a psychological affect on the enemy. Second, it enables soldiers to fight in close quarters

Page 6

Case 3:17-cv-01017-BEN-JLB Document 53-7 Filed 04/09/18 PageID.6274 Page 14 of 194

with a knife attached to their rifles. We know of no traditional sporting application for a bayonet.

- e. Flash suppressor. A flash suppressor generally serves one or two functions. First, in military firearms it disperses the muzzle flash when the firearm is fired to help conceal the shooter's position, especially at night. A second purpose of some flash suppressors is to assist in controlling the "muzzle climb" of the rifle, particularly when fired fully automatic.<sup>12</sup> From the standpoint of a traditional sporting firearm, there is no particular benefit in suppressing muzzle flash. Those flash suppressors which also serve to dampen "muzzle climb" have a limited benefit in sporting uses by allowing the shooter to reacquire the target for a second shot. However, the barrel of a sporting rifle can be modified by "magna-porting" to achieve the same result. There are also muzzle attachments for sporting firearms to assist in the reduction of muzzle climb. In the case of military-style weapons that have flash suppressors incorporated in their design, the mere removal of the flash suppressor may have an adverse impact on the accuracy of the firearm.
- f. Bipods. The majority of military firearms have bipods as an integral part of the firearm or contain specific mounting points to which bipods may be attached.<sup>13</sup> The military utility of the bipod is primarily to provide stability and support for the weapon when fired from the prone position, especially when fired fully automatic. Bipods are available accessory items for sporting rifles and are used primarily in long-range shooting to enhance stability. However, traditional sporting rifles do not come equipped with bipods, nor are they specifically designed to accommodate them. Instead, bipods for sporting firearms are generally designed to attach to a detachable "sling swivel mount" or simply clamp onto the firearm.
- g. Grenade launcher. Grenade launchers are incorporated in the majority of military firearms as a device to facilitate the launching of explosive grenades.<sup>14</sup> Such launchers are generally of two types. The first type is a flash suppressor designed to function as a grenade launcher. The second type attaches to the barrel of the rifle either by screws or clamps. We are not aware of any particular sporting use for grenade launchers.
- h. Night sights. Many military firearms are equipped with luminous sights to facilitate sight alignment and target acquisition in poor light or darkness.<sup>15</sup> Their uses are generally for military and law enforcement purposes and are not usually found on sporting firearms since it is generally illegal to hunt at night.
- 2. Whether the weapon is a semiautomatic version of a machinegun.

The vast majority of modern military firearms are selective fire, <u>i.e.</u>, they can shoot either fully automatic or semiautomatic. Since machineguns are prohibited from importation (except for law enforcement use) the manufacturers of such weapons have developed semiautomatic versions of these firearms.<sup>16</sup>

3. Whether the rifle is chambered to accept a centerfire cartridge case having a length of 2.25 inches or less.

Page 7

#### Case 3:17-cv-01017-BEN-JLB Document 53-7 Filed 04/09/18 PageID.6275 Page 15 of 194

Modern military assault rifles and submachineguns are generally chambered to accept a centerfire cartridge case of 2.25 inches or less.<sup>17</sup> On the other hand, while many traditional sporting rifles will fire a cartridge of 2.25 inches or less, such firearms usually do not have the other military features outlined in Items 1a-h.

These features and characteristics are not usually found on traditional sporting firearms.<sup>18</sup> This is not to say that a particular rifle having one or more of the listed features should necessarily be classified as a semiautomatic assault rifle. Indeed, many traditional sporting firearms are . semiautomatic or have detachable magazines. Thus, the criteria must be viewed in total to determine whether the overall configuration places the rifle fairly within the semiautomatic assault rifle category.

Using these criteria, we determined that, on balance, all of the firearms on the original suspension list are properly included in the semiautomatic assault rifle category, with the exception of the .22 rimfire caliber rifles and the Valmet Hunter. While the .22 rimfire caliber rifles bear a striking resemblance to the true assault rifle, these rifles employ, by and large, conventional .22 rimfire caliber semiautomatic mechanisms. Moreover, they are not semiautomatic versions of a machinegun and contain only a few of the other relevant characteristics. Further, the working group determined that, in general, .22 caliber rifles are generally recognized as suitable for small game hunting. The Valmet Hunter, while based on the operating mechanism of the AK47 assault rifle, has been substantially changed so that it is now akin to a traditional sporting rifle and does not properly fall within the semiautomatic assault rifle category. More specifically, its receiver has been modified and its pistol grips, bayonet, and flash suppressor have been removed. The trigger mechanism has been moved to the rear of the modified receiver to facilitate its use with a traditional sporting stock. Also, its military-style sights have been replaced with traditional sporting-style sights. See Attachment 6.

#### B. Scope of "Sporting Purposes".

The second step of our process was to determine the scope of "sporting purposes" as used in the statute. This is a critical aspect of the process. The broadest interpretation could take in virtually any lawful activity or competition which any person or groups of persons might undertake. Under this interpretation, any rifle could meet the "sporting purposes" test. A narrower interpretation which focuses on the traditional sports of hunting and organized marksmanship competition would result in a more selective importation process.<sup>20</sup>

To determine the proper interpretation, we consulted the statute itself, its legislative history, applicable case law, the work of the original Firearms Evaluation Panel, and prior interpretations by ATF. In terms of the statute itself, the structure of the importation provisions would suggest a somewhat narrow interpretation. In this regard, firearms are prohibited from importation (section 922(1)) with certain specific exceptions (section 925(d)(3)). A broad interpretation which permits virtually any firearm to be imported because someone may wish to use it in some lawful shooting activity would render the statute meaningless.

As discussed earlier, the legislative history suggests a narrow meaning and indicates that the term "sporting purposes" refers to the traditional sports of target shooting, skeet and trap shooting, and hunting. Moreover, the history discussed earlier strongly suggests that Congress intended the provision to allow the importation of traditional sporting type rifles while excluding military type rifles. There is nothing in its history to indicate that it was intended to recognize every conceivable

Page 8

#### Case 3:17-cv-01017-BEN-JLB Document 53-7 Filed 04/09/18 PageID.6276 Page 16 of 194

type of activity or competition which might employ a firearm. To the contrary, the history indicates that mere use in some competition would not make the rifle a sporting rifle.

Finally, the 1968 Firearms Evaluation Panel specifically addressed at least one informal shooting activity and determined that it was not a legitimate sporting purpose under the statute. The panel addressed what is commonly referred to as "plinking" (shooting at randomly selected targets such as bottles and cans). It was the Panel's view that "while many persons participated in this type of activity and much ammunition was expended in such endeavors, it was primarily a pastime and could not be considered a sport for the purposes of importation. . ." See Attachment 3.

Based on the above, the working group determined that the term "sporting purpose" should properly be given a narrow reading. It was determined that while hunting has been a recognized rifle sport for centuries, and competitive target shooting is a recognized rifle sport, the so-called activity of plinking is not a recognized sport. Moreover, we believe that reference to sporting purposes was intended also to stand in contrast to military and law enforcement applications. Consequently, the working group does not

believe that police/combat-type competitions should be treated as sporting activities. This position is supported by the court's decision in <u>Gilbert Equipment Company</u>, Inc., v Higgins, 709 F. Supp. 1071 (S.D. Ala. 1989) and is consistent with prior interpretations of ATF as noted on pages 4 and 5 in discussing the Striker-12 shotgun and USAS-12 shotgun.

#### C. Suitability.

The final step in our review involved an evaluation of whether semiautomatic assault rifles are a type of rifle generally recognized as particularly suitable for or readily adaptable to the traditional sporting applications discussed above.

The criminal misuse of semiautomatic assault rifles is a matter of significant public concern and was an important factor in the decision to suspend their importation. Nevertheless, the working group did not consider criminal misuse as a factor in its analysis of the importability of this type of rifle. Instead, the working group confined its analysis to the question of whether this type of rifle meets the test provided in section 925(d)(3).

Rather than criminal misuse, our comprehensive examination of this issue focused on the legal analysis and technical assessment of these firearms discussed earlier. In addition, the working group used the information gathered under Items 1-7 outlined in the next section in determining whether this type of firearm is generally recognized as particularly suitable for sporting purposes. These items take into account technical and marketing data, expert opinions, the recommended uses of the firearms, and data on the actual uses for which the weapons are employed in this country.

In evaluating these firearms, we believe that all rifles which are fairly typed as semiautomatic assault rifles should be treated the same. Therefore, the fact that there may be some evidence that a particular rifle of this type is used or recommended for sporting purposes should not control its importability.<sup>21</sup> Rather, all findings as to suitability of these rifles as a whole should govern each rifle within this type.

Report and Recommendation on the Importability of Certain Semiautomatic Rifles Exhibit 12 Page 00543
## Case 3:17-cv-01017-BEN-JLB Document 53-7 Filed 04/09/18 PageID.6277 Page 17 of 194

This is consistent with the approach taken with respect to handguns since 1968. Although certain handguns may be used or recommended for sporting purposes, they may fall within the type of easily concealable handguns barred from importation by the administrative factoring criteria used by ATF to determine the importability of handguns. Furthermore, a pistol specifically designed for target shooting, but lacking a safety as required by the factoring criteria, would be a type of handgun prohibited from importation as not particularly suitable for sporting purposes for this reason. Finally, just as ATF allows handguns to be modified so as to meet the factoring criteria, a semiautomatic assault rifle could be modified into a sporting configuration and be importable, as was done in the case of the Valmet Hunter referred to earlier.

## D. Evaluation of Information from Outside Sources

As part of our comprehensive analysis as to whether semiautomatic assault rifles meet the statutory criteria for importation, the following sources of information were also considered:

- How has the weapon been advertised, marketed and categorized by the manufacturer and/or importer?
- 2. How has the use of the rifle been described by firearms technical writers?
- 3. What is the rifle's reported use by importers?
- 4. Do hunting guides recommend the rifle?
- 5. Do editors of hunting magazines recommend the rifle?
- 6. Is the rifle used in target shooting competitions?
- 7. Do State game commissions allow the use of the rifle to hunt?

Items 1-6 focus upon how the rifles are marketed, advertised, and recommended for use. Item 7 addresses the legal restrictions pertaining to the use of the weapons for sporting purposes.

The working group reviewed the advertising and marketing literature concerning each of the weapons (Item 1) and reviewed evaluations of the firearms by technical writers (Item 2). In addition, the working group solicited information from the importers of the weapons and other knowledgeable sources (Items 3-6).

Questionnaires were drafted and sent out to licensed hunting guides, State game and fish commissions, local hunting associations, competitive shooting groups, and hunting/shooting magazine editors to determine the extent to which the weapons are used for sporting purposes or recommended for such use. The working group believed that the actual uses of the weapons for sporting purposes would be a factor to be considered in determining whether this type of rifle meets the sporting purposes test.

Page 10

## Case 3:17-cv-01017-BEN-JLB Document 53-7 Filed 04/09/18 PageID.6278 Page 18 of 194

The review of advertising and marketing literature indicates that these rifles are not generally marketed for hunting or competitive shooting. The review of the technical evaluations revealed that these rifles are not regarded as suitable for these sporting activities.22

To the extent that the technical evaluations made recommendations with respect to the use of the rifles suspended from importation, the majority recommended them for law enforcement or military use or for activities such as collecting, plinking, home and self-defense, and combat target shooting. Only 5 of over 50 evaluations reviewed contained recommendations for the use of these firearms for hunting purposes.

The importers were asked to submit information concerning the sporting uses of the semiautomatic rifles they import. Thirty-nine importers were asked to submit this information and 19 responded. In general, their comments were conclusory and stated that their weapons could be used for sporting purposes. A small number of importers, <u>e.g.</u>, Gun South, Inc., and Heckler & Koch, Inc., provided more specific data showing the sporting uses made of their firearms by their customers.

Of 3 hunting associations to whom questionnaires were sent, 2 responded. They stated that they place no restrictions on the use of semiautomatic rifles by their members, on the minimum caliber of ammunition used to hunt large game, or on the number of rounds allowed in semiautomatic rifle magazines. However, over 1,800 hunting guides were sent questionnaires and, of these, 706 responded. Over 73 percent of those responding indicated that their patrons used either bolt or lever action rifles for hunting. Only 10 of the 706 guides indicated that their patrons had used any of the rifles whose importation had been temporarily suspended.

Of the 20 hunting/shooting editors to whom questionnaires were sent, 14 responded. Nine of the fourteen editors recommended semiautomatic rifles for use in hunting large game, including 5 who recommended use of any of the rifles subject to the temporary suspension. Eleven of the fourteen editors recommended semiautomatic rifles for target competitions, including 7 who recommended semiautomatic assault rifles for such use.

The recommendations of editors were contradictory. One editor pointed out that what made the assault rifle successful as a military weapon made the semiautomatic version totally unfit for any other use. On the other hand, another editor stated that semiautomatic rifles had certain advantages over conventional sporting rifles especially for the physically disabled and left-handed shooters. While this may be true, there appears to be no advantage to using a semiautomatic assault rifle as opposed to a semiautomatic sporting rifle.

A total of 54 competitive shooting groups were sent a questionnaire and 53 groups responded (some of the responses were from unsolicited groups). Fifty of these groups indicated that they sponsor high power rifle competition events. While none of the groups prohibited the use of the semiautomatic assault rifles in their competitions, none stated that any of the rifles covered by the temporary suspension were used in a specific event.

Finally, the information gathered under Item 7 reveals that most of these weapons could legally be used in most States for most hunting purposes.

Page 11

Report and Recommendation on the Importability of Certain Semiautomatic Rifles Exhibit 12 Page 00545

## Case 3:17-cv-01017-BEN-JLB Document 53-7 Filed 04/09/18 PageID.6279 Page 19 of 194

The working group reviewed all of the information gathered under Items 1-6 and determined that while these weapons may legally be used for sporting purposes in most States, the evidence was compelling that, as a type of firearm, the semiautomatic assault rifle is not generally recognized as particularly suitable for sporting purposes. The working group found persuasive the technical and expert evaluations of these firearms which generally did not recommend them as particularly suitable for sporting purposes. The group was also impressed by the comments of the hunting guides which showed that these rifles were not widely used for hunting purposes. The comments of the hunting guides are consistent with the opinion of the technical experts who generally do not recommend the rifles for hunting purposes.

The opinions of the editors were fairly divided with respect to the sporting uses of these rifles. The importers generally recommended their own weapons for such uses. The competitive shooting groups indicated that the rifles could be used in certain shooting events. Thus, while there was some evidence that these rifles could be used for hunting and target shooting, there was no evidence of any widespread use for such purposes. The mere fact that they are not generally prohibited from use for sporting purposes does not mean that the rifles meet the test for importation.

#### **CONCLUSIONS**

The working group has dealt with a complex issue, the resolution of which has required the group to take into account interpretations of law, technical assessments of firearms and their physical characteristics, marketing data, the assessment of data compiled from responses to questionnaires and, finally, Bureau expertise with respect to firearms. We fully recognize that particular findings as well as the results will be controversial.

From the cross section of representation within ATF, we have brought to bear our technical, legal, and administrative expertise to resolve the issues in what we believe to be a fair manner, taking into consideration all points of view. While some of the issues were difficult to resolve, in the end we believe that the ultimate conclusion is clear and compelling. These semiautomatic assault rifles were designed and intended to be particularly suitable for combat rather than sporting applications. While these weapons can be used, and indeed may be used by some, for hunting and target shooting, we believe it is clear that they are not generally recognized as particularly suitable for these purposes.

The purpose of section 925(d)(3) was to make a limited exception to the general prohibition on the importation of firearms, to preserve the sportsman's right to sporting firearms. This decision will in no way preclude the importation of true sporting firearms. It will only prevent the importation of military-style firearms which, although popular among some gun owners for collection, self-defense, combat competitions, or plinking, simply cannot be fairly characterized as sporting rifles.

Therefore, it is the finding of the working group that the semiautomatic assault rifle is not a type of firearm generally recognized as particularly suitable for or readily adaptable to sporting purposes and that importation of these rifles should not be authorized under 18 U.S.C. § 925(d)(3).

#### Page 12

#### Case 3:17-cv-01017-BEN-JLB Document 53-7 Filed 04/09/18 PageID.6280 Page 20 of 194

Based on our evaluation, we recommend that the firearms listed on Attachment 7 not be authorized for importation. For the reasons discussed in this report, we recommend that the firearms listed on Attachment 8 be authorized for importation. These are the .22 rimfire caliber rifles and the Valmet Hunter which we do not believe are properly included in the category of semiautomatic assault rifles. Attachment 9 is a compilation of the responses from the questionnaires. Attachment 10 combines the criteria for identifying semiautomatic assault rifles and the items considered in assessing suitability. Attachments 11 and 12 contain the data compiled for each of the criteria listed in Attachment 10. Finally, Attachment 13 contains the source materials used in locating persons and organizations who were sent questionnaires.

## NOTES

1. Paul Wahl, ed., Gun Trader's Guide, 13th Edition, (South Hackensack, NJ. 1987), 155-162.

2. Although a firearm might be recognized as "suitable" for use in traditional sports, it would not meet the statutory criteria unless it were recognized as <u>particularly</u> suitable for such use. Indeed, Senator Dodd made clear that the intent of the legislation was to" [regulate] the importation of firearms by excluding surplus military handguns; and rifles and shotguns that are not <u>truly</u> suitable for sporting purposes." 114 Cong. Rec. 13325 (1968) (Statement of Sen. Dodd) [emphasis added].

Similarly, it is apparent that the drafters of the legislation did not intend for "sports" to include every conceivable type of activity or competition which might employ a firearm; otherwise a "sporting purpose" could be advanced for every firearm sought to be imported. For example, in response to Sen. Hansen's question concerning the meaning of "sporting purposes" in the bill which became section 925(d), Senators Dodd and Hansen engaged in the following colloquy:

Mr. HANSEN. Would the Olympic shooting competition be a "sporting purpose?"

Mr. DODD. I would think so.

Mr. HANSEN. What about trap and skeet shooting?

Mr. DODD. I would think so. I would think trap and skeet shooting would certainly be a sporting activity.

Mr. HANSEN. Would the Camp Perry national matches be considered a "sporting purpose?"

Mr. DODD. Yes: that would not [sic] fall in that arena. It should be described as a sporting purpose.

Mr. HANSEN. I understand the only difference is in the type of firearms used at Camp Perry which includes a wide variety of military types as well as commercial.

#### Page 13

Case 3:17-cv-01017-BEN-JLB Document 53-7 Filed 04/09/18 PageID.6281 Page 21 of 194

Would all of these firearms be classified as weapons constituting a "sporting purpose?"

Mr. DODD. No. I would not say so. I think when we get into that, we definitely get into military type of weapon for use in matches like these at Camp Perry; but I do not think it is generally described as a sporting weapon. It is a military weapon. I assume they have certain types of competition in which they use these military weapons as they would in an otherwise completely sporting event. I do not think that fact would change the nature of the weapon from a military to a sporting one.

Mr. HANSEN. Is it not true that military weapons are used in Olympic competition also?

Mr. DODD. I do not know. Perhaps the Senator can tell me. I am not well informed on that.

Mr. HANSEN. It is my understanding that they are. Would the Senator be inclined to modify his response if I say that is true? (27461)

Mr. DODD. It is not that I doubt the Senator's word. Here again I would have to say that if a military weapon is used in a special sporting event, it does not become a sporting weapon. It is a military weapon used in a special sporting event. I think the Senator would agree with that. I do not know how else we could describe it.

Mr. HANSEN. If I understand the Senator correctly, he said that despite the fact that a military weapon may be used in a sporting event it did not, by that action become a sporting rifle Is that correct?

Mr. DODD. That would seem right to me ..... As I said previously the language says no firearms will be admitted into this country unless they are genuine sporting weapons...... I think the Senator and I know what a genuine sporting gun is.

114 Cong. Rec. 27461-62 (1968).(Emphasis added.)

- Ken Warner, ed., <u>Gun Digest 1989</u>, (Northbrook, II. 1988), pp. 293-300; William S. Jarrett, ed., <u>Shooter's Bible, No. 80</u>, (Hackensack, NJ. 1988), pp. 345-363; Edward Clinton Ezell, <u>Small Arms of the World</u>, (Harrisburg, Pa. 1983), p. 844; Pete Dickey, "The Military Look-Alikes," <u>American Rifleman</u>, (April 1980), p. 31. Also, see generally, Ian V. Hogg, ed., <u>Jane's Infantry Weapons</u>, <u>1987-88</u>, (New York 1987); Jack Lewis, ed., <u>The Gun Digest</u> <u>Book of Assault Weapons</u>, (Northbrook, II. 1986).
- Art Blatt, "Tomorrow's State-of-the-Art Sporting Rifle," <u>Guns & Ammo</u>, (July 1981), p. 48; Jarrett, pp. 345-363; Warner, pp. 293-300.
- Daniel D. Musgrave and Thomas B.Nelson, <u>The World's Assault Rifles</u>, (Virginia, 1967), p. 1.
- See generally, Angus Laidlaw, ed., <u>Paul Wahl's Big\_Gun Catalog/1</u>, (Bogota, NJ. 1988); Musgrave and Nelson; Hogg; Jarrett; and Warner.

Page 14

Case 3:17-cv-01017-BEN-JLB Document 53-7 Filed 04/09/18 PageID.6282 Page 22 of 194

7. Ibid.

- Arizona, 5 rounds; Colorado, 6 rounds; Michigan 6 rounds; New Hampshire, 5 rounds; New York, 6 rounds; North Carolina, 6 rounds; North Dakota, 8 rounds; Oregon, 5 rounds; Pennsylvania, semiautomatic rifles prohibited; Vermont, 6 rounds.
- 9. See generally, Hogg; Musgave and Nelson; Ezell; Warner; Jarrett; Laidlaw; and Lewis.
- 10. Ibid.
- 11. Ibid.
- 12. Ibid.
- 13. Ibid.
- 14. Ibid.
- 15. Ibid.
- 16. Ezell, p. 844; Dickey, p. 31.
- 17. Musgrave and Nelson, pp. 11-29; and, see generally, Hogg; and Ezell.
- 18. Ezell, pp.844-866; and, see generally, Warner; Jarrett; and Laidlaw.
- See, for example, Walter Rickell, "The Plinker's AK <u>GunsMagazine</u>, (July 1986) p. 21; John Lachuk, "Bantam Battle Rifles," <u>Guns & Ammo</u>, (January 1987), p. 37; John Lachuk, ".22 Erma Carbine," <u>Guns & Ammo</u>, (May 1968), p. 58; JackLewis, "Something New: The AK in Twenty-Two," <u>Gun World</u>, (July 1985), p. 32; Roger Combs, "A Most Unique Carbine," <u>Gun World</u>, (December 1985), p. 28; Garry James, "Mitchell Arms AK-22," <u>Guns & Ammo</u>, (November 1985), p. 72.
- 20. See note 2, colloquy between Senators Dodd and Hansen.
- 21. Ibid.
- 22. See generally, bibliography.

Page 15

#### Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 295 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-7 Filed 04/09/18 PageID.6283 Page 23 of 194

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Page 16

Report and Recommendation on the Importability of Certain Semiautomatic Rifles Exhibit 12 Page 00550

<sup>&</sup>quot;Armalite AR-180 Rifle," American Rifleman, (February 1981), 65-66.

<sup>&</sup>quot;Beretta AR. 70 Rifle," American Rifleman, (March 1988), 64-66.

### Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 296 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-7 Filed 04/09/18 PageID.6284 Page 24 of 194

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Page 17

## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 297 of 299

#### Case 3:17-cv-01017-BEN-JLB Document 53-7 Filed 04/09/18 PageID.6285 Page 25 of 194

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Page 18

Report and Recommendation on the Importability of Certain Semiautomatic Rifles Exhibit 12 Page 00552

## Case: 19-55376, 07/15/2019, ID: 11364007, DktEntry: 8-3, Page 298 of 299

Case 3:17-cv-01017-BEN-JLB Document 53-7 Filed 04/09/18 PageID.6286 Page 26 of 194

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Report and Recommendation on the Importability of Certain Semiautomatic Rifles Exhibit 12 Page 00553

Page 19

## **CERTIFICATE OF SERVICE**

Case Name: Duncan, Virginia et al v. Xavier No. 19-55376 Becerra

I hereby certify that on <u>July 15, 2019</u>, I electronically filed the following documents with the Clerk of the Court by using the CM/ECF system:

# APPELLANT'S EXCERPTS OF RECORD VOLUME THREE

I certify that **all** participants in the case are registered CM/ECF users and that service will be accomplished by the CM/ECF system.

I declare under penalty of perjury under the laws of the State of California the foregoing is true and correct and that this declaration was executed on <u>July 15, 2019</u>, at Los Angeles, California.

Beth L. Gratz Declarant *s/ Beth L. Gratz* Signature

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