"ASSAULT WEAPON" MYTHS

E. Gregory Wallace*

Scary black rifles that spray bullets like machine guns. Military arms designed solely for killing on the battlefield. Weapons of choice for mass shooters. These are common descriptions of so-called "assault weapons," a favorite target for those who want to eliminate gun violence by eliminating guns. Several states and localities currently ban "assault weapons," as did the federal government from 1994-2004. In response to recent mass shootings, bills have been introduced in Congress to create a new national ban. Lawmakers and judges often use these descriptions to justify such bans. But are the descriptions factual? If not, what does that say about the laws and court decisions that rely on them?

While there is no generally agreed-upon definition of "assault weapon," laws banning such weapons typically criminalize possession or transfer of semiautomatic rifles with detachable magazines and at least one specified feature such as a pistol grip, telescoping stock, flash suppressor, barrel shroud, bayonet mount, or grenade launcher.[1] Other "assault weapon" bans prohibit certain semiautomatic rifles, shotguns, and pistols by name and by features, along with any copies, duplicates, or variants.[2] The main target of these bans is the AR-15 rifle, the most popular rifle in America, owned by millions for lawful purposes including self-defense.[3] The AR-15 looks like a fully automatic military M4 carbine or M16 rifle, but it has a semiautomatic firing system like most modern handguns. Legislatures imposing "assault

* Professor of Law, Campbell University School of Law. Professor Wallace is a competitive shooter and certified firearms instructor.

1 *See, e.g.*, D.C. CODE § 7-2501.01(3A)(A) (2018) (defining assault weapons under D.C. code); N.Y. PENAL LAW § 265.00(22) (2018) (defining assault weapons under N.Y. law).

2 *See, e.g.*, CONN. GEN. STAT. § 53-202a (2013); MD. CODE ANN., CRIM. LAW § 4-301(d) (LexisNexis 2018) (banning specific "assault long guns" listed under MD. CODE ANN., PUB. SAFETY § 5-10(r)(2) (LexisNexis 2018) and "copycat weapons" as defined by certain features listed in the code). The scope of this article is limited to semiautomatic rifles and does not include semiautomatic pistols and shotguns included in most "assault weapons" bans.

3 *See* Jon Schuppe, *America's rifle: Why so many people love the AR-15*, NBC NEWS (Dec. 27, 2017, 1:19 PM), https://www.nbcnews.com/news/us-news/america-s-rifle-why-so-many-people-love-ar-15-n831171?cid=public-rss_20171228 (noting that that Americans own an estimated 15 million AR-15s and that "the AR-15 remains a jewel of the gun industry, the country's most popular rifle, irreversibly lodged into American culture"); *'AR' Stands for Armalite,* NATIONAL SHOOTING SPORTS FOUND., https://www.nssf.org/ar-stands-for-armalite/ (last visited July 3, 2018) (noting that the "AR" does not stand for "assault rifle" but rather for "ArmaLite," the company that developed the prototype rifle that later became the military M16 and the civilian AR-15). This article uses "AR-15" as a shorthand term for all AR-15 variants.

weapon" bans nevertheless have concluded that the AR-15 is just as lethal as its military counterparts, and federal courts have agreed.

Since the Supreme Court's landmark decision in *District of Columbia v. Heller*,[4] four federal circuit courts have rejected Second Amendment challenges to "assault weapon" bans.[5] Two courts—the District of Columbia Circuit in *Heller v. District of Columbia* (*Heller II*) and the Second Circuit in *New York State Rifle and Pistol Association v. Cuomo* (*NYSRPA*)—applied a weak form of intermediate scrutiny with no serious requirement of narrow tailoring to uphold the challenged bans.[6] The Seventh Circuit in *Friedman v. City of Highland Park* declined to apply traditional levels of scrutiny, but rather considered whether the banned firearms "have some reasonable relationship to the preservation or efficiency of a well regulated militia, and whether law-abiding citizens retain adequate means of self defense."[7] The court ultimately upheld the ban, concluding that law-abiding citizens can find substitute weapons for self-defense and the ban may reduce casualties in mass shootings and other gun-related crime.[8] Most recently, in a 10-4 en banc decision, the Fourth Circuit in *Kolbe v. Hogan* took the unprecedented step of upholding the challenged ban on the ground that AR-15s are not protected arms under the Second Amendment.[9] It declared that the civilian AR-15 is an "exceptionally lethal weapon of war" that is "like" the fully automatic military M16, and therefore not constitutionally protected.[10] Never mind that no national military force actually uses the AR-15 on the battlefield.

Before courts can resolve constitutional questions regarding "assault weapon" bans, they must establish certain facts about the banned weapons. How do "assault weapons" operate? Are they any different from military weapons? Are they exceptionally dangerous when compared to other firearms? Answering these questions accurately is critical to determining both whether "assault weapons" are protected arms under the Second

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4 District of Columbia v. Heller, 554 U.S. 570, 599 (2008) (holding that the Second Amendment protects the individual right to keep and bear arms for self-defense, whether against a tyrannical government or common criminal).

5 *See* Kolbe v. Hogan, 849 F.3d 114 (4th Cir. 2017); N.Y. State Rifle & Pistol Ass'n v. Cuomo, 804 F.3d 242 (2d Cir. 2015); Friedman v. City of Highland Park, 784 F.3d 406 (7th Cir. 2015); Heller v. District of Columbia (*Heller II*), 670 F.3d 1244 (D.C. Cir. 2011). The First Circuit currently is reviewing a Second Amendment challenge to Massachusetts' "assault weapons" ban. *See* Worman v. Healey, 293 F. Supp. 3d 251 (D. Mass. 2018), *appeal docketed* No. 18-1545 (1st Cir. June 19, 2018).

6 *N.Y. State Rifle & Pistol Ass'n*, 804 F.3d at 257-61; *Heller II*, 670 F.3d at 1262-64.

7 *Friedman*, 784 F.3d at 410 (internal quotations and citations omitted).

8 *Id.* at 411-12. The court noted that even if the ban's public safety goals are not realized, making the public "feel safer" was a substantial benefit. *Id.* at 412.

9 *Kolbe*, 849 F.3d at 130-37, 141-46.

10 *Id.* at 124, 135. *Kolbe* alternatively held that Maryland's "assault weapon" ban survived intermediate scrutiny. *Id.* at 138-41.

Amendment and whether broad bans of such weapons are effective in achieving the government's public safety goals.

The federal circuit court decisions provide a useful lens to view how lower courts have disregarded the Supreme Court's decision in *Heller*, and how that disregard extends even to factual determinations about the specific firearms involved. Despite considering whether "assault weapon" bans violate a constitutional right, these courts have showed little interest in seriously examining the underlying facts about the operation and use of "assault weapons." They instead rely on an amalgam of reports more than two decades old from federal agencies justifying their policy decisions, outdated crime data, skewed claims and statistics from gun-control advocates, non-scientific "studies," opinions from non-experts, and speculation offered by experts.

The Fourth Circuit in *Kolbe*, for example, cited no firearms or ballistics experts to support its multiple conclusions about how the AR-15 is functionally equivalent to the M16, but rather relied on a 1989 Bureau of Alcohol, Tobacco, and Firearms (BATF) report justifying its ban on imported "assault weapons," a 1994 congressional report citing multiple non-expert statements in support of the federal "assault weapon" ban, and statements from four Maryland police chiefs, who all conceded that they were not firearms experts**,** including one who admitted that he had fired an AR-15 only once.[11] The *Kolbe* plaintiffs produced contrary evidence from firearms and ballistic experts, but the Fourth Circuit mostly ignored it, falsely claiming that the state's evidence was "uncontroverted."[12] I doubt the court would have shown similar indifference to basic facts had *Kolbe* been a First or Fourth Amendment case.

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[11] *Id.* at 125, 127, 137, 144 (citing Bureau of Alcohol, Tobacco, and Firearms, REPORT AND RECOMMENDATION OF THE ATF WORKING GROUP ON THE IMPORTABILITY OF CERTAIN SEMIAUTOMATIC RIFLES (1989) [hereinafter ATF REPORT] at Joint Appendix [hereinafter "J.A."] 735; H.R. REPORT NO. 103-489 (1994) at J.A. 1120-22; Marcus Brown Decl. at J.A. 206 (Superintendent of Maryland State Police); James W. Johnson Decl. at J.A. 227 (Chief of Baltimore County Police Dept.); Henry Swawinski Decl. at J.A. 279 (Deputy Chief of Prince George County Police Dept.); Anthony Batts Decl. at J.A. 265 (Commissioner of Baltimore Police Dept.)); *see* Marcus Brown Dep. at J.A. 2470, Kolbe v. Hogan, 849 F.3d 114 (4th Cir. 2017) (No. 14-1945) ("I'm not sort of a firearms expert"); James Johnson Dep. at J.A. 2446, *id.* ("I am not a ballistics expert" and subsequently agreeing that he is not a firearms expert); Anthony Batts Dep. at J.A. 2400, 2418, *id.* ("I am not an expert"); Henry Stawinski Dep. at J.A. 2487-88, *id.* (admitting he has not been trained in the use of any of the banned firearms and has fired an AR-15 on only one occasion)).

[12] *Id.* at 124, 144. The *Kolbe* plaintiffs submitted declarations and reports from Gary Roberts, a firearms and ballistics expert, Roberts Decl. at J.A. 2086, *Kolbe*, 849 F.3d 114 (No. 14-1945), Guy Rossi, a firearms and tactics expert, Rossi Decl. at J.A. 2119, *id.*, Buford Boone, a firearms and ballistics expert who formerly directed the FBI Ballistic Research Facility for 15 years, Boone Decl. at J.A. 2163, *id.*, and Jim Supica, a firearms historian, Supica Decl. at J.A. 2245, *id.*. These experts specifically controverted much of the state's evidence regarding the features and functions of the AR-15.

No one wants to see guns in the hands of terrorists, criminals, or the dangerously mentally ill. Mass shootings are unspeakable tragedies that result in the loss of innocent lives, heartbroken families, and devastated communities. But court decisions based on false or misleading claims about "assault weapons" have questionable legitimacy. No doubt many judges (and their law clerks) don't know how modern semiautomatic firearms operate—like many people, they have never fired a gun or only used a hunting rifle or shotgun on occasion. Courts nevertheless have a duty to "get it right" when it comes to the facts upon which their decisions are based.

This article critically examines several factual claims about "assault weapons" found in these four federal appellate court decisions. Part I introduces the problem by showing how gun-control advocates have disseminated false and misleading information about "assault weapons." Part II identifies three common myths about "assault weapons" based on this disinformation that repeatedly appear in the four decisions and drive their outcomes. It shows how these myths are perpetuated by the courts' refusal to take seriously readily-available evidence about the operation and use of these weapons, with a special focus on *Kolbe's* conclusion that the civilian AR-15 is functionally equivalent to the military M16. Part III briefly concludes with some thoughts on how having accurate facts about the operation and use of "assault weapons" can affect the broader discussion about the constitutionality of banning such firearms.

I. "ASSAULT WEAPON" DISINFORMATION

Anti-gun groups have done an effective job of demonizing "assault weapons" with very little evidence to support their descriptions. The "assault weapons" debate began in the late 1980s when handgun-ban activists like Josh Sugarmann realized that the vast majority of legislators, the public, and the media simply were not interested handgun bans.[13] Sugarmann wrote a policy memo for the Violence Policy Center (VPC) arguing that "assault weapon" bans would be novel and appealing, and eventually strengthen the case for banning handguns.[14] Pro-ban advocates, he urged, could win support by emphasizing the firearms' scary-looking features and by exploiting widespread public ignorance about how they function.

> Assault weapons—just like armor-piercing bullets, machine guns, and plastic firearms—are a new topic. The weapons' menacing looks, coupled with the public's confusion over fully automatic machine guns versus semi-automatic assault weapons—anything

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[13] Josh Sugarman, *Assault Weapons and Accessories in America*, Conclusion, VIOLENCE POLICY CENTER (1988), http://www.vpc.org/studies/awaconc.htm.

[14] *Id.*

> that looks like a machine gun is assumed to be a machine gun—can only increase the chance of public support for restrictions on these weapons.[15]

Gun-control advocates have pressed this tactic by using machine-gun language to describe semiautomatic "assault weapons," even though they are not machine guns. For example, the VPC published a 2003 report entitled *Bullet Hoses: Semiautomatic Assault Weapons—What Are They? What's So Bad About Them?*,[16] which depicts such weapons as "bullet hoses" that "enable shooters to spray ('hose down') a large number of bullets over a broad killing zone, without having to aim at each individual target."[17] The report claims there are no functional differences between civilian semiautomatic rifles and the fully automatic rifles used by the military:

> All assault weapons—military and civilian alike—incorporate specific features that were designed to provide a specific military combat function. That military function is *laying down a high volume of fire over a wide killing zone*, also known as "hosing down" an area. Civilian assault weapons keep the specific design features that make this deadly spray-firing easy.[18]

The problem with these descriptions is simple: they are false. Semiautomatic "assault weapons" such as the popular AR-15 do not "spray fire," as that term is commonly understood.[19]

Even the term "assault weapon" reinforces the misperception that the AR-15 is a military firearm. It's a variation on "assault rifle," a historical term describing lightweight military rifles that fire in both automatic and semiautomatic modes.[20] While gun-control advocates and the media use the two terms interchangeably, they actually do not refer to the same weapons. Various militaries created assault rifles in the mid-twentieth century to bridge the gap between heavy semiautomatic combat rifles firing large rounds effective at longer ranges and smaller submachine guns firing pistol rounds

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15 *Id*.

16 Tom Diaz, Bullet Hoses: Semiautomatic Assault Weapons—What Are They? What's So Bad About Them?, VIOLENCE POLICY CENTER (May 2003), http://www.vpc.org/publications/bullet-hoses.

17 Tom Diaz, Bullet Hoses – The "Father of All Assault Rifles," Chapter in Diaz, id..

18 Tom Diaz, Bullet Hoses – What's So Bad About Semiautomatic Assault Weapons, Chapter in Diaz, *id*.

19 See Joseph Avery, An Army Outgunned: Physics Demands a New Basic Combat Weapon, Military Review 3 (July-August 2012), https://www.armyupress.army.mil/Portals/7miltaryreview/Archives/English/MilitaryReview_20120831_art004.pdf (noting that "spray fire" refers to a large volume of "not well aimed and placed shots.").

20 *See* ATF REPORT, *supra* note 11, at 5-6 ("True assault rifles are selective fire weapons that will fire in a fully automatic mode.") (citing DANIEL D. MUSGRAVE & THOMAS B. NELSON, THE WORLD'S ASSAULT RIFLES 1 (T.B.N. Enterprises, 1967)).

effective only at shorter distances.[21] The term "assault weapon," on the other hand, is not part of widely-accepted technical or historical descriptions of modern rifles. It is a political and pejorative term, useful for creating mental images of military weapons capable of deadly spray fire.[22]

This disinformation campaign was designed to stir passion, not dispel ignorance. It has been very effective. After the Parkland, Florida school shooting, Lawrence Tribe, a widely-respected Harvard law professor, confidently proclaimed that the semiautomatic AR-15 "easily fires over 10 rounds per second."[23] Professor Tribe's figure is only slightly less than the "700 rounds a minute" figure offered by Representative Alan Grayson (D-FL) after the Orlando nightclub shooting in 2016.[24] Try pulling a semiautomatic rifle trigger 10-12 times in *one second*—it's impossible.[25] Then there's Michael Bloomberg, former mayor of New York and prominent gun-control advocate, who asserted in a 2012 ABC-TV interview that an "assault weapon" is fully automatic like a machine gun, firing multiple rounds with one pull of the trigger.[26] Jacob Sullum, writing in *Reason* magazine, recently noted that a 2013 Reason-Rupe survey showed "about two-thirds of Americans mistakenly thought 'assault weapons' fire faster than other guns, hold more rounds, or use higher-caliber ammunition. The respondents who harbored these misconceptions were especially likely to say such guns should be banned."[27]

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21 *See infra* text accompanying notes 78-80.

22 *See* Bruce Kobayashi & Joseph Olson, *In re 101 California Street: A Legal and Economic Analysis of Strict Liability for the Manufacture and Sale of "Assault Weapons,"* 8 STAN. L. & POL'Y REV. 41, 43 (1997) ("Prior to 1989, the term 'assault weapon' did not exist in the lexicon of firearms. It is a political term, developed by anti-gun publicists to expand the category of 'assault rifles' so as to allow an attack on as many additional firearms as possible on the basis of undefined 'evil' appearance."); *see also* Stephen P. Halbrook, *Reality Check: The "Assault Weapon" Fantasy and Second Amendment Jurisprudence*, 14 GEO. J.L. & PUB. POL'Y 47, 49 (2016) ("The term 'assault weapon' . . . became a classic case of 'an Alice-in-Wonderland world where words have no meaning.'") (quoting Welsh v. United States, 398 U.S. 333, 354 (1970) (Harlan, J., concurring)).

23 Laurence Tribe (@tribelaw), TWITTER (Feb. 24, 2018, 4:27 AM) (tweet deleted) (screen shot in possession of author). Tribe doubled down on the figure after being criticized, claiming in a subsequent tweet that "I researched it; didn't draw the 10ps rate from thin air." Laurence Tribe (@tribelaw), TWITTER (Feb. 24, 2018, 10:34 AM), https://twitter.com/tribelaw/status/967467905830019072?lang=en. He then admitted he was wrong and said it was 5 rounds per second. Laurence Tribe (@tribelaw), TWITTER (Feb. 24, 2018, 3:04 PM) https://twitter.com/tribelaw/status/967535732624674818. He finally edited his original tweet to say "4 to 8 rounds PER SECOND." Laurence Tribe (@tribelaw), TWITTER (Feb. 24, 2018, 4:55 PM), https://twitter.com/tribelaw/status/967563721810763776.

24 Washington FreeBeacon, *Alan Grayson claims AR-15 can fire 700 rounds per minute, which is ridiculous*, YOUTUBE (June 13, 2016), https://www.youtube.com/watch?v=ThKlXcAaVNk.

25 *See infra* Part II-B for a discussion of the AR-15's rate of fire.

26 UserUnknown00, *Bloomberg Doesn't Know SemiAuto from Auto*, YOUTUBE (Dec. 23, 2012), https://www.youtube.com/watch?time_continue=7&v=iV5E30ZY1kQ.

27 Jacob Sullum, *'Assault Weapons,' Explained: How a scary name for an arbitrary group of firearms distorts the gun control debate*, REASON (June 2018), https://reason.com/archives/2018/05/14/assault-weapons-explained.

The "spray fire" myth and other falsehoods also appear in federal court decisions upholding "assault weapon" bans. Courts rely on these myths to show that "assault weapons" are exceptionally dangerous and have no legitimate civilian utility. Once these factual premises are established, it requires little serious legal analysis to hold that there is no constitutional right to possess "assault weapons" or that bans on such firearms survive intermediate scrutiny.

II. COMMON "ASSAULT WEAPON" MYTHS

The Fourth Circuit's decision in *Kolbe* that there is no constitutional right to possess the AR-15 or any other "assault weapon" is based on a novel interpretation of *Heller* that excludes from Second Amendment protection weapons that are "like" M16 rifles—i.e., "weapons that are most useful in military service."[28] The court therefore had to show that the AR-15 is virtually indistinguishable from the M16. To make this showing, the Fourth Circuit turned to three common myths about how "assault weapons" work that federal courts have accepted without rigorous factual inquiry. This section examines those myths.

A. The "Weapon of War" Myth

The "weapon of war" myth has long been part of the gun-control narrative against "assault weapons." Barbara Lautman, a spokesperson for Handgun Control Inc. (now the Brady Center to Prevent Gun Violence) said in 1989 that "[w]e don't see any reason why a private citizen needs access to a weapon designed solely for combat. These are weapons of war."[29] Senator Charles Schumer (D-NY), an ardent gun-control advocate, chaired the House Subcommittee on Crime and Criminal Justice in April 1994 when it held hearings on the proposed federal "assault weapons" ban. In his opening statement, he asked, "We are here today to consider one simple question—do weapons of war, weapons solely designed to kill people on the battlefield, belong on America's streets?"[30]

When expiration of the federal "assault weapons" ban approached in 2004, Senator Christopher Dodd (D-CT), another gun-control congressman, called for renewal of the ban. "[A]ssault weapons are weapons of war . . .

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[28] Kolbe v. Hogan, 849 F.3d 114, 136 (4th Cir. 2017) (quoting District of Columbia v. Heller, 554 U.S. 570, 627 (2008)).

[29] Kent Jenkins, Jr., *Calls for Ban Boost Assault Rifle Sales*, WASH. POST (Mar. 6, 1989), https://www.washingtonpost.com/archive/local/1989/03/06/calls-for-ban-boost-assault-rifle-sales/0d6c6d39-99da-4e0d-8318-a5d246762081/?utm_term=.5da5c0686193.

[30] *Public Safety and Recreational Firearms Use Protection Act: Hearing on H.R.* 3527 *Before the Subcomm. on Crime & Criminal Justice of the Comm. On the Judiciary*, 103d Cong. 1 (1994) (statement of Sen. Charles Schumer).

designed with one purpose in mind—for slaughtering human beings over a wide area," he declared, "[t]hey belong on a faraway battlefield, not on our Nation's streets."[31] The Brady Center to Prevent Gun Violence released a publication in 2008 entitled *Assault Weapons: "Mass Produced Mayhem,"* which describes "assault weapons" four separate times as "weapons of war."[32] The Law Center to Prevent Gun Violence (now the Giffords Law Center to Prevent Gun Violence) published a "fact sheet" in 2012 containing a picture of an AR-15 and asserting that "[w]eapons of war like these don't belong in the hands of civilians."[33]

Both legislative bodies and courts have adopted this rhetoric. The District of Columbia Council banned "assault weapons" after concluding that they are "military-style weapons of war, made for offensive military use."[34] The *Kolbe* court labeled civilian AR-15s "exceptionally lethal weapons of war"[35] that are designed "to kill or disable the enemy on the battlefield."[36] Such descriptions are used to reinforce the legitimacy of "assault weapon" bans by characterizing the banned weapons as only having military utility.

1. Civilian use of "weapons of war"

The "weapons of war" refrain may be useful rhetoric, but it's not fact. One flaw is that small arms such as long guns and handguns have never been nicely separated into distinct categories of "military firearms" designed for the battlefield and "civilian firearms" designed for hunting, target shooting, or self-defense. Historically, most popular civilian firearms were designed for military use.[37] Civilians have been buying and using "weapons of war" since musket days, with little if any significant differences between military and civilian versions of these firearms.

Take rifles, for example. American militiamen originally fought with the rifles they brought from home. As *Heller* recognizes, "[i]n the colonial and revolutionary era, [small arms] weapons used by militiamen and

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31 150 CONG. REC. S1947-09, S1953 (daily ed. Mar. 2, 2004) (statement of Sen. Dodd).

32 *Assault Weapons: "Mass Produced Mayhem"* BRADY CENTER TO PREVENT GUN VIOLENCE, (October 2008), https://www.bradycampaign.org/sites/default/files/mass-produced-mayhem.pdf.

33 *Why America Needs to Get Military-Style Weapons Off Our Streets*, LAW CENTER TO PREVENT GUN VIOLENCE, http://smartgunlaws.org/wp-content/uploads/2017/04/Assault-Weapons-Factsheet-2013.pdf (last visited Sept. 30, 2018).

34 *See* Heller v. District of Columbia, 698 F. Supp. 2d 179, 193 (D.D.C. 2010) (internal quotation omitted).

35 Kolbe v. Hogan, 849 F.3d 114, 124 (4th Cir. 2017). *See also* Cutonilli v. Maryland, 251 F. Supp. 3d 920, 922 (D. Md. 2017) (noting that "assault weapons" are "weapons of war" restricted under Maryland's Firearm Safety Act of 2013).

36 *Kolbe*, 849 F.3d at 137 (quoting J.A. 735) (internal quotations and brackets omitted).

37 GARY KLECK, POINT BLANK: GUNS AND VIOLENCE IN AMERICA 70 (1991) ("Most firearms, no matter what their current uses, derive directly or indirectly from firearms originally designed for the military").

weapons used in defense of person and home were one and the same."[38] The repeating rifles that first debuted in the Civil War evolved into the lever action rifles used by soldiers and civilians alike in the Old West, such as the iconic Winchester Model 1873.[39] Like the modern AR-15, these rifles had higher ammunition capacity and more rapid rates of fire than their predecessors. Lever-action rifles manufactured by Winchester, Henry, and Marlin are still popular among hunters today.[40] The Remington Model 30 bolt-action sporting rifle, first sold commercially in 1921, was derived from the M1917 Enfield rifle used by American soldiers in World War I.[41] The semiautomatic M1 Garand rifle and M1 carbine were designed for military use in World War II, Korea, and Vietnam. Civilian versions are sold commercially for target shooting and hunting, and military surplus versions are available to qualified rifle clubs for competitive matches through the federal government's Civilian Marksmanship Program.[42] The Remington Model 700 is a classic civilian bolt-action rifle that has been used by the U.S. Army and Marines as sniper rifles in the M24 and M40 versions.[43]

Soldiers and civilians also use the same handguns and shotguns. Popular civilian handguns such as the iconic Browning-designed 1911, the Beretta 92 FS, and the Sig Sauer P226 were all designed for and used by the United States military.[44] The Glock 17, probably the most popular civilian handgun in the world today, initially was designed for the Austrian military

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38 *Heller*, 554 U.S. 570, 624-25 (2008) (quoting State v. Kessler, 614 P.2d 94, 98 (Or. 1980) (citing G. NEUMANN, SWORDS AND BLADES OF THE AMERICAN REVOLUTION 6-15, 252-54 (1973)) (internal quotation omitted); *see id.* at 627 (recognizing that the founding-era militia consisted of citizens "who would bring the sorts of lawful weapons they possessed at home to militia duty").

39 *See* David E. Petzal, *The Rifle That Won the West*, FIELD & STREAM (Dec. 11, 2003), https://www.fieldandstream.com/articles/guns/rifles/2003/12/rifle-won-west.

40 *See* WINCHESTER REPEATING ARMS, http://www.winchesterguns.com/products/rifles/model-94.html; HENRY LEVER ACTION RIFLES, https://www.henryusa.com/firearm-category/lever-action-rifles/; MARLIN FIREARMS, https://www.marlinfirearms.com/lever-action.

41 *See* John Lacy, *Remington Model 30Bolt Action, High-Power Rifles: A History and Users Manual*, REMINGTON SOCIETY OF AMERICA, https://www.remingtonsociety.org/remington-model-30-bolt-action-high-power-rifles.

42 *See* Kennedy Hickman, *World War II: M1 Garand Rifle*, THOUGHTCO. (June 4, 2017), https://www.thoughtco.com/world-war-ii-m1-garand-2361245; *M1 Garand*, CIVILIAN MARKSMANSHIP PROGRAM, http://thecmp.org/cmp_sales/rifle_sales/m1-garand/; *M1 Carbine*, CIVILIAN MARKSMANSHIP PROGRAM, http://thecmp.org/cmp_sales/rifle_sales/m1-carbine/. The federal government recently announced that 100,000 surplus M1911 handguns in storage since the 1980s will be sold to civilians through the Civilian Marksmanship Program. *See* Chris Eger, *How, when and where will the CMP 1911s be available?*, GUNS.COM (November 22, 2017), http://www.guns.com/2017/11/22/how-when-and-where-will-the-cmp-1911s-be-available/.

43 *See* IAN V. HOGG & JOHN S. WEEKS, MILITARY SMALL ARMS OF THE 20TH CENTURY 220 (7th ed. 2000).

44 *See* Scott Engen, *The History of the 1911 Pistol*, BROWNING (Jan. 24, 2011), http://www.browning.com/news/articles/history-of-the-1911-pistol.html; *92 FS*, BERETTA, http://www.beretta.com/en-us/92-fs/ (last visited July 1, 2018)*; P226*, SIG SAUER, https://www.sigsauer.com/products/firearms/pistols/p226/ (last visited July 1, 2018).

and police.[45] The bestselling gun in Remington Arms history, the Remington 870 pump-action shotgun, is commonly used by civilians for self-defense and hunting as well as by militaries and law enforcement agencies worldwide.[46] The Benelli M4 semiautomatic shotgun was designed for the military, but is sold in the civilian market.[47] Mossberg 500 and 590 pump-action shotguns also are used by the military and civilians alike.[48]

None of this should be surprising. War often drives more effective firearm designs, and civilian small arms typically incorporate advances in military weapon technology. Private citizens historically have owned guns identical or similar to military weapons because they were readily available in the civilian market. Of course, such advances have produced more lethal firearms. But lethality is a core function of a firearm, and users typically want the most effective weapon possible, whether on the battlefield, while hunting, or in lawful defense of self and others. Both military and civilian small arms have represented the state-of-the-art technology of the day. The flintlocks of the Revolutionary War, the repeaters of the Civil War, the lever-action rifles of the Old West, the bolt-action rifles of World War I, and the semiautomatic rifles of World War II all were "weapons of war" used by civilians.

Military small arms do not lose their Second Amendment protection when possessed by civilians. The Supreme Court has never held that firearms are constitutionally-protected only if they are not "weapons of war"—in fact, it's just the opposite. In *United States v. Miller,* the Court recognized that citizens have the right to possess weapons that are part of the militia's "ordinary military equipment" or that "could contribute to the common defense."[49] That equipment, *Miller* explains, comprises those "arms supplied by themselves and of the kind in common use at the time."[50] The Court could not conclude that the Second Amendment protects possession of a short-barreled shotgun because there was no evidence that its possession or use had

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45 *See* Robert A. Sadowski, *Glock: The Pistol that Changed Handguns*, RANGE 365 (July 17, 2017), https://www.range365.com/history-glock; *How The Glock Became America's Weapon of Choice*, NPR FRESH AIR (Jan. 24, 2012), https://www.npr.org/2012/01/24/145640473/how-the-glock-became-americas-weapon-of-choice.

46 Ashley Hlebinsky, *The 28 Most Notable Guns in Remington's 200-Year History*, OUTDOOR LIFE (June 30, 2016), https://www.outdoorlife.com/articles/guns/2016/06/28-most-notable-guns-remingtons-200-year-history.

47 Charles Cutshaw, *Heckler & Koch/Benelli M4 Super 90/XM1014: The US Military's Innovative New Tactical Shotgun*, SMALL ARMS REVIEW (Dec. 25, 2015), http://www.smallarmsreview.com/display.article.cfm?idarticles=3200.

48 Victor & Cheryl Havlin, *Since 1919...A Look at the Storied History of Mossberg*, MOSSBERG BLOG (June 17, 2015), https://www.mossberg.com/since-1919-a%E2%80%88look-at-the-storied-history-of-mossberg/.

49 United States v. Miller, 307 U.S. 174, 178 (1939) (citing Aymette v. Tennessee, 21 Tenn. 154 (1840)).

50 *Id.* at 179.

"some reasonable relationship to the preservation or efficiency of a well regulated militia."[51]

The Supreme Court in *Heller* rejected a narrow reading of *Miller* that protects "*only* those weapons useful in warfare"[52] and clarified that the "ordinary military equipment" referenced in *Miller* includes civilian small arms commonly used for lawful purposes such as self-defense.[53] *Heller* thus recognizes that the Second Amendment protects not only small arms useful in warfare, but also firearms "typically possessed by law-abiding citizens for lawful purposes."[54] Taken together, *Miller* and *Heller* stand for the proposition that the Second Amendment protects certain small arms with military utility, but that protection extends beyond those weapons to civilian weapons "in common use."[55] Both history and precedent show that one aim of the Second Amendment was to ensure that "weapons of war" would be in the hands of ordinary citizens. Even under the narrower view of the Second Amendment taken by the *Heller* dissenters, civilian-owned rifles and handguns of military utility are still protected arms.[56] If the Second Amendment protects "only a right to possess and use firearms in connection with service in a state-organized militia,"[57] as the dissenters urged, then civilians must be able to own, shoot, and train with "weapons of war."[58]

2. The AR-15 as a "weapon of war"

The "weapons of war" refrain also is problematic when applied to the modern AR-15 rifle. Any rifle can be used in war, but certain rifles are made exclusively for combat applications. The United States military has never

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51 *Id.* at 178.

52 District of Columbia v. Heller, 554 U.S. 570, 624-25 (2008) (emphasis added). The Court reaffirmed this proposition in *Caetano v. Massachusetts*, 136 S. Ct. 1027 (2016) (per curiam), reversing a lower court's denial of Second Amendment protection to stun guns on the ground that there was no evidence that they had military utility.

53 *Heller*, 554 U.S. at 624.

54 *Id.* at 625, 627.

55 *Id.* at 627.

56 *Id.* at 636 (Stevens, J., dissenting) ("The Second Amendment plainly does not protect the right to use a gun to rob a bank; it is equally clear that it *does* encompass the right to use weapons for certain military purposes.") (original emphasis); *id.* at 646 (noting that the phrase "[t]o keep and bear arms" describes a "unitary right: to possess arms if needed for military purposes and to use them in conjunction with military activities").

57 *Id.* at 647.

58 *See id*. at 618 (majority opinion) ("But a militia would be useless unless the citizens were enabled to exercise themselves in the use of warlike weapons.") (quoting J. POMEROY, AN INTRODUCTION TO THE CONSTITUTIONAL LAW OF THE UNITED STATES § 239, at 152-53 (1868)) (internal quotations omitted); *id.* at 619 ("Some general knowledge of firearms is important to the public welfare; because it would be impossible, in case of war, to organize promptly an efficient force of volunteers unless the people had some familiarity with weapons of war.") (quoting B. ABBOTT, JUDGE AND JURY: A POPULAR EXPLANATION OF THE LEADING TOPICS IN THE LAW OF THE LAND 333 (1880)) (internal quotations omitted).

used the semiautomatic-only AR-15 for combat. Its standard infantry rifles are the M16 rifle and the smaller M4 carbine.[59] These rifles are "select" or "selective" fire weapons, meaning they can be fired either in semiautomatic mode or fully automatic mode (or three-round burst mode, depending on the model) by toggling a selector switch on the side of the rifle.[60] A fully automatic weapon fires continuously so long as the shooter presses and holds the trigger.[61] By contrast, a semiautomatic firearm fires one bullet (or "round") for each pull of the trigger.[62] The Supreme Court in *Staples v. United States* described the basic difference between the AR-15 and the M16: "The AR-15 is the civilian version of the military's M-16 rifle, and is, unless modified, a semiautomatic weapon. The M-16, in contrast, is a selective fire rifle that allows the operator, by rotating a selector switch, to choose semiautomatic or automatic fire."[63]

Kolbe correctly recognizes the distinction between semiautomatic AR-15s and the military's fully automatic rifles,[64] but declares that "[t]he difference between the fully automatic and semiautomatic versions of those firearms is *slight*."[65] It goes on to label civilian AR-15s as "exceptionally lethal weapons of war" [66] that are designed "to kill or disable the enemy on the battlefield."[67] They do that by functioning like machine guns. "[L]ike their fully automatic counterparts," *Kolbe* says, "the banned assault weapons 'are firearms designed for the battlefield, for the soldier to be able to shoot a

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59 U.S. DEP'T OF ARMY, TRAINING CIRCULAR 3-22.9, RIFLE AND CARBINE 2-1 (2016) [hereinafter ARMY RIFLE AND CARBINE TRAINING CIRCULAR]. The military is replacing the M16 with the M4A1 as its standard service weapon. *See* Kyle Mizokami, *M4 Carbine: The Gun the Army Loves to Go to War With*, THE NATIONAL INTEREST (May 31, 2018), http://nationalinterest.org/blog/the-buzz/m4-carbine-the-gun-the-army-loves-go-war-26049?page=2.

60 U.S. DEP'T OF ARMY, FIELD MANUAL 3-22.9, RIFLE MARKSMANSHIP: M16-/M-4 SERIES WEAPONS 4-11, 4-12 (2008) [hereinafter ARMY RIFLE MARKSMANSHIP MANUAL] (explaining that M16A1/A3 rifles and M4A1 carbines fire in fully automatic mode, while M16A2/A4 rifles and M4 carbines fire in a three-round burst mode).

61 *See* Staples v. United States, 511 U.S. 600, 602 n.1 (1994) ("[T]he terms 'automatic' and 'fully automatic' refer to a weapon that fires repeatedly with a single pull of the trigger. That is, once the trigger is depressed, the weapon will automatically continue to fire until its trigger is released or the ammunition is exhausted. Such weapons are 'machine guns' within the meaning of the [National Firearms] Act."); *see also* 26 U.S.C. § 5845(b) (2018) (defining "machine gun" to mean "any weapon which shoots . . . automatically more than one shot, without manual reloading, by a single function of the trigger.").

62 *See* Gun Control Act of 1968, 18 U.S.C. § 921(a)(28) (defining "semiautomatic rifle" as any repeating rifle which uses a portion of the energy of a firing cartridge to extract the fired cartridge case and chamber the next round, and which requires a separate pull of the trigger to fire each cartridge); *Staples*, 511 U.S. at 602 n.1 ("We use the term 'semiautomatic' to designate a weapon that fires only one shot with each pull of the trigger, and which requires no manual manipulation by the operator to place another round in the chamber after each round is fired.").

63 *Staples*, 511 U.S. at 603.

64 Kolbe v. Hogan, 849 F.3d 114, 124 (4th Cir. 2017).

65 *Id*. at 126.

66 *Id*. at 124.

67 *Id*. at 137 (quoting J.A. 735) (internal quotations and brackets omitted).

large number of rounds across a battlefield at a high rate of speed.'"[68] *Heller II* similarly concludes that "it is difficult to draw meaningful distinctions between the AR-15 and M-16."[69]

These are myths, not facts. To begin with, federal law treats fully automatic firearms (i.e., machine guns) very differently than semiautomatic firearms like the AR-15. Civilian ownership of machine guns is extensively regulated under the National Firearms Act of 1934 (NFA).[70] Federal law prohibits the possession by private citizens of any machine gun that was not registered under the NFA by May 19, 1986.[71] The effect of this law is to create a de facto ban on private ownership or transfer of machine guns made after 1986. Distinguishing the "generally 'dangerous' character of all guns," Justice Ginsburg pointed out in her concurring opinion in *Staples* that "[t]he Nation's legislators chose to place under a registration requirement only a very limited class of firearms, those they considered especially dangerous."[72] The Fifth Circuit explained in *United States v. Kirk* that "[t]he firepower of a machine gun puts it in a quite different category from the handguns, shotguns, and rifles so popular with sportsmen. Its continuous fire puts the machine gun on a different plane from the semi-automatic."[73]

Kolbe fails to identify any national military force that uses the AR-15 or other semiautomatic-only rifle as its standard service rifle, nor could it. No military in the world uses a service rifle that is semiautomatic only.[74] Harold Johnson, a firearms expert, 20-year Marine veteran, and author of the Defense Intelligence Agency's *Small Arms Identification and Operation Guide—Eurasian Communist Countries*,[75] explained in a 2009 affidavit filed in *Heller II:*

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68 *Id.* at 125 (quoting J.A. 206).

69 Heller v. District of Columbia (*Heller II*), 670 F.3d 1244, 1263 (D.C. Cir. 2011).

70 26 U.S.C. §§ 5801-5872; *see also* The Bureau of Alcohol, Tobacco, Firearms and Explosives, *National Firearms Act Handbook,* U.S. DEP'T OF JUST. (Apr. 2009), https://www.atf.gov/firearms/docs/guide/atf-national-firearms-act-handbook-atf-p-53208/download.

71 18 U.S.C. § 922(o) (2018); *see also* Letter from Stephanie M. Boucher, Chief, Disclosure Div., U.S. Dept. of Justice Bureau of Alcohol, Tobacco, Firearms and Explosives to Jeffrey Folloder, Exec. Dir., Nat'l Firearms Act Trade & Collectors Ass'n (Feb. 24, 2016), http://www.nfatca.org/pubs/MG_Count_FOIA_2016.pdf (reporting that in February 2016 there were 175,977 transferrable pre-1986 machine guns in the U.S.).

72 Staples v. United States, 511 U.S. 600, 622 (1994) (Ginsburg, J., concurring).

73 United States v. Kirk, 105 F.3d 997, 1002 (5th Cir. 1997). *See also* United States v. Thomas, 531 F.2d 419, 423 (9th Cir. 1976) (Hufstedler, J., dissenting) ("[O]ur society does not put hand guns and rifles in the same category of suspected dangerousness as machine guns, hand grenades, sawed-off shotguns, and other lethal hardware[.]").

74 *See Service Rifle*, WIKIPEDIA, https://en.wikipedia.org/wiki/Service_rifle (last visited Sept. 30, 2018) (listing service rifles from various nations).

75 HAROLD E. JOHNSON, DEFENSE INTELLIGENCE AGENCY, SMALL ARMS IDENTIFICATION AND OPERATION GUIDE—EURASIAN COMMUNIST COUNTRIES (1973), https://www.scribd.com/document/117824077/Small-Arms-Identification-and-Operation-Guide-Eurasian-Communist-Countries.

> Although firearm models used by military forces throughout the world have undergone design changes since [*Small Arms Identification*] was published, it remains the case that today's military forces throughout the world continue to utilize selective-fire rifles as their standard services rifles. They have done so since the end of World War II, and will continue to do so for the foreseeable future. Semiautomatic rifles, including all those designated by the D.C. Code as "assault weapons," are not made or designed for offensive military use. They are not used as service rifles by any military force in the world, nor are they preferred by irregular forces or terrorists . . . . None of these ["assault weapons"] are designed for offensive military use and none are known to be issued to any military force in the world.[76]

That is why the Supreme Court in *Staples* used a descriptor that accurately differentiates the AR-15: it is the *civilian* version of the M16 rifle.[77] The AR-15 is not a "weapon of war" and never has been.

The capability to fire in fully automatic mode is a uniquely-military feature. Military designers during World War II recognized the need for an infantry weapon that combined the accuracy and power of a rifle with the lighter weight and automatic fire of a submachine gun. Most soldiers at the time were equipped with heavy and cumbersome semiautomatic-only "battle rifles" that delivered large caliber rounds with great energy at effective ranges of 500 yards and beyond, while some soldiers used submachine guns firing low-powered pistol rounds that lost effectiveness beyond 100-150 yards. The modern "assault rifle" was developed to bridge this gap. It is a selective-fire weapon that fires intermediate-size rifle rounds powerful enough to be effective at the ranges useful for most modern warfare applications, but small enough to produce lower recoil for controllable automatic fire.[78]

German engineers produced the first true "assault rifle" in 1943, the Stürmgewehr ("storm rifle") MP43/44 and StG 44, which fired a shorter, less powerful rifle round (7.92x 33mm) in full automatic mode, had a 16.5-inch barrel, and came equipped with a 30-round magazine. The Soviet Union developed its own fully automatic, lightweight assault rifle in 1947, the

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[76] Harold E. Johnson Decl., Heller v. District of Columbia, 698 F. Supp. 2d 179 (D.D.C. Sept. 14, 2009) (No. 1:08-cv-01289); *see also* Halbrook, *supra* note 22, at 59-60 (listing Johnson's qualifications and additional statements).

[77] *Staples*, 511 U.S. at 603. *See* N.Y. State Rifle & Pistol Ass'n v. Cuomo, 804 F.3d 242, 256 (2d Cir. 2015) ("Because the AR–15 is 'the civilian version of the military's M–16 rifle,' defendants urge that it should be treated identically for Second Amendment purposes. But the Supreme Court's very choice of descriptor for the AR–15—the 'civilian version'— could instead imply that such guns 'traditionally have been widely accepted as lawful.'") (internal citations omitted).

[78] The United States Defense Intelligence Agency defines "assault rifles" as "short, compact, selective-fire weapons that fire a cartridge intermediate in power between a submachine gun and rifle cartridges. Assault rifles have mild recoil characteristics and, because of this, are capable of delivering effective full automatic fire at ranges up to 300 meters." JOHNSON, *supra* note 75, at 105.

Avtomat Kalashnikova, or AK-47. American designers were late to the assault-rifle race, but eventually produced the AR-15 assault rifle in the late 1950s and early 1960s.[79] Compared to the M1 Garand used in World War II and Korea, the AR-15 was almost three pounds lighter, had less recoil, used a 30-round magazine rather than an eight-round clip, could fire 12-rounds per second on full automatic rather than just single shots, and its small .22-caliber cartridge weighed less than the Army's .30-caliber rounds, allowing troops to carry more ammunition.[80]

Kolbe discusses the military development of the AR-15, but the military AR-15 was not the same rifle as the modern civilian AR-15. The initial AR-15 prototype was designed, as *Kolbe* recognizes, "as a selective-fire rifle,"[81] offering both semiautomatic and fully automatic modes, and it was only later that the military changed its name from AR-15 to M16. Thus, the AR-15 rifle "designed for the battlefield" was a selective-fire rifle that could shoot one round at a time or many rounds with one sustained squeeze of the trigger. The military version of the AR-15, which became the M16, always has been selective fire, whereas the civilian AR-15 always has been semiautomatic only. Because the AR-15 lacks the fully automatic capabilities of its military counterpart, it was designed not for the battlefield but rather for the civilian market.

To determine whether the AR-15 is a weapon of war "like" the M16, one must consider the two rifles' intended applications. There is a reason why no military in the world uses a semiautomatic-only rifle as its standard service weapon. Certain tactical conditions may require automatic fire, making selective-fire assault rifles superior for military use over semiautomatic-only rifles like the civilian AR-15. The 2008 United States Army Field Manual on Rifle Marksmanship explains that "[i]n some combat situations, the use of automatic or burst fire can improve survivability and enhance mission accomplishment."[82] Automatic rifle fire can be used for

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79 For more extensive discussions of the historical development of military assault rifles, see Duncan Long, The Complete AR-15/M16 Sourcebook: What Every Shooter Needs to Know 3-61 (2002); Hogg, supra note 43, at 243, 271, 286-87, 291-92; Thomas L. McNaugher, Marksmanship, McNamara, and the M16 Rifle: Organizations, Analysis and Weapons Acquisition (Rand Corp. Paper Series 1979), https://www.rand.org/pubs/papers/P6306.html; Joe Poyer, The M16/AR15 Rifle: A Shooter's and Collector's Guide 13-20 (2013). McNaugher's paper, a condensation of his 1977 Ph.D. dissertation at Harvard, provides one of the best short histories on the philosophy behind the development of the M16 rifle.

80 See Edward Clinton Ezell, Small Arms of the World 784 (1983); Hogg, supra note 43 at 287, 292; James Fallows, M-16: A Bureaucratic Horror Story, The Atlantic (June 1981), https://www.theatlantic.com/magazine/archive/1981/06/m-16-a-bureaucratic-horror-story/545153/.

81 Kolbe v. Hogan, 849 F.3d 114, 124 (4th Cir. 2017).

82 Army Rifle Marksmanship Manual, supra note 60, at 7-13; see also Dennis Chapman, The 'Weapons of War' Myth, LinkedIn (Dec. 7, 2015), https://www.linkedin.com/pulse/weapons-war-myth-dennis-chapman (explaining that "[w]hether burst or full auto, selective fire serves one function in combat—to gain fire superiority over an enemy force. Fire superiority is achieved when

gaining initial fire superiority over an enemy force, suppressive fire, engaging area targets, breaking contact in close terrain, effecting ambushes, executing certain close-quarters-battle (CQB) situations such as clearing a room or bunker, engaging closely-spaced multiple targets, and providing final protective fire (FPF) against an overwhelming enemy attack.[83] Sometimes the military's need to fire many rounds downrange quickly is more important than precisely-aimed fire. By contrast, the inability of the AR-15 to fire in fully automatic mode makes it best-suited for civilian rather than military use. Full-automatic capability is not available on civilian AR-15s because there is typically no need for automatic fire in civilian self-defense and sporting applications.

When measured by intended applications, the AR-15 is not a weapon of war "like" the M16. Both the AR-15 and the M16 can fire in semiautomatic mode used in the vast majority of military applications, but only the M16 can fire in the fully automatic mode required for certain exceptional military operations.[84] The civilian AR-15 is neither designed nor suited for such applications. That is why the military does not use the civilian AR-15 on the battlefield. Dennis Chapman, an attorney, 25-year military veteran, and former infantry officer, points out that selective-fire capability "is the single, essential feature that makes a military firearm more useful in combat than its civilian counterpart."[85]

Kolbe never explains how the semiautomatic AR-15 can be a weapon "designed for the battlefield" and "most useful in military service" when it lacks the capability for military applications requiring automatic fire. Instead, *Kolbe* downplays this distinction by asserting that any difference between the fully automatic M16 and the semiautomatic AR-15 is "slight."[86] It confidently declares that the AR-15's semiautomatic rate of fire is "nearly identical" to the M16's fully automatic fire and that the AR-15 has the same "military features . . . that make the M16 a devastating and lethal weapon of war."[87] As discussed in the two myths that follow, the AR-15's rate of fire

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the enemy has been suppressed—which is to say, when one side is placing such a high volume of fire into the enemy's general vicinity that the enemy is forced to seek cover and is thereby prevented from returning effective fire (they may still shoot back, but not very well.").

83 *See* ARMY RIFLE MARKSMANSHIP MANUAL, *supra* note 60, at 7-13, 7-16, 7-19, 7-47 (2008); *cf.* Arthur D. Osborne & Seward Smith, *Analysis of M16A2 Rifle Characteristics and Recommended Improvements* 7-8, 11 (Feb. 1986), http://www.dtic.mil/dtic/tr/fulltext/u2/a168577.pdf (noting that fully automatic fire is useful "to clear and defend buildings, to conduct final assaults on enemy positions, to defend against an enemy final assault, to conduct an ambush," and "to react to an enemy ambush" and explaining that high-volume suppressive fire is more useful at close-range when closing in on an enemy position).

84 *See* Hognose, *Burst Selector: An Idea Whose Time Has Come and Gone,* WEAPONSMAN (March 21, 2016) http://weaponsman.com/?p=30530 ("anyone who's been well trained uses an assault rifle in semi auto mode well over 90% of the time").

85 Chapman, *supra* note 82.

86 Kolbe v. Hogan, 849 F.3d 114, 125 (4th Cir. 2017).

87 *Id.* at 136.

is comparable to semiautomatic handguns, not machine guns, and its "military features" typically address ergonomics and safety in a way common to most civilian rifles—they do not make the AR-15 far more dangerous than other firearms. *Kolbe* identifies one additional point of comparison: "in many situations, the semiautomatic fire of an AR-15 is more accurate and lethal than the automatic fire of an M16."[88] No one disputes that semiautomatic fire is more accurate and typically preferred over fully automatic fire (the M16 also fires in semiautomatic mode), but this is a red herring. The AR-15's semiautomatic fire capability does not offset its lack of fully automatic fire capability.

If the AR-15 and M16 are virtually interchangeable "weapons of war," as *Kolbe* contends, one wonders why the military uses more complex selective-fire weapons when cheaper, simpler AR-15s will do. The Fourth Circuit twice cited with approval the *Kolbe* district court's finding that "assault rifles like the AR-15 are essentially the functional equivalent of M-16s—*and arguably more effective* . . . ."[89] Neither the Fourth Circuit nor the district court explained how a weapon capable of *only* semiautomatic fire can be more effective on the battlefield than a selective-fire weapon, which has the capability for *both* semiautomatic and fully automatic fire. These judges apparently think our military is using inferior assault rifles and instead should supply its troops with weapons purchased from local gun stores.

Kolbe's deliberate disregard for the military's exclusive use of selective-fire assault rifles cannot be reconciled with its own "military use" test for Second Amendment protection. When the dissenters pointed out that the military does not use semiautomatic-only rifles, the Fourth Circuit majority responded that the relevant inquiry is not whether a weapon is used by a military, but whether it is "most useful in military service."[90] That distinction makes little sense —the military will use the weapon it determines to be most useful in military service. The military has decided that selective-fire M16 and M4 rifles are most useful in war, not the less-capable AR-15.

Faced with the lack of evidence that the civilian AR-15 is a "weapon of war" by design or function, the Fourth Circuit simply made that evidence up. Three times *Kolbe* describes the civilian AR-15 as being designed to kill or

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88 *Id*.

89 *Id*. at 134, 143 (quoting Kolbe v. O'Malley, 42 F. Supp. 3d 768, 789 n.29 (D. Md. 2014)) (emphasis added). This bizarre observation echoes the Violence Policy Center's claim that "[c]ivilian semiautomatic assault weapons . . . *are arguably more deadly than military versions*, because most experts agree that semiautomatic fire is more accurate—and thus more lethal—than automatic fire." Tom Diaz, *Bullet Hoses – Ten Key Points about What Assault Weapons Are and Why They are So Deadly*, Chapter in Diaz, *supra* note 16 (emphasis added).

90 *Kolbe*, 849 F.3d at 144 ("The relevant question is not whether they are themselves M16s or other arms used by a military; or whether they are useful at all or only useful in military service; or whether they have this or that single feature in common with a non-banned firearm. Rather, the issue is whether the banned assault weapons and large-capacity magazines possess an amalgam of features that render those weapons and magazines like M16s and most useful in military service.").

disable the enemy on the battlefield, citing a 1989 ATF report at page 735 in the joint appendix:

> The AR-15, semiautomatic AK-47, and other assault weapons banned by the [Maryland act] have a number of features designed to achieve their principal purpose—"*killing or disabling the enemy" on the battlefield. See* J.A. 735 . . . .[91]
>
> Whatever their other potential uses—including self defense—the AR-15, other assault weapons, and large-capacity magazines prohibited by the [Maryland act] are unquestionably most useful in military service. That is, the banned assault weapons are designed to *"kill[] or disabl[e] the enemy" on the battlefield*. *See* J.A. 735 . . . .[92]
>
> [T]he issue is whether the banned assault weapons . . . possess an amalgam of features that render those weapons and magazines like M16s and most useful in military service. The uncontroverted evidence here is that they do. *See, e.g.*, J.A. 735 . . . (reflecting that the banned assault weapons are designed to *"kill[] or disabl[e] the enemy" on the battlefield* . . . .) . . . .[93]

The quoted words in the joint appendix come from this sentence in the 1989 ATF report: "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."[94] The same report makes clear that a civilian AR-15 is not a "modern military assault rifle" because it lacks fully automatic capability.[95] The *Kolbe* majority took part of a sentence describing the design of the fully automatic military assault rifle and used it repeatedly to describe the semiautomatic-only civilian AR-15, without acknowledging or explaining the discrepancy.

The civilian AR-15 is not a "weapon of war" like the M16. Despite *Kolbe's* claim that it is "most useful for military service," it has never been used in war by the United States military and is not currently in use by any national military as a standard service rifle. The civilian AR-15 is not "designed for the battlefield" because it lacks the capability for fully automatic fire useful in certain combat applications. Because the civilian AR-15 is incapable of performing those applications, it is not "like" the selective-fire M16.

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91 *Id.* at 125 (emphasis added).

92 *Id.* at 137 (emphasis added).

93 *Id.* at 144 (emphasis added).

94 ATF REPORT, *supra* note 11, at 6 (1989) (emphasis added) (found at J.A. 734-35).

95 *See id.* at 5-6 (noting that "[t]rue assault rifles are selective fire weapons that will fire in a fully automatic mode.") (citing DANIEL D. MUSGRAVE & THOMAS B. NELSON, THE WORLD'S ASSAULT RIFLES 1 (T.B.N. Enterprises, 1967)).

By trying to make the civilian AR-15 appear "like" a machine gun, the Fourth Circuit neglected a more appropriate comparison: there is no significant difference in combat effectiveness between the military M16 and the civilian AR-15 when both are fired in semiautomatic mode.[96] But the Fourth Circuit's legal argument for why the AR-15 is not protected under the Second Amendment turns entirely on there being no meaningful difference between the AR-15 when fired in *semiautomatic* mode and the M16 when fired in *fully automatic* mode. Comparing the two rifles when fired in semiautomatic mode obscures the critical difference between them: the M16 is a machine gun, while the AR-15 is not. *Kolbe* thus must compare the AR-15 in semiautomatic mode to the M16 in fully automatic mode for its argument to work. That is why *Kolbe* asserts that the AR-15's rate of fire is "nearly identical" to the M16 in automatic mode[97] and that AR-15s "are firearms designed . . . to shoot a large number of rounds across a battlefield *at a high rate of speed*."[98] That also is why *Kolbe* compares the two rifles' "combat features," which it says give the AR-15 a lethal capability "far beyond" that of other firearms.[99] The correctness of these comparisons are discussed in the next two myths.

B. The "Spray Fire" Myth

A second myth propagated by gun-control advocates and relied on by courts is that the semiautomatic AR-15 is designed to "spray" a high volume of bullets almost as rapidly as a machine gun, typically without aiming. This myth is associated with mistaken or misleading assertions about the AR-15's design and rate of fire, as well as certain "combat features" the AR-15 has in common with the M16, such as a "barrel shroud" and pistol grip, both of which are said to enable "spray firing" from the hip. The AR-15's comparative rate of fire is discussed here, while the barrel shroud and pistol grip features are addressed in the third myth.

"Spray fire" imagery repeatedly is used by advocates of "assault weapons" bans. As discussed above, this is part of their strategy to exploit confusion surrounding "assault weapons" and make courts, lawmakers, and the public think that such weapons operate like machine guns and are therefore more dangerous than other rifles.[100] For example, the Council on Scientific Affairs of the American Medical Association called for a ban on "assault weapons" in 1994, asserting that "[s]emiautomatic hunting rifles are precisely aimed and fired from the shoulder, while assault weapons are meant

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96 Of course, the combat effectiveness of a weapon ultimately will depend on the skill of the shooter.

97 *Kolbe*, 849 F.3d at 136.

98 *Id.* at 125 (quoting J.A. 206) (internal quotation omitted) (emphasis added).

99 *Id.* at 137.

100 *See supra* Part I.

to be spray-fired from the hip."[101] According to a 2003 Violence Policy Center report calling semiautomatic AR-15s "bullet hoses,"[102] both military *and* civilian "assault weapons" were developed specifically for the purpose of "spray and pray" firing:

> From the STG-44 "storm gun" [a selective-fire military assault rifle] to the Bushmaster XM-15 [a semiautomatic-only civilian AR-15 style rifle], assault weapons have incorporated into their design *specific* features that enable shooters to spray ("hose down") a large number of bullets over a broad killing zone, without having to aim at each individual target. These features not only give assault weapons a distinctive appearance, they make it easy to simply point the gun while rapidly pulling the trigger—including firing from the hip, a procedure seldom used in hunting anything but human beings . . . "spray and pray" was exactly the point of developing assault weapons. [103]

The Legal Community Against Violence (now the Giffords Law Center to Prevent Gun Violence) declared in 2004 that "[a]ssault weapons are semi-automatic firearms designed with military features to allow rapid and accurate spray firing. They are not designed for 'sport;' they are designed to kill humans quickly and efficiently."[104] The organization further claimed that "assault weapons" are designed to "mak[e] spray firing easy"[105] and have the ability "to spray large amounts of ammunition rapidly and accurately."[106] These are only a few examples. The "spray fire" canard has been repeated so often that it has become a cliché among pro-ban advocates.

Courts readily have accepted the "spray fire" myth as fact, despite it being both counterintuitive and unsupported by reliable evidence. The Seventh Circuit in *Friedman*, without citation, described the banned "assault weapons" as being "designed to spray fire rather than to be aimed carefully."[107] In *Heller II* the D.C. Circuit credited the statement of Brian

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101 Yank D. Coble, Jr, MD et al., Assault Weapons as a Public Health Hazard in the United States, 267 J. AM. MED. ASS'N 3067, 3067 (1992). In support of this statement, the article cited a 1990 publication by Handgun Control, Inc. (now the Brady Campaign) entitled Assault Weapons Questions & Answers.

102 Diaz, *supra* note 16.

103 Tom Diaz, Bullet Hoses – The "Father of All Assault Rifles," Chapter in Diaz, id.; Tom Diaz, Bullet Hoses – The Gun Industry's Lies, Chapter in Diaz, id.

104 Banning Assault Weapons—A Legal Primer for State and Local Action 1, LEGAL CMTY. AGAINST VIOLENCE 1 (2004), http://lawcenter.giffords.org/wp-content/uploads/2012/05/Banning_Assault_Weapons_A_Legal_Primer_8.05_entire.pdf (last visited Sept. 30, 2018). It's unclear what the LCAV meant by "rapid and accurate," since "spray" firing is notoriously inaccurate.

105 *Id*. at 2.

106 *Id*. at 4.

107 Friedman v. City of Highland Park, 784 F.3d 406, 409 (7th Cir. 2015). This description appears in a "what we know" section of the court's opinion. Judge Easterbrook cited no evidence supporting the claim.

Siebel, a gun-control advocate, that "assault weapons" are capable of spray-firing:

> The [District of Columbia] Committee on Public Safety relied upon a report by the ATF, which described assault weapons as creating "mass produced mayhem." *Assault Weapons Profile* 19 (1994). This description is elaborated in the Siebel testimony for the Brady Center: "the military features of semiautomatic assault weapons are designed to enhance their capacity to shoot multiple human targets very rapidly" and "[p]istol grips on assault rifles help stabilize the weapon during rapid fire and allow the shooter to spray-fire from the hip position."[108]

Again, this is myth, not fact. High-volume "spray fire" historically has been associated with the design and function of modern selective-fire military assault rifles and not with semiautomatic-only military rifles such as the M1 Garand and civilian rifles such as the AR-15. If the military's semiautomatic-only rifles could produce high-volume "spray fire," then development of the modern selective-fire assault rifle with fully automatic capability would have been unnecessary. Pro-ban supporters have created this "spray fire" myth by falsely attributing to the semiautomatic AR-15 a function exclusive to the selective-fire M16. No military documents or historical accounts of the development of modern military assault rifles describe semiautomatic-only rifles (or the M16 in semiautomatic mode) as having the design or capability to "spray" bullets on the battlefield.

"Spray and pray" was not the point of developing "assault weapons," as the Violence Policy Center (VPC) falsely claimed.[109] The term "spray and pray" originally described a method of fire employed in Vietnam that *abused* the M16's fully automatic capability. The M16 was effective in producing a large volume of fire over shorter distances.[110] But fully automatic point shooting in combat quickly became undisciplined "spray and pray" fire for inexperienced American riflemen.[111] "Aimed fire was seldom used. Volume

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[108] Heller v. District of Columbia (*Heller II*), 670 F.3d 1244, 1262-63 (D.C. Cir. 2011). The D.C. Committee on Public Safety asserted that "assault weapons" are "military-style weapons made for offensive military use. They are designed with military features to allow rapid and accurate spray firing. They are not designed for sport, but to kill people quickly and efficiently." Council of D.C., Comm. on Pub. Safety & the Judiciary, *Rep. on Bill 17-843, Firearms Control Amendment Act of 2008* (2008).

[109] *See* Tom Diaz, *Bullet Hoses – The Gun Industry's Lies,* Chapter in Diaz, *supra* note 16.

[110] *See* POYER, *supra* note 79, at 19 ("The M16A1 rifle served with distinction during the war in Vietnam and helped to prove the theory that massive amounts of firepower at ranges of up to 300 meters were more effective than aimed fire at the same distances—the thick rain forest and high grass of Vietnam often prevented soldiers from identifying targets at distances beyond 100 to 200 meters.").

[111] *Id.* at 14 ("'Spray and pray' would become the practice on the future battlefields of Vietnam."); *id.* at 19 ("[T]oo much firepower [in Vietnam] was as bad as not enough. Soldiers under fire had the tendency to . . . switch[] to full automatic and spray an area, often with little or no effect.").

automatic fire became the rule. Typically, soldiers sprayed bullets at the enemy in hopes that *some* of the rounds would hit him. More often than not, they *all* missed."[112] The "spray and pray" method of fire was extremely inaccurate, wasted ammunition, and led to weapon malfunctions.[113] There is no reason to design a firearm for "spray and pray" gunfire.

1. Comparative rates of fire: Semiautomatic handgun, AR-15, and M16

Because the AR-15 and other "assault weapons" do not fire in fully automatic mode like the M16, they do not have such "spray fire" capability. *Heller II,* however, declares that "semi-automatics . . . fire almost as rapidly as automatics," citing Siebel's testimony that a 30–round magazine from an UZI assault pistol "was emptied in slightly less than two seconds on full automatic, while the same magazine was emptied in just five seconds on semi-automatic."[114] *Kolbe* similarly compares rates of fire of the M16 and AR-15:

> [T]he automatic firing of all the ammunition in a large-capacity thirty-round magazine takes about two seconds, whereas a semiautomatic rifle can empty the same magazine in as little as five seconds. See, e.g., J.A. 1120 ("[S]emiautomatic weapons can be fired at rates of 300 to 500 rounds per minute, making them virtually indistinguishable in practical effect from machine guns.") . . . .[115]
>
> Although an M16 rifle is capable of fully automatic fire and the AR-15 is limited to semiautomatic fire, their rates of fire (two seconds and as little as five seconds, respectively, to empty a thirty-round magazine) *are nearly identical*.[116]

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112 CHARLES SASSER & CRAIG ROBERTS, ONE SHOT–ONE KILL 135 (1990).

113 To minimize "spray and pray," the M16A2, developed in 1983, substituted a three-round burst mode for the fully automatic mode in the M16A1. But the burst mode reduced accuracy due to inconsistent trigger pull and was rarely used. Special forces and other select units began using the smaller selective-fire M4A1 carbine in the 1990s with its fully automatic mode. Over the last several years, the military has been replacing the M16 with the M4A1 in infantry units, thus doing away with the burst mode and returning to the fully automatic mode in its standard service rifles. *See* Christian Beekman, *Here's why the US military is replacing the M16,* BUSINESS INSIDER (Oct. 28, 2015), http://www.businessinsider.com/heres-why-the-us-military-is-replacing-the-m16-2015-10; Kyle Jahner, *Army continues rollout of more durable, full auto M4A1,* ARMYTIMES (July 4, 2015), https://www.armytimes.com/news/your-army/2015/07/04/army-continues-rollout-of-more-durable-full-auto-m4a1/.

114 Heller v. District of Columbia (*Heller II*), 670 F.3d 1244, 1263 (D.C. Cir. 2011) (quoting Testimony of Brian J. Siebel, Brady Center to Prevent Gun Violence, at 1 (Oct. 1, 2008)) (internal quotations omitted).

115 Kolbe v. Hogan, 849 F.3d 114, 125 (4th Cir. 2017).

116 *Id.* at 136 (emphasis added).

Before examining the accuracy of these claims, it is necessary to establish a baseline for comparing rates of fire. That baseline is the semiautomatic handgun, which *Heller* recognizes as a firearm protected by the Second Amendment. Semiautomatic handguns and semiautomatic rifles operate the same way: one round fired for each trigger pull with automatic loading of the next round. The average shooter can fire a semiautomatic handgun at a rate of about 2-3 rounds per second while pointing at a single stationary target. A Force Science Research Center 2007 study on police-attacker shooting performance showed that a large majority of inexperienced handgun shooters in the test group could fire three rounds from a semiautomatic handgun in 1.5 seconds (2 rounds per second), and some were able to fire three rounds in one second.[117] In *Rampage Nation: Securing America from Mass Shootings,* Louis Klarevas says the average shooter's rate of fire for a semiautomatic handgun is two rounds per second, while the expert shooter can fire three rounds per second.[118] As shown below, the rate of fire for semiautomatic AR-15 rifle is nearly identical to the semiautomatic handgun. If AR-15s are capable of "spray firing," then so are the handguns protected by *Heller*.[119]

Determining comparative rates of fire is more complicated than federal court decisions suggest. There are two ways to measure a weapon's rate of fire. One method measures the total time from the first shot to the last shot, breaking that time into "splits" or time intervals between each shot. This typically is used when measuring cyclic (mechanical) rate of fire. The other

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[117] Force Science Ins., *New Tests Show Deadly Accuracy & Startling Speed Even Inexperienced Shooters Can Achieve in Shooting Cops*, FORCE SCIENCE (Feb. 27, 2007), http://www.forcescience.org/fsnews/66.html. The result includes reaction time. The report summary states:

> The shooters were told that at the sound of a timer they should "shoot as fast as you can, as well as you can, trying to hit the target with every shot but not slowing down in an attempt to gain accuracy," [Ron] Avery said [Avery is an FSRC technical advisor]. "We wanted them to get the first round off in under 1 second and to complete 3 shots within 1.7 seconds. That's similar to a real assailant bringing a gun out and firing as rapidly as he can." They were not told what part of the target to try to hit, just "wherever you feel is best."

Id. A summary of the test and results appears in Force Science Institute, *New reaction-time study addresses what's 'reasonable' in armed-suspect encounters*, POLICEONE.COM (May 26, 2011), https://www.policeone.com/Officer-Safety/articles/3705348-New-reaction-time-study-addresses-whats-reasonable-in-armed-suspect-encounters/.

[118] LOUIS KLAREVAS, RAMPAGE NATION: SECURING AMERICA FROM MASS SHOOTINGS 211-12 (2016).

[119] *See* Eugene Volokh, *Implementing the Right to Keep and Bear Arms for Self-Defense: An Analytical Framework and a Research Agenda*, 56 UCLA L. REV. 1443, 1484 (2009) ("The laws generally define assault weapons to be a set of semiautomatic weapons (fully automatic weapons have long been heavily regulated, and lawfully owned fully automatics are very rare and very expensive) that are little different from semiautomatic pistols and rifles that are commonly owned by tens of millions of law-abiding citizens. 'Assault weapons' are no more 'high power' than many other pistols and rifles that are not covered by the bans.") (footnote omitted).

method adds the shooter's reaction time, which is the time interval between the shooter hearing the start signal and firing the first round. The latter method provides a more realistic measurement for real-world scenarios.

With a cyclic (mechanical) rate of fire of 700-900 rounds per minute in full automatic mode,[120] an M16 can empty a standard 30-round magazine in 2 to 2.5 seconds. But the M16's cyclic rate of fire becomes theoretical after the first magazine is emptied. It does not account for magazine changes to reload or the fact that firing multiple rounds without pause will cause the barrel to overheat. To fire that rapidly over a sustained period, the shooter would have to reload every two seconds, which would add another two-to-five seconds per 30-round magazine, depending on the shooter's proficiency.[121] Additionally, because the M16's barrel is not intended for sustained fully automatic fire, it will overheat and eventually rupture around 500 rounds.[122]

Federal court claims that the semiautomatic AR-15 is capable of high rates of fire "almost as rapid"[123] or "nearly identical"[124] to the fully automatic M16 are inaccurate. *Kolbe* cites evidence that "semiautomatic weapons can be fired at rates of 300 to 500 rounds per minute, making them virtually indistinguishable in practical effect from machine guns."[125] Aside from the fact that *Kolbe*'s data indicates that semiautomatics fire at only half the rate of fully automatics, anyone familiar with the operation of the civilian AR-15 knows that it does not fire 300 to 500 rounds per minute. To begin with, a cyclic rate of fire for a semiautomatic firearm is meaningless. Because a semiautomatic firearm fires only one round with each pull of the trigger, it can fire only as fast as the individual shooter can pull the trigger. How fast the shooter can pull the trigger will depend on the shooter's skill and endurance as well as the weapon's firing mechanism (weight of trigger pull, trigger reset distance, buffer spring, etc.). Even if a shooter can fire multiple

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120 ARMY RIFLE MARKSMANSHIP MANUAL, supra note 60, at 2-1. A cyclic rate of fire measures how fast the weapon can fire mechanically and does not consider operator factors such as reaction time, reloading, and aiming.

121 *See* Maddhatter111111, *Marine speed reloading m4* 2, YOUTUBE (Mar. 5, 2009), https://www.youtube.com/watch?v=Hx0JzYcwUiY (showing U.S. Marine speed reload at 2.6 seconds).

122 Fire to destruction testing of the M16A2 at the Rock Island Arsenal in 1996 showed that the barrel ruptured at 491 rounds. Jeff Windham, *Fire to Destruction Test of 5.56mm M4A1 Carbine and M16A2 Rifle Barrels*, ENGINEERING SUPPORT DIRECTORATE ROCK ISLAND ARSENAL, ILLINOIS 1-2 (Sept. 1996), www.dtic.mil/get-tr-doc/pdf?AD=ADA317929. For more sustained automatic fire, the military uses the Squad Automatic Weapon (SAW) as well as larger caliber machine guns, all of which have heavier barrels that can be readily replaced when degraded. *See, e.g.*, Capt. JT Elder & Patricia Herndon, *Harnessing the Power of Technology for the Warfighter—USSOCOM S&T MK48 MOD1 Machinegun—Sustained Fire Upgrade*, NAVSEA WARFARE CENTERS (April 2016), https://ndiastorage.blob.core.usgovcloudapi.net/ndia/2016/armament/18355_Armstrong.pdf.

123 Heller v. District of Columbia (*Heller II*), 670 F.3d 1244, 1263 (D.C. Cir. 2011).

124 Kolbe v. Hogan, 849 F.3d 114, 136 (4th Cir. 2017).

125 *Id.* at 125 (citing J.A. 1120).

rounds in a single second, that does not mean he or she can maintain that rate of fire for a longer period. To fire 300 to 500 rounds per minute, a shooter would have to pull the trigger five to eight times *a second* for 60 seconds. The shooter also would need to reload, which adds an additional two to five seconds (or more, depending on proficiency) for each magazine used.

To further show that a semiautomatic AR-15 fires almost as rapidly as the fully automatic M16, both *Kolbe* and *Heller II* declare that a semiautomatic rifle can empty a 30-round magazine "in as little as five seconds."[126] While *Kolbe* sourced this assertion with the flawed "300 to 500 rounds per minute" figure,[127] the D.C. Circuit in *Heller II* relied on a statement from gun-control advocate Brian J. Siebel, who made the "five seconds" claim:

> Although semi-automatic firearms, unlike automatic M-16s, fire "only one shot with each pull of the trigger,". . . semi-automatics still fire almost as rapidly as automatics. *See* Testimony of Brian J. Siebel, Brady Center to Prevent Gun Violence, at 1 (Oct. 1, 2008) ("30-round magazine" of UZI "was emptied in slightly less than two seconds on full automatic, while the same magazine was emptied in just five seconds on semi-automatic"). Indeed, it is difficult to draw meaningful distinctions between the AR-15 and the M-16.[128]

You can empty a 30-round magazine on a semiautomatic AR-15 in five seconds—if you are Jerry Miculek. Many consider Miculek to be the world's fastest shooter.129 He has fired five rounds from an AR-15 in .96 seconds and emptied a 30-round magazine with an AR-15 in 5.3 seconds.[130] If you are not Jerry Miculek, it will take longer. I asked Jeff Gurwitch, a Special Forces veteran, firearms expert, and competitive shooter, to see how fast he could empty a 30-round magazine using a semiautomatic AR-15. It took him

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126 *Id.* at 125, 136; *Heller II*, 670 F.3d at 1263.

127 *Kolbe*, 849 F.3d at 125.

128 *Heller II*, 670 F.3d at 1263. The district court in *Kolbe* cited Siebel's statement when concluding that the difference in rate of fire between a semiautomatic and fully automatic weapon is "minimal," 42 F. Supp. 3d 768, 793-94 (D. Md. 2014), *aff'd en banc sub nom.* Kolbe v. Hogan, 849 F.3d 114 (4th Cir. 2017), and that statement was in the *Kolbe* record before the Fourth Circuit at J.A. 1150.

129 For a montage of Miculek's speed shooting, see Miculek.com-The Leaders in Gun Control!, *Fastest Shooter OF ALL TIME! Jerry Miculek Incredible Shooting Montage*, YOUTUBE (July 28, 2014), https://www.youtube.com/watch?v=WyIq9FdTgwM.

130 See the Miculek videos at Miculek.com-The Leaders in Gun Control!, *AR-15 5 shots in 1 second with fastest shooter ever, Jerry Miculek (Shoot Fast!)*, YOUTUBE (June 20, 2013), https://www.youtube.com/watch?v=v3gf_5MR4tE (5 rounds); Miculek.com-The Leaders in Gun Control!, *30 Caliber Magazine Clip in a Half Second! (With the world's FASTEST shooter, Jerry Miculek)*, YOUTUBE (Feb. 6, 2014), https://www.youtube.com/watch?v=REdjjLBaiOs (30 rounds with a "clip" spoof). Both of Miculek's times include reaction time. Miculek typically uses a trigger with a light pull and very short reset. *See* Miculek.com-The Leaders in Gun Control!, *Jerry Miculek's Gear,* https://miculek.com/guns-gear/jerry-miculeks-gear/ (last visited Sept. 18, 2018) (indicating that Miculek uses the American Gold trigger).

6.4 seconds.[131] Being an avid civilian shooter, I have fired thousands of rounds through an AR-15. My best time was slower at almost seven seconds.[132]

These rates of fire are not "nearly identical" to an M16 firing in automatic mode. Adding half-a-second reaction time to the cyclic rate, a fully automatic M16 can empty a 30-round magazine in 2.5 seconds, which is 12 rounds per second.[133] By contrast, only the world's fastest shooters can empty a 30-round magazine in "as little as five seconds," which is twice as slow as the M16. The average shooter likely will take at least eight-to-ten seconds to empty a 30-round magazine with an AR-15, which is almost four times slower than the M16.[134] Few shooters will retain that rate of fire for an entire minute, probably slowing closer to one or two rounds per second at the end. The rate for an inexperienced shooter will be even less.

Such rates of fire, of course, do not occur in real-world situations. Besides reloading, the shooter will be aiming at a target or multiple targets that likely are moving and the weapon's accuracy will be affected as recoil impulses move the barrel upwards after each shot. Dave Kopel rightly has pointed out that "the only meaningful rate of fire for a weapon is how fast a person, shooting at actual targets, can hit those targets."[135] Automatic fire is notoriously inaccurate. That is why the military specifies that the maximum *effective* rate of fire for an M16/M4 in fully automatic mode is 150-200 rounds per minute, even though its cyclic rate is five times higher.[136] Rapid semiautomatic fire likewise can be inaccurate. The military's maximum *effective* rate of fire for an M16/M4 in semiautomatic mode is only 45 rounds per minute, about four times slower the fully automatic rate.[137] Accurate semiautomatic fire thus results in only about four rounds in five seconds, not

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131 Video in possession of the author. The result includes reaction time.

132 Video in possession of the author. I used a LaRue OBR 5.56 rifle with a Geissele SSA-E trigger and PACT Club shot timer. The result includes reaction time.

133 *See supra* text accompanying note 121.

134 This figure is an extrapolation from the times discussed *supra* in text accompanying notes 130-32. It may take even longer. Klarevas says that an average shooter can fire two rounds per second from an AR-15, which would require as many as 15 seconds to empty a 30-round magazine. *See* KLAREVAS, *supra* note 118, at 211-12.

135 Dave Kopel, *Rational Basis Analysis of "Assault Weapon" Prohibition,* 20 J. CONTEMP. L. 381, 389 (1994). The U.S. Army's 2016 Rifle and Carbine Training Circular explains:

> [t]he rifleman's primary role is to engage the enemy with well-aimed shots . . . . In this capacity, the rate of fire for the M4 rifle is not based on how fast the Soldier can pull the trigger. Rather, it is based on how fast the Soldier can consistently acquire and engage the enemy with accuracy and precision.

ARMY RIFLE AND CARBINE TRAINING CIRCULAR, *supra* note 59, at 5-1.

136 ARMY RIFLE MARKSMANSHIP MANUAL, *supra* note 60, at 2-1. Another Army manual puts the maximum effective rate of fire for the M4/M16 on full automatic at 90 rounds per minute. *See* U.S. DEP'T OF ARMY, TRAINING MANUAL 9-1005-319-10, OPERATORS MANUAL, at 0002 00-1 to 0002 00-2 (June 2010), https://www.sterlingarsenal.com/uploads/TM_9-1005_M16_Operator_Manual_-_2010.pdf [hereinafter ARMY OPERATORS MANUAL].

137 ARMY RIFLE MARKSMANSHIP MANUAL, *supra* note 60, at 2-1.

30 rounds as *Kolbe* claims. Additionally, the maximum *sustained* rate of fire for the M4/M16—the rate at which the weapon can continue to be fired indefinitely without overheating—is even lower at 12-15 rounds per minute.[138] Even with sustained suppressive fire, military training is designed to produce rapid semiautomatic fire that "will result in a well-aimed shot every one or two seconds."[139] Citing several expert declarations in *Robertson v. Denver*,[140] Kopel notes that "[i]t is nearly impossible for even trained shooters to fire on a target at much faster than one shot per second."[141]

Even if *Kolbe*'s "nearly identical" claim is understood as proximate rather than proportional—that is, the rates of fire are "nearly identical" because they differ only by a few seconds—the attempt to favorably compare the semiautomatic AR-15 with the fully automatic M16 still fails. Using semiautomatic handguns as a baseline, the rate of fire for the AR-15 is "nearly identical" to the handgun, not the M16. As previously noted, the Force Science Research Center study showed that inexperienced shooters could fire two-to-three rounds per second from a semiautomatic handgun at a single stationary target.[142] My own testing showed that I was able to fire three rounds from a semiautomatic handgun in .93 seconds and to empty a 15-round magazine in 3.9 seconds.[143] That rate is less than a second longer than it took me to empty a 30-round magazine with my AR-15. Louis Klarevas in *Rampage Nation: Securing America from Mass Shootings* sets the average shooter's rates of fire for a semiautomatic handgun and semiautomatic "assault rifle" at an identical two rounds per second, while the expert shooter can fire both weapons at three rounds per second.[144] Well-aimed fire at multiple targets will be even slower. The AR-15 is no more dangerous in its rate of fire than the vast majority of handguns.

Further evidence that "assault weapons" have not been used in real-life for achieving rates of fire comparable to fully automatic weapons comes from a *New York Times* article comparing audio recordings of the Las Vegas shooting, the Pulse nightclub shooting in Orlando, and the firing of a pre-1986 fully automatic Colt AR-15.[145] During the periods captured in the three audio recordings, the Orlando shooter fires 24 shots in nine seconds, the Las Vegas shooter fires 90 shots in ten seconds, and a fully automatic weapon

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138 ARMY OPERATORS MANUAL, *supra* note 136, at 0002-01 to 0002-02.

139 ARMY RIFLE MARKSMANSHIP MANUAL, *supra* note 60, at 7-9. This belies claims by gun-control advocates that AR-15s can be fired rapidly and accurately.

140 Robertson v. City & Cty. of Denver, No. 90CV603 (Denver Dist. Ct. Feb. 26, 1993).

141 Kopel, *supra* note 135, at 390.

142 Force Science Inst., *supra* note 117.

143 I used a Sig Sauer P226 Legion 9mm SAO (single action only) handgun and PACT Club shot timer. The results include reaction time.

144 KLAREVAS, *supra* note 118, at 211-12.

145 Larry Buchanan et al., *Nine Rounds a Second: How the Las Vegas Gunman Outfitted a Rifle to Fire Faster*, N.Y. TIMES (Oct. 5, 2017), https://www.nytimes.com/interactive/2017/10/02/us/vegas-guns.html.

fires 98 shots in seven seconds.[146] The Orlando shooter fired at a rate of 2.7 rounds per second during the recording, which is comparable to the rate-of-fire results for AR-15s and semiautomatic handguns described above.[147] By contrast, the Las Vegas shooter, apparently assisted by a bump-fire stock, fired at a rate of 9 rounds per second, and the fully automatic rifle fired at an even higher rate of 14 rounds per second.

Some may argue that semiautomatic rates of fire are irrelevant when add-ons like bump stocks or trigger cranks can increase the AR-15's rate of fire almost to the fully automatic rate. Until the tragic mass shooting in Las Vegas in September 2017, such devices had not been used in any mass shooting, and there is no evidence that they play any significant part in gun crimes. They are not used by the military or law enforcement, they are notoriously inaccurate and prone to misfiring, and they are not particularly useful for target shooting or self-defense. Since they are accessories and not part of the AR-15's original configuration, they can be regulated or banned separately.[148] The whole point of these devices is to make the semiautomatic AR-15 fire almost as rapidly as the fully automatic M16. If the two weapons' rates of fire are "nearly identical," as *Kolbe* claims,[149] these devices would be unnecessary.

The attempt by *Kolbe* and *Heller II* to depict "assault weapons" as having rates of fire virtually indistinguishable from fully automatic military assault rifles is both counterintuitive and lacks any reliable evidentiary support. The AR-15 does not "spray" rounds like the fully automatic M16. Nelson Lund correctly observes that "if the rate of fire in both modes were virtually identical, one wonders why the military would bother making all of its battle rifles capable of automatic fire."[150] The simple fact that the M16 and M4 have two separate modes of fire—semiautomatic and fully automatic (or burst)—indicates that the rates of fire in both modes are not "nearly identical."

So where did the Fourth and D.C. Circuits get their "facts"? The Fourth Circuit's "300 to 500 rounds per minute" figure comes from the 1994 United States House of Representatives Committee on the Judiciary Report on the proposed federal "assault weapons" ban.[151] The committee report cites earlier testimony from Dewey R. Stokes, who at the time was national president of the Fraternal Order of Police and a leading proponent of gun

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146 *Id.*

147 The Orlando shooter used a semiautomatic Sig Sauer MCX carbine, which is similar to an AR-15.

148 On March 23, 2018, the Justice Department has issued proposed administrative rule banning bump stocks. *See* Bump-Stock-Type Devices, 83 Fed. Reg. 13, 456 (proposed Mar. 29, 2018).

149 Kolbe v. Hogan, 849 F.3d 114, 136 (4th Cir. 2017).

150 Nelson Lund, Fourth Circuit Shootout: "Assault Weapons" and the Second Amendment, 24 GEO. MASON L. REV. 1233, 1239 n.40 (2017).

151 H.R. REP. NO. 103-489, at 18 (1994) (appearing in the Kolbe Joint Appendix at J.A. 1120).

control.[152] Stokes had testified before a June 1991 House subcommittee hearing on "assault weapons," where he stated that "[a]ssault weapons dramatically escalate the firepower of the user. Some technical documents on the firing rate of these weapons is at 300 or even 500 rounds per minute."[153] Stokes neither identified nor produced those "technical documents," and there is nothing to indicate that he was a firearms expert or personally observed that rate of fire from a semiautomatic AR-15 or any other "assault weapon." The Fourth Circuit's conclusion that the semiautomatic AR-15 has a rate of fire "nearly identical" to a fully automatic M16 was based on a single unsubstantiated claim made by a gun-control advocate 26 years ago.

Siebel's "testimony" cited by the D.C. Circuit was an unsworn statement made before the District of Columbia's Committee on Public Safety, which urged enactment of the District's "assault weapons" ban. Siebel is not a firearms expert—at the time, he was an attorney and lobbyist with the Brady Center, a gun-control advocacy group. His statement refers to an earlier police test: "When San Jose, California, police test-fired an UZI, a 30-round magazine was emptied in slightly less than two seconds on full automatic, while the same magazine was emptied in just five seconds on semiautomatic."[154] This test originally was mentioned in a 1988 magazine article by Chief Joseph D. McNamara of the San Diego Police Department, also a gun-control advocate.[155] McNamara explained that

> [a]fter a San Jose officer was shot with an Uzi, we tested it on our police firing range. Fully automatic, the weapon is illegal; it fired a 30-round clip in slightly less than two seconds. On semiautomatic, it fired the same clip

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152 Garry Lee, Taking the Fight Against Gun Control to the Police, WASHINGTON POST (Aug. 15, 1991), https://www.washingtonpost.com/archive/politics/1991/08/15/taking-the-fight-against-gun-control-to-the-police/c1de803d-9213-4bad-9892-c9055836508f/?utm_term=.0af9cd585be3; see also OSHA GRAY DAVIDSON, UNDER FIRE: THE NRA AND THE BATTLE FOR GUN CONTROL 274-75 (1998).

153 Hearing on Selected Crime Issues: Prevention and Punishment Before the Subcomm. on Crime & Criminal Justice of the H. Comm. on the Judiciary, 102nd Cong., 1st Sess. (May 23, 29, June 12, 26, July 10, 17, and 25, 1991) at 299 (statement of Dewey R. Stokes, National President, Fraternal Order of Police) (Semiautomatic Assault Weapons hearing on June 12, 1991), http://njlaw.rutgers.edu/collections/gdoc/hearings/9/92164661/92164661_2.pdf.

154 Council of D.C., Comm. on Pub. Safety & the Judiciary, Rep. on Bill 17-843, "Firearms Registration Amendment Act of 2008" (2008) (attachment of testimony of Brian J. Siebel, October 1, 2008), http://dcclims1.dccouncil.us/images/00001/20090513152155.pdf [hereinafter Report on Bill 17-843].

155 Joseph D. McNamara, *The Need for Gun Control: Developing a Rational, National Firearms Policy*, THE POLICE CHIEF 26 (Mar. 1988). Siebel provided no source citation for the referenced police test in his written statements to the council, but he earlier had referred to the test in his publication *Assault Weapons: "Mass Produced Mayhem"* (2008), which in turn cited a reference to the test in a 1992 article by Judith Bonderman entitled *In Search of Justice: Compensation for Victims of Assault Weapon Violence*, 20 PRODUCT SAFETY & LIABILITY REP. 622 (June 26, 1992). The Bonderman article cited McNamara's piece in *The Police Chief* magazine.

> in five seconds. These weapons are defined as rifles and purchased legally . . . .[156]

McNamara did not specify the model of the Uzi, nor did he provide any information about the skill of the shooter, type of timing device used (stopwatch or digital shot timer), or whether the results included reaction time;[157] in short, there is no way to verify the accuracy of McNamara's results. Yet the results of this one unconfirmed "test," reported in three sentences in trade magazine almost 30 years ago, has become anti-gun advocates' oft-repeated agitprop and a key piece of evidence in federal appellate court decisions upholding broad bans on popular firearms.

2. Comparative rates of fire: Mass shootings

Other than the 2017 Las Vegas shooting, mass shooters have not used AR-15s or other "assault weapons" to produce rates of fire higher than those attainable with semiautomatic handguns in incidents for which average rates of fire can be determined. I am not suggesting that the mass shooters discussed below actually fired at the rates specified; rather, my point is that the same number of rounds could have been fired by semiautomatic handguns within the time elapsed for the shootings. Having a semiautomatic rifle rather than a semiautomatic handgun apparently did not result in any significant rate-of-fire advantage. Of course, any discussion of mass shootings solely from a rate-of-fire perspective will seem detached from the tragic loss of life involved. Such analysis must be performed, however, if courts are going to rely on rate-of-fire comparisons to reach legal conclusions about the constitutionality of "assault weapon" bans.

One of the first modern mass shooting tragedies occurred in 1989 at Cleveland Elementary School in Stockton, California. The shooter used a semiautomatic AK-47-style rifle to kill five children and injure 31 on the school playground. He fired 105 rounds during the shooting, which lasted three minutes.[158] According to the California Attorney General's Report on

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156 McNamara, *supra* note 155, at 1.

157 The standard police timing device in 1988 was a stopwatch. Richard Mann, *Shot Timers – The Time of Your Life*, NRA SHOOTING ILLUSTRATED (Aug. 2, 2016), https://www.shootingillustrated.com/articles/2016/8/2/shot-timers-the-time-of-your-life/. Results were imprecise and dependent on the reaction time of the person running the stopwatch. *Id.*

158 There is some uncertainly as to exactly how long the shooting lasted. Most reports agree it was three minutes. *See, e.g.*, Mark Emmons & Josh Richman, *Stockton shooting: 25 years later, city can't forget its worst day*, THE MERCURY NEWS (Aug. 12, 2016) http://www.mercurynews.com/2014/01/16/stockton-shooting-25-years-later-city-cant-forget-its-worst-day/ ("Purdy's three-minute shooting rampage left five children dead and 30 teachers and students wounded"); Joshua Logan, *The Stockton Schoolyard Shooting*, OFFICER.COM (June 7, 2016) https://www.officer.com/tactical/article/12211156/the-stockton-schoolyard-shooting ("The attack lasted for three minutes from 11:59 am to 12:02 p.m. Pacific Time."); Tim O'Rourke, *Chronicle*

the shooting, the shooter's AK-47 variant "was capable of firing those bullets at about two rounds per second."[159] To fire 105 rounds in three minutes would require about 35 rounds per minute, well within the rate of fire for semiautomatic handguns.

Using an AR-15, the Newtown shooter, according to *Kolbe*, "fired at least 155 rounds within five minutes," which tragically killed 20 first-graders and six adults.[160] Assuming he made five magazine changes that took five seconds each, that would be about 34 rounds per minute, again within the rate of fire for semiautomatic handguns. The Aurora movie theater shooter killed 12 and wounded at least 58 in six minutes.[161] He fired 76 rounds total: 65 rounds from an AR-15 rifle before it jammed, six shotgun rounds (with multiple pellets per round), and five .40 caliber handgun rounds.[162] Sounds of at least 30 shots can be heard in a recorded 27-second call to 911.[163] That is about one round per second, again a rate easily attainable with a semiautomatic handgun. The off-duty sheriff's deputy who used his police-issued AR-15 semiautomatic rifle to kill six and wound one in Crandon, Wisconsin, fired 30 rounds in about one minute, also about one round every two seconds.[164] The Parkland school shooter reportedly fired 150 rounds in six-and-one-half minutes, killing 17 and wounding 17 more.[165] There are conflicting reports about whether he used 10-round or 30-round

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Covers: A bloody, horrific school day in Stockton, SAN FRANCISCO CHRONICLE (Jan. 18, 2016), http://www.sfchronicle.com/news/article/Chronicle-Covers-A-bloody-horrific-school-day-6751921.php ("He went through more than 100 rounds in three minutes"). *But see Slaughter in a School Yard*, TIME MAGAZINE (June 24, 2001), http://content.time.com/time/printout/0,8816,151105,00.html (describing the assault as lasting four minutes).

159 Nelson Kempsky et al., *A Report to Attorney General John K. Van de Kamp on Patrick Edward Purdy and the Cleveland School Killings* 18 (Oct. 1989) https://schoolshooters.info/sites/default/files/Purdy%20-%20official%20report.pdf.

160 Kolbe v. Hogan, 849 F.3d 114, 120 (4th Cir. 2017). *See generally* Office of the State's Attorney, Judicial District of Danbury, 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) [hereinafter SANDY HOOK REPORT].

161 *Aurora, Colo. theater shooting timeline, facts*, ABC7 (July 26, 2012), http://abc7.com/archive/8743134.

162 Casey Wian et al., *"He intended to kill them all," prosecutor in theater shooting says*, CNN NEWS (Jan. 9, 2013), http://www.cnn.com/2013/01/09/justice/colorado-theater-shooting/index.html?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+rss%2Fcnn_latest+(RSS%3A+Most+Recent); Phil Tenser, *"Aurora police testify in James Holmes" trial: 240 ballistic impacts found after theater shooting*, KJRH NEWS (May 14, 2015), http://www.kjrh.com/news/national/aurora-police-testify-in-james-holmes-trial-240-ballistic-impacts-found-after-theater-shooting.

163 Wian, *supra* note 162.

164 *Statement of Attorney General Van Hollen on Crandon Multiple Homicides*, WISCONSIN DEPT. OF JUSTICE (Oct. 9, 2007), https://www.doj.state.wi.us/news-releases/statement-attorney-general-van-hollen-crandon-multiple-homicides.

165 Evan Perez, *Florida school shooter could have fired many more bullets*, CNN (Feb. 27, 2018), https://www.cnn.com/2018/02/27/us/florida-school-shooter-ammunition-left/index.html.

magazines.[166] Assuming five seconds for each magazine change, that averages between 23 to 28 rounds per minute depending on magazine size, again well within the capability of a semiautomatic handgun.

Perhaps the highest rate of fire in a mass shooting occurred at the First Baptist Church in Sutherland Springs, Texas. The shooter tragically killed 26 and wounded 20, using 15 30-round magazines to fire 450 rounds in seven minutes.[167] The rate of fire likely was higher was due to multiple stationary victims in very close proximity to the shooter. Assuming five seconds for each magazine change, this would have reduced his total shooting time to six minutes. That results in an average rate of fire of 77 rounds a minute or 1.28 rounds per second. By comparison, a shooter with semiautomatic handgun firing two rounds per second and using standard 15-round magazines could fire about 80 rounds a minute with magazine changes.

Other mass shootings show that semiautomatic handguns can be fired at rates or volumes comparable to the "assault weapons" used in the Stockton, Newtown, Aurora, Orlando, Sutherland Springs, and Parkland shootings. Using a Glock 19 semiautomatic handgun with a 33-round magazine, the Tucson shooter fired 33 rounds in 15 seconds, some two rounds per second.[168] The shooter at Virginia Tech used two semiautomatic handguns, a 9mm Glock 19 and a .22 caliber Walther P22.[169] At the Norris Hall location, he fired 174 rounds from the two handguns in about 10 minutes, walking back and forth among classrooms while killing 30 and wounding 17.[170] The Fort Hood shooter used an FN 5.7 semiautomatic handgun to kill

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166 *Compare* Nicholas Nehamas & David Smiley, *Florida school shooter's AR-15 may have jammed, saving lives, report says*, MIAMI HERALD (Feb. 27, 2018), https://www.miamiherald.com/news/local/community/broward/article202486304.html (stating the shooter used 10 round magazines) *with* Alex Daugherty & Mary Ellen Klas, *Limiting gun-magazine size poses a problem for Marco Rubio*, TAMPA BAY TIMES (Mar. 29), http://www.tampabay.com/florida-politics/buzz/2018/03/29/limiting-gun-magazine-size-poses-a-problem-for-marco-rubio/ (stating the shooter used 30 round magazines).

167 Adam Goldman et al., *Texas Church Shooting Video Shows Gunman's Methodical Attack, Official Says*, THE NEW YORK TIMES (Nov. 8, 2017), https://www.nytimes.com/2017/11/08/us/texas-shooting-video-devin-kelley.html; Holly Yan, *"Be quiet! It's him!" Survivors say shooter walked pew by pew looking for people to shoot*, CNN (Nov. 9, 2017), https://www.cnn.com/2017/11/07/us/texas-church-shooting-scene/index.html.

168 KLAREVAS, *supra* note 118, at 209; David Nakamura et al, *Videos show details of Tucson shooting*, WASH. POST (Jan. 19, 2011), http://www.washingtonpost.com/wp-dyn/content/article/2011/01/18/AR2011011801155.html; Press Release, James Turgal, *Jared Lee Loughner Sentenced in Arizona on Federal Charges in Tucson Shooting*, FBI PHOENIX DIVISION (Nov. 8, 2012), https://archives.fbi.gov/archives/phoenix/press-releases/2012/jared-lee-loughner-sentenced-in-arizona-on-federal-charges-in-tucson-shooting.

169 TriData Division, *Mass Shootings at Virginia Tech: Addendum to the Report of the Review Panel* 71 (Nov. 2009), https://schoolshooters.info/sites/default/files/Virginia%20Tech%20Addendum%20to%20the%20Official%20Report.pdf.

170 *Id.* at 92. The shooter also killed two students at West Ambler Johnston Hall two hours before entering Norris Hall.

13 and wound 30. He fired 214 rounds in 10 minutes.[171] The Wisconsin church shooter fired 22 rounds from a 9mm Beretta semiautomatic handgun in less than a minute.[172]

With the sole exception of the Las Vegas shooter who apparently used a bump stock, there is no evidence that any mass shooter has fired at AR-15's maximum rate of fire.[173] Criminologist Gary Kleck, whose research is cited in *Heller*,[174] made the following observations about mass shootings involving large-capacity magazines from 1994-2013 with known rates of fire:

> In the 25 incidents for which average rates of fire could be determined, shooters never maintained an average rate of fire anywhere as fast as that at which their firearms were capable of firing. Shooters firing as fast as the gun allows can easily fire three rounds per second with a typical semiautomatic firearm, that is, with only about one third of a second between rounds. In only three incidents were mass shooters know to have averaged less than 2 s between rounds. This is no more than one sixth of the maximum rate of fire of which semiautomatic guns are capable . . . .[175]

The three incidents Kleck identifies as having an average rate of fire of less than two seconds per shot involved one semiautomatic handgun (Tucson), one semiautomatic AR-15 (Newtown), and one semiautomatic AK-47 variant illegally modified to fire automatically (Carson City).[176]

The claim that AR-15s are capable of "spray firing" like machine guns is myth, not fact. Accurate rate-of-fire comparisons prove false *Kolbe's*

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171 Rick Jervis, *Fort Hood massacre trial: Hasan goes on the defense*, USA TODAY (July 8, 2013), https://www.usatoday.com/story/news/nation/2013/07/08/fort-hood-shooting-trial-hasan-court-martial/2427095/; Charley Keyes, *Fort Hood witness says he feared there were more gunmen*, CNN (Oct. 20, 2010), http://www.cnn.com/2010/CRIME/10/20/texas.fort.hood.shootings/index.html?hpt=T1.

172 Chris Hawke, *Church, Police Probe 7 Murders*, CBS NEWS (Mar. 14, 2005), https://www.cbsnews.com/news/church-police-probe-7-murders/; Associated Press, *Officials end investigation of deadly church shooting*, STARNEWS ONLINE (Aug. 3, 2005), http://www.starnewsonline.com/news/20050803/officials-end-investigation-of-deadly-church-shooting.

173 The high casualty rate in the Las Vegas shooting likely is attributable not only to the use of a bump stock, but also to crowd density and shooter elevation, making it difficult for victims to find cover. The significant loss of accuracy with the use of a bump stock may explain the much higher ratio of injuries to fatalities (9:1) in the Las Vegas shooting when compared to the next four deadliest mass shootings (2:1). *See* Jacob Sullum, *Did Bump Stocks Make the Las Vegas Shooting Deadlier?*, REASON HIT & RUN BLOG (Oct. 3, 2017), http://reason.com/blog/2017/10/03/did-bump-stocks-make-the-las-vegas-shoot.

174 District of Columbia v. Heller, 554 U.S. 570, 701, 704 (2008).

175 Gary Kleck, Large-Capacity Magazines and the Casualty Counts in Mass Shootings: The Plausibility of Linkages, 17 JUST. RES. & POL'Y 28, 44 (2016).

176 *Id*. at 43.

assertion that the semiautomatic-only AR-15 can fire at a rate "nearly identical" to the military's fully automatic M16. The semiautomatic AR-15's rate of fire actually is much more "like" the semiautomatic handgun, which *Heller* describes as the "quintessential self-defense weapon" and a firearm protected under the Second Amendment.[177]

C. The "combat features" myth

Another "assault weapon" myth is that the AR-15 shares certain military combat features with its M16 counterpart that make it much more lethal than other civilian firearms. This myth is reflected in "assault weapons" statutes that define the banned firearms based not on how powerfully they strike, how fast they fire, and how accurately they shoot, but rather on having certain features such as flash suppressors, barrel shrouds, folding and telescoping stocks, pistol grips, grenade launchers, night sights, bayonet lugs, and detachable magazines.[178]

The combat features myth appears widely in pro-gun control advocacy and typically supports the "spray-fire" falsehood. For example, Brian Siebel testified before the D.C. Council that unlike hunting rifles designed for aimed fire from the shoulder, semiautomatic "assault weapons" are designed to "shoot multiple human targets very rapidly," that these weapons have pistol grips to "help stabilize the weapon during rapid fire and allow the shooter to spray-fire from the hip position," that barrel shrouds "protect the shooter's hands from the heat generated by firing many rounds in rapid succession."[179] Siebel summed up by claiming that "[f]ar from being simply 'cosmetic,' these features all contribute to the unique function of any assault weapon to deliver extraordinary firepower. They are uniquely military features, with no sporting purpose whatsoever."[180]

Heller II relies on Siebel's testimony about these features in upholding the District's "assault weapons" ban.[181] *Kolbe* and *New York State Rifle & Pistol Ass'n* likewise embrace the myth. According to *Kolbe*, the AR-15 and other "assault weapons" possess military features designed for combat:

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177 Heller, 554 U.S. at 629; *see* Kolbe v. Hogan, 849 F.3d 114, 158 (4th Cir. 2017) (Traxler, J., dissenting) ("[I]f the majority is correct that the semiautomatic AR-15's rate of fire makes it a weapon of war outside the scope of the Second Amendment, then all semiautomatic firearms—including the vast majority of semiautomatic handguns—enjoy no constitutional protection since the rate of fire for any semiautomatic firearm is determined by how fast the shooter can squeeze the trigger. Such a conclusion obviously flies in the face of Heller, which never mentions rate of fire as a relevant consideration.").

178 *See* Kolbe, 849 F.3d at 137 (discussing statutory defining features). For additional discussion of these features and other features, see Kopel, supra note 135, at 388-400.

179 *See, e.g.*, *Report on Bill 17-843*, *supra* note 154 (attachment of testimony of Brian J. Siebel, Oct. 1, 2008), http://dcclims1.dccouncil.us/images/00001/20090513152155.pdf.

180 *Id.*

181 Heller v. District of Columbia (*Heller II*), 670 F.3d 1244, 1262-63 (D.C. Cir. 2011).

> [S]ome of the banned assault weapons incorporate flash suppressors, which are designed to help conceal a shooter's position by dispersing muzzle flash. Others possess barrel shrouds, which enable ''spray-firing'' by cooling the barrel and providing the shooter a ''convenient grip.'' Additional military features include folding and telescoping stocks, pistol grips, grenade launchers, night sights, and the ability to accept bayonets and large-capacity magazines.[182]

Both *Kolbe* and *New York State Rifle & Pistol Ass'n* conclude that such features give the AR-15 a lethal capability "far beyond" that of other firearms.[183] But none of these courts seriously considered whether these claims are factual. They took decades-old statements from pro-ban advocates at face value without scrutinizing them for accuracy. They assumed when they should have examined.

Only two features from *Kolbe*'s list have strictly military applications: the grenade launcher and the bayonet mount. Neither are sold on civilian AR-15s and can be added only as accessories. Grenade launchers, such as the 40mm Colt M203, and high explosive rounds are considered "destructive devices" under the National Firearms Act (NFA) and therefore highly regulated. Assuming they are legal in the purchaser's state, they require a separate ATF registration and $200 tax stamp for each item (i.e., the launcher and each separate round), as is required for machine guns, short-barrel rifles, and suppressors.[184] Few manufacturers sell 40mm grenade launchers for AR-15 rifles and they are very expensive—the launcher itself sells for around $2000 plus the tax stamp, and each high explosive round, if you can find one for sale, sells for $400-500 and requires a tax stamp. Manufacturers stopped affixing bayonet mounts on civilian AR-15s in the 1990s, but they still can be installed as accessories. While both features can enhance the AR-15's lethality, no one has ever used a rifle-mounted grenade launcher or bayonet to commit mass murder in the United States. Moreover, like bump stocks, if the accessory makes the rifle unusually lethal, then the state's interests in public safety can be met by regulating or banning the accessory, not the entire rifle. Banning the rifle to eliminate a single accessory is not "narrowly tailored" under heightened constitutional scrutiny.

The remaining features—flash suppressors, barrel shrouds, adjustable stocks, pistol grips, night sights, and large-capacity magazines—do not have exclusively military uses. They reflect advances in modern firearm technology that make the rifle more ergonomic and functional as a firearm in

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182 *Kolbe*, 849 F.3d at 125 (citing J.A. 1121) (1994 United States House of Representatives Committee on the Judiciary Report No. 103-489 favoring H.R. 4298, the proposed federal "assault weapons" ban (citing testimony from John McGaw, Director of BATF, and John Pitta, National Executive Vice President, Federal Law Enforcement Officers Association, both of whom supported the ban)).

183 *Id.* at 137; N.Y. State Rifle & Pistol Ass'n v. Cuomo, 804 F.3d 242, 262 (2d Cir. 2015).

184 *See* 26 U.S.C. § 5845(f) (2018).

both military and civilian applications. Of course, enhancing a firearm's functionality can increase its lethality, as lethality is a core function of any firearm. When presented with evidence that these features improve the AR-15's accuracy, comfort, and utility, the Second Circuit in *New York State Rifle & Pistol Ass'n* observed that "[t]his circumlocution is . . . a milder way of saying that these features make the weapons more deadly."[185] But how much more deadly? None of the circuits have attempted to answer that question. If they had, they would have learned that pistol grips, barrel shrouds, adjustable stocks, and flash hiders only marginally affect the AR-15's lethality, if at all. There is no evidence that such features give the AR-15 a lethal capability "far beyond" other civilian long guns.[186] The only feature that has the potential to make the AR-15 deadlier than other firearms is its capability to use larger capacity magazines. However, as discussed below, the lethal effect of large-capacity magazines in real-world scenarios is difficult to measure.

1. Pistol grips

Courts repeatedly have made the false claim that pistol grips enable spray firing from the hip. In Richmond Boro Gun Club, Inc. v. City of New York, a pre-Heller case challenging the constitutionality of a local ordinance banning "assault weapons," the Second Circuit observed that a pistol grip "is favored in military weapons because it aids in 'one-handed firing' at the hip level" and that the law "aims to identify those rifles whose pistol grips are designed to make such spray firing from the hip particularly easy."[187] *Heller II* approvingly quotes Brian Siebel's statement that "[p]istol grips on assault rifles help stabilize the weapon during rapid fire and allow the shooter to spray-fire from the hip position."[188] The district court in *New York State Rifle & Pistol Ass'n* noted that in defending the ban New York "points to evidence that these features aid shooters when 'spray firing' from the hip."[189]

The pistol grip is designed to help stabilize the rifle when firing from the shoulder, not the hip. When a rifle fires, recoil from the bullet and propellant gases exiting the muzzle of the barrel moves the rifle back along

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185 *N.Y. State Rifle & Pistol Ass'n,* 804 F.3d at 262.

186 *See* Christopher Koper, *An Updated Assessment of the Federal Assault Weapons Ban: Impacts on Gun Markets and Gun Violence, 1994-2003* 80 n.94 (June 2004) ("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."). Koper was an expert witness for the state in *Kolbe* and submitted this report as an exhibit to his declaration.

187 Richmond Boro Gun Club, Inc. v. City of New York, 97 F.3d 681, 695 (2d Cir. 1996).

188 Heller v. District of Columbia, 670 F.3d 1244, 1262-63 (D.C. Cir. 2011) (*Heller II*) (internal quotations omitted).

189 N.Y. State Rifle & Pistol Ass'n, Inc. v. Cuomo, 990 F. Supp. 2d 349, 370 (W.D.N.Y. 2013), *aff'd in part, rev'd in part*, 804 F.3d 242 (2d Cir. 2015).

the centerline of the barrel. With many hunting rifles and shotguns, the centerline of the barrel is higher than the shooter's shoulder because the buttstock of the rifle is angled lower than the barrel. Recoil thus causes the barrel of the rifle to move back and up ("muzzle rise"). This effect is multiplied when using fully automatic fire, potentially causing all but the first one or two shots to go high. Selective-fire M16 rifles were designed to reduce muzzle rise by moving the buttstock in line with the barrel so that the rifle's recoil will push straight back against the shooter's shoulder.[190] With this straight-line design, the shooter can more quickly return to the point of aim, allowing faster follow-up shots.

The straight-line design requires a pistol grip separate from the buttstock because it is too awkward to pull the trigger while gripping the raised buttstock when firing the rifle from the shoulder, whether standing, kneeling, or prone. The Department of Defense's Advanced Research Projects Agency (ARPA), in its 1962 final report on testing of the military's AR-15/M16 in Vietnam, described the rifle as having "a plastic stock with a rubber butt, assembled in line with the bore. This, in conjunction with its high line of sight and *separate hand grip*, is designed to minimize rotation *about the shoulder* during firing."[191] The ARPA report refers to the military AR-15/M16 six times as a "shoulder weapon."[192] The pistol grip thus allows for accurate firing from the shoulder, which is how the rifle was designed to shoot.

Firing a weapon from the hip is something seen in Hollywood movies, not in firearms training courses. No competent military, law enforcement, or civilian trainer teaches people to shoot a semiautomatic rifle from the hip as the preferred method of fire.[193] Assertions by pro-ban groups and courts that AR-15 pistol grips are "designed" to give the shooter greater control with unaimed "spray-firing" from the hip are simply false. They have not produced any design report, field test, military documentation, or other impartial source to substantiate this claim—it is myth masquerading as fact.

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190 *See* Armalite Technical Note 54, https://web.archive.org/web/20120905024032/http://www.armalite.com/images/Tech%20Notes%5CTech%20Note%2054,%20Gas%20vs%20Op%20Rod%20Drive,%20020815.pdf ("The Stoner system provides a very symmetric design that allows straight line movement of the operating components. This allows recoil forces to drive straight to the rear."); POYER, *supra* note 80 at 15-16 ("Stoner added a straight-line stock . . . that allowed the barrel, receiver, bolt and bolt carrier and recoil spring to operate in a straight line from the muzzle to the shooter's shoulder to produce less muzzle jump and felt recoil.").

191 United States Department of Defense, Advanced Research Projects Agency (ARPA), *Report of Task No. 13A, Test of Armalite Rifle, AR-1*5 at 2 (1962), http://www.dtic.mil/dtic/tr/fulltext/u2/343778.pdf (emphasis added).

192 *Id.* at iii, 2, 3, 9.

193 The U.S. Army teaches a pointed "quick fire" technique while holding the weapon at the soldier's side when confronted with "close, suddenly appearing, surprise enemy targets; or when close engagement is imminent," but "only when a target cannot be engaged fast enough using the sights in a normal manner." ARMY RIFLE MARKSMANSHIP MANUAL, *supra* note 60, at 7-19 to 7-21.

A pistol grip separate from the stock does not give the shooter any ergonomic advantage when firing from the hip; in fact, holding a rifle at the hip with a pistol grip can be more difficult than with a non-pistol grip stock. The pistol grip is designed for shooting from the shoulder.

Even if the AR-15 were capable of "spray firing," gun-control advocates have not explained why anyone would want to shoot it unaimed from the hip. The AR-15 is far less accurate when fired from the hip without a backstop like the shoulder to aid in controlling recoil. Because the shooter is not aiming with the gun's sights and has less recoil control, "spray-firing" from the hip results in highly-inaccurate fire and makes the gun *less* lethal to the intended target. Professor Eugene Volokh explains:

> People "spray firing" a semi-automatic from the hip are thus making themselves *less dangerous* to the people they're shooting at (compared to normal firing when one is actually sighting down the barrel). Nor are they making it easier to fire a lot of rounds quickly; one can fire just as quickly in the normal shooting position as when firing from the hip . . . .
>
> Another way of thinking about this is to consider a pistol —an ordinary handgun. Those pistols, unsurprisingly, have pistol grips. But only someone who is either extraordinarily skillful or pretty stupid would want to try to "spray fir[e]" a pistol from the hip. Instead, people who shoot pistols raise them up to eye level, so that they can actually aim by looking down the barrel. There's a reason that the expression "shoot from the hip" tends to refer to actions that are less effective because they are less deliberate . . . .
>
> [T]he concern that pistol-grip semiautomatic rifles are somehow more dangerous because they facilitate "'spray firing' from the hip" strikes me as a red herring. If you could wave a magic wand that makes all criminals shoot semiautomatics from the hip rather than from eye level, you'd probably save lives.[194]

There is no evidence that the use of pistol grips makes AR-15s more lethal than other firearms. Christopher Koper, who studied the effects of the 1994-2004 federal "assault weapons" ban, observed that "it is unknown whether civilian attacks with semiautomatic rifles having pistols grips claim more victims per attack than do those with other semiautomatic rifles."[195] The "spray firing from the hip" myth is just another attempt by gun-control

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194 Eugene Volokh, "Do Pistol Grips Make Semi-Automatic Rifles More Dangerous, Because They 'Aid Shooters when "Spray Firing" from the Hip'?", *The Volokh Conspiracy*, THE WASHINGTON POST (Jan. 2, 2014), http://volokh.com/2014/01/02/pistol-grips-make-semi-automatic-rifles-dangerous-aid-shooters-spray-firing-hip/.

195 Koper, *supra* note 186, at 80 n.94.

advocates to convince courts that semiautomatic AR-15 rifles are no different than military machine guns and just as dangerous.

2. Barrel shrouds

The conventional term for barrel shroud is "handguard." It is the metal or plastic enclosure that covers typically all but a few inches of the barrel. The AR-15 handguard has multiple functions: (1) it provides the shooter with a forward grip on the rifle using the non-trigger hand; (2) it protects the shooter's hand from a hot barrel; (3) it protects the barrel and gas tube or piston from damage; [196] (4) it helps ventilate and cool the barrel; and (5) it provides a base for attaching accessories to the rifle such as sights, slings, flashlights, forward vertical grips, and bipods. None of these functions make the AR-15 exceptionally lethal, especially when compared to non-banned rifles.

The AR-15 handguard provides a stable and safe forward grip on the rifle, but this function is common to long guns. Every long gun has a place where the shooter can grip the firearm forward of the rifle's trigger and chamber. The AR-15 handguard works like the forward part of a wooden or synthetic stock on a bolt-action rifle or shotgun—it allows the shooter to grip the firearm with the off hand and stabilize the weapon while aiming. It also protects the shooter's off hand from being burned by directly touching the barrel. Firing more than three or four rounds consecutively through any long gun can make the barrel too hot to touch. For safety reasons, no long gun requires the shooter to hold the barrel directly with the off hand—they all have some protective mechanism.

Kolbe says that barrel shrouds on AR-15s "enable 'spray-firing' by cooling the barrel and providing the shooter a 'convenient grip.'"[197] One function of the AR-15 and M4/M16 handguard is to help cool the barrel. Heat buildup in the rifle barrel degrades the weapon's accuracy. Due to barrel mass, lightweight rifles like the military M16/M4 and civilian AR-15 tolerate thermal stress less efficiently than heavier firearms. The handguard helps cool the barrel through convection cooling.[198] But *Kolbe* overstates the

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196 The vast majority of AR-15s have a gas-impingement system, which uses a small stainless steel gas tube running over the top of the barrel to force some of the pressurized gases pushing the projectile out of the barrel back into the upper receiver to cycle the action. Some AR-15s use a piston-driven system, which forces the pressurized gases to drive a piston located above the barrel that cycles the action. The handguard provides a protective cover for both of these systems.

197 *Kolbe*, 849 F.3d at 125 (quoting J.A. 1121).

198 The U.S. Army Training Circular 3-22.9 describes the process as follows:

> Convection cooling . . . requires the presence of a moving air current. The moving air has greater potential to carry away heat. The hand guards and ARS [adaptive rail system] of the rifle and carbine are designed to facilitate air movement. The heat shield [in the handguard] reflects heat energy away from the hand guard and back towards the barrel.

effect of handguard cooling. Such cooling does not enable rapid "spray firing." Even with handguard cooling, military M16/4 rifles and civilian AR-15 rifles cannot be fired rapidly without loss of accuracy and potential barrel damage due to heat buildup. The maximum sustained rate of fire is the rate at which the weapon can continue to be fired indefinitely without serious overheating. For M16/M4 rifles, the military has set that rate at only 12-15 rounds *per minute*, which hardly qualifies as "spray firing."[199] Handguards function mostly as ergonomic and safety devices, and only secondarily to provide some slight additional cooling to the barrel. They do not enable rapid spray firing or increase the lethality of AR-15s beyond other rifles.

3. Adjustable stocks

Adjustable stocks are ergonomic improvements over earlier fixed-stock rifle configurations. They are designed to allow adjustments in the rifle's length of pull, making the firearm more comfortable to shoot in both military and civilian applications. A telescoping stock makes a rifle easier to shoulder properly for different users, or for one user when shooting from different positions or wearing different thicknesses of clothing. The military M16 has a fixed stock, while the military M4 and the civilian AR-15 have telescoping rather than folding stocks.[200] Adjustable stocks are ubiquitous on civilian rifles. My precision bolt-action rifle, for example, has a stock that adjusts both for length and for height of the cheek rest.

Kolbe neither identifies the combat-specific function of folding or telescoping stocks nor explains how such stocks help make the AR-15 much more lethal than other semiautomatic rifles. A firearm more comfortable to shoot may increase accuracy, but only slightly so. A telescoping stock can make the weapon somewhat easier to stow and manage in military aircraft or vehicle operations,[201] but it does not significantly increase the weapon's lethality. Switching from the fixed-stock M16 to the telescoping stock M4 did not suddenly make our soldiers far more accurate on the battlefield.

The district court in *N.Y. State Rifle & Pistol Ass'n* stated that "[f]olding and telescoping stocks aid concealability and portability."[202] Daniel Webster, a professor of health policy and gun violence researcher, submitted a sworn statement in *Kolbe* asserting that folding or telescoping rifle stocks

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> The net effect is an updraft that brings the cooler air in from the bottom. This process establishes a convection style as heated air is continually replaced by cooler air.

ARMY RIFLE AND CARBINE TRAINING CIRCULAR, *supra* note 59, at 2-13.

199 ARMY OPERATORS MANUAL, *supra* note 136, at 0002 00-1 to 002 00-2.

200 The buttstock of these rifles contains a buffer and recoil spring necessary for the action to cycle. AR-15s are almost never sold with folding stocks because they cannot fire more than one round with the stock folded.

201 Chris Beekman, *supra* note 113.

202 N.Y. State Rifle & Pistol Ass'n v. Cuomo, 990 F. Supp. 2d 349, 370 (W.D.N.Y. 2013).

"enhance a weapon's utility in carrying out criminal assaults, especially mass shootings" because they "make it easier to conceal powerful rifles."[203] Once again, this is myth, not fact. "Concealment" is not a typical combat-function with military service rifles. There is no reason to conceal infantry small arms like the M16 and M4 on the battlefield. The M16 rifle has always had a fixed stock, but that did not disqualify it as a battlefield weapon. The smaller M4 carbine uses a telescoping stock for ergonomic and storage reasons, not for concealment. Moreover, the adjustment range for telescoping stocks is small, typically about three inches. The telescoping stock on my AR-15, for example, shortens the rifle's overall length from 37 to 34 inches. A three-inch adjustment is hardly enough to make the rifle concealable for mass shootings and criminal assaults, as Webster claimed.

4. Flash hiders

Flash suppressors or hiders are attached to the end of the barrel and typically come standard on civilian AR-15s. They reduce but do not eliminate the rifle's visible signature (muzzle flash) during firing. With the M16/4 and AR-15, burning powder and reigniting hot gases create a ball of flame at the end of the muzzle. The flash hider disperses the exploding gases, helping hide the shooter's location and preserve the shooter's low-light or night vision.[204] Some flash hiders, such as the popular A2, which comes as standard equipment on military M16/4 rifles and many civilian AR-15s, also function as a compensator that can slightly reduce vertical movement of the barrel (muzzle rise) by dispersing the gases upward and to each side.[205]

Flash suppressors do not make rifles shoot faster, fire with much greater accuracy, or impact with more power.[206] Civilian applications for flash

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[203] Daniel Webster Decl. at J.A. 288, Kolbe v. Hogan, 849 F.3d 114 (4th Cir. 2017) (No. 14-1945); *see also* James Johnson Decl. at J.A. 224, *id.* (sworn declaration from James Johnson, Baltimore County police chief, stating that "[c]ollapsible or folding stocks aid in the concealment of high-powered assault weapons").

[204] Flash suppressors are not very effective in reducing flash seen by night vision optics. *See* PATRICK SWEENEY, GUNSMITHING THE AR-15 92-93 (2010) ("the heat is still released, and even the most effective flash hider does little to decrease the flash seen by night vision optics") ("[N]ight vision gear is very sensitive to near-IR and IR frequencies. Even the best flash hiders show a lot of flash to night vision gear.").

[205] *See id.* at 92 ("[C]alling the A2 a compensator, to dampen the felt recoil of the AR, is like saying opening your car's door and pressing your shoe against the pavement is a braking system. It can work, but at most speeds you aren't going to notice much decrease in your vehicle's velocity. In most shooting situations you aren't going to notice much, if any, decrease in muzzle movement due to the A2 flash hider.").

[206] *See, e.g., AR 15 Muzzle Brake vs. Flash Hider vs. Compensator – What is the Best Muzzle Device?*, AT3TACTICAL (Sept. 19, 2018 8:31 AM), https://www.at3tactical.com/blogs/news/ 10797809-what-is-the-best-muzzle-device-for-my-ar-15-muzzle-brake-vs-flash-hider-vs-compensator (noting that flash suppressors provide "[n]o recoil or accuracy increasing benefits").

hiders include hunting in low light or at night.[207] Probably the greatest practical benefit of a flash hider for civilians is that it protects the crown of the barrel from dirt and other obstructions.[208] There is no evidence that flash hiders have given terrorists or criminals any advantage in mass shootings or other crimes involving "assault weapons." Even pro-ban advocates agree that flash suppressors do not make AR-15s more lethal than other firearms. Calling them "bells and whistles," the Violence Policy Center (VPC) conceded that flash suppressors "have nothing to do with why assault weapons are so deadly."[209]

5. Magazine capacity

One feature that may give the shooter an advantage is magazine capacity. Both the military M16/M4 and the civilian AR-15 use a standard 30-round detachable magazine. This capacity is larger than standard semiautomatic handguns (15-18 rounds), bolt-action rifles (5-10 rounds), lever-action rifles (5-8 rounds), revolvers (5-6 rounds), and typical hunting shotguns (2-5 rounds).[210] Christopher Koper, in his study of the effects of the federal "assault weapons" ban, observed that "an LCM [large-capacity magazine] is arguably the most important feature of an AW [assault weapon]. 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 silencer, and so on."[211]

The ability to accept detachable magazines is not a unique military feature.[212] Civilian semiautomatic rifles and handguns are designed to use detachable magazines, as are most modern bolt-action rifles. The critical feature is the *size* of the magazine. Since an AR-15 does not require standard 30-round magazines to function, any lethal effects of larger-capacity magazines can be addressed by banning certain-sized magazines. There are good reasons to be skeptical that magazine capacity makes a difference in

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207 Steve Felgenhauer, *Flash Hiders & Compensators,* MILITARY.COM (2018), https://www.military.com/outdoor-guide/flash-hiders-and-compensators.html.

208 *See* LONG, *supra* note 79, at 261 ("A flash hider . . . has an added plus of protecting a barrel from dings and damage; this is important because damage to the muzzle can quickly ruin accuracy. Consequently, even sport shooters who don't need to reduce flash will discover that a flash hider . . . makes good sense on an AR-15.").

209 Tom Diaz, *Bullet Hoses – The Gun Industry's Lies,* Chapter in Diaz, *supra* note 16.

210 Aftermarket manufacturers sell 60-round and 100-round magazines for civilian AR-15s. They come in box and drum versions, the latter being highly prone to jamming. The weight and size of these larger magazines can degrade the AR-15's accuracy by making it more difficult to handle effectively.

211 Koper, *supra* note 186, at 80.

212 *See generally* David B. Kopel, *The History of Firearms Magazines and Magazine Prohibitions,* 88 ALBANY L. REV. 849 (2015).

mass shootings,[213] but even if it does, the narrowly-tailored solution—which should be required under heightened judicial scrutiny—is to ban the larger-capacity magazine rather than the entire firearm. *Kolbe*'s inclusion of the ability to accept larger-capacity magazines in its list of military features disqualifying the AR-15 from Second Amendment protection proves too much.[214] As Judge Traxler pointed out in his *Kolbe* dissent, "the [majority's] suggestion that the ability to accept large-capacity magazines facilitates a firearm's military usefulness applies to all semiautomatic weapons, including constitutionally-protected handguns, since any firearm that can hold a magazine can theoretically hold one of any size."[215]

Identifying the magazine with the firearm is a favorite tactic of gun-control advocates. They inflate the number of mass shootings involving "assault weapons" by adding shootings involving large-capacity magazines (LCMs), even if the LCMs are not used in "assault weapons." One example is the Citizens Crime Commission of New York City's 2016 report on *Mayhem Multiplied: Mass Shooters and Assault Weapons*.[216] The report claims that from 1984-2016 there were 301 percent more injuries and fatalities in mass shootings with assault weapons and LCMs than with other firearms.[217] While the report identifies 46 mass shootings during this period, only 18 involved "assault weapons."[218] The remaining 28 involved other firearms with LCMs, including handguns, but the report never mentions this fact.[219] The report title and internal graphs leave the impression that all the incidents involved "assault weapons."

Kolbe says that LCMs "are 'designed to enhance' a shooter's 'capacity to shoot multiple human targets very rapidly.'"[220] It further declares that LCMs "depriv[e] victims and law enforcement officers of opportunities to escape or overwhelm the shooters while they reload their weapons" and that

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213 *See* David B. Kopel, *The Cost and Consequences of Gun Control*, CATO INSTITUTE POLICY ANALYSIS 6-9 (No. 784) (Dec. 1, 2015), https://www.cato.org/publications/policy-analysis/costs-consequences-gun-control; Tomislav Kovandzic & Gary Kleck, *Banning Large Capacity Magazines: A Solution to a Nonexistent Problem*, https://www.utdallas.edu/~tvk071000/Banning%20Large%20Capacity%20Magazines%20Will%20Not%20Reduce%20Crime.pdf (last visited July 3, 2018).

214 Kolbe v. Hogan, 849 F.3d 114, 125 (4th Cir. 2017) (citing J.A. 1121 (1994 United States House of Representatives Committee on the Judiciary Report No. 103-489 favoring H.R. 4298, the proposed federal "assault weapons" ban) (testimony from John McGaw, Director of BATF, and John Pitta, National Executive Vice President, Federal Law Enforcement Officers Association, both of whom supported the ban)).

215 *Id.* at 158 (Traxler, J., dissenting).

216 Ashley Cannon, *Mayhem Multiplied: Mass Shooters and Assault Weapons*, CITIZENS CRIME COMMISSION OF NEW YORK CITY (2016), http://www.nycrimecommission.org/pdfs/CCC-MayhemMultiplied-June2016.pdf.

217 *Id.*

218 *Id.*

219 *Id.*

220 *Kolbe*, 849 F.3d at 125 (quoting the Brady Center's Brian Siebel at J.A. 1151).

"reducing the number of rounds that can be fired without reloading increases the odds that lives will be spared in a mass shooting."[221] Smaller magazines presumably will force the shooter to make additional magazine changes, thus slowing the shooter's rate of fire and giving bystanders more opportunities to subdue the shooter or escape the scene while the shooter is reloading. The Fourth Circuit cited no empirical evidence to support this conclusion, but rather relied on simple arithmetic: if a shooter uses 10-round magazines instead of 30, 50, or 100-round magazines, for every 100 rounds fired, that would afford six to nine more chances for bystanders to subdue or escape the shooter.[222]

While *Kolbe*'s arithmetic is true in theory, it is not as simple in fact. Determining the extent to which larger magazine capacity increases the AR-15's lethality in actual shootings beyond other firearms depends on several variables. The AR-15 does not fire any faster mechanically with a 30-round magazine than with a 10-round magazine, nor does the size of the magazine affect how powerfully the AR-15's bullets strike or how accurately it shoots.[223] Magazine changes do not pause firing by much. An experienced shooter can perform a speed reload in as little as two or three seconds.[224] Inexperienced shooters will take a few seconds longer. Everything else being equal, a larger-capacity magazine will allow the shooter to stay on target longer because the shooter will less frequently need to pause and reload. But everything else rarely is equal in actual shootings. A variety of factors must be considered, including the shooter's determination to injure or kill, the shooter's rate of fire, whether the shooter needs to change magazines, how fast the shooter can change magazines, how many magazines (or alternate weapons) are readily available to the shooter, the location of bystanders, and whether they are in a posture to overpower or escape the shooter. A shooter may even reload before his magazines are empty.[225] These factors make it difficult to determine whether smaller magazines will have any measurable effect on mass shootings.

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221 *Id*. at 127, 128.

222 *Id*. at 128 (citing Batts Decl. ¶ 49 at J.A. 266).

223 *See* Aaron Bandler, *Debunking Top 5 Myths About the AR-15*, THE DAILY WIRE, (June 20, 2016), https://www.dailywire.com/news/6749/debunking-top-5-myths-about-ar-15-aaron-bandler (explaining that since an AR-15 is a semi-automatic, it can only fire the amount of times somebody pulls the trigger).

224 *See, e.g.*, T.Rex Arms, *2 Second Rifle Speed Reload Standard*, https://www.youtube.com/watch?v=2Q-QVBQVYTA; Milspec_Mojo, *How I Like to Speed Reload an AR-15*, https://www.youtube.com/watch?v=aT_bSGJ8j9o; maddhatter111111, *Marine speed reloading M4 2*, https://www.youtube.com/watch?v=Hx0JzYcwUiY&frags=pl%2Cwn.

225 *See, e.g.*, SANDY HOOK REPORT, *supra* note 160, at 21-22, (explaining that the Newtown shooter emptied three 30-round magazines but did not wait until two other 30-round magazines were empty to change them).

Criminologist Gary Kleck recently studied whether LCMs directly contribute to the number of injuries and deaths in mass shootings.[226] He wanted to know whether there was evidence that (1) significant numbers of mass shootings were disrupted by bystanders when the shooters paused to reload and (2) magazine changes increase the intervals between shots fired, giving victims time to escape to safety.[227] Out of all mass shootings in the United States from 1994-2013 in which a shooter was using a semiautomatic firearm and detachable magazines (with or without LCMs), he found only one case—the 2011 Tuscon shooting that critically injured Representative Gabrielle Giffords—in which the shooter was tackled by bystanders, while the shooter purportedly was trying to reload.[228] Kleck acknowledged that the absence of an LCM in this one case might have prevented several casualties.[229]

Kleck identified 23 mass shootings in the United States from 1994-2013 in which more than six persons were shot, either fatally or non-fatally, and one or more LCMs were known to have been used.[230] In all of these incidents, the shooter possessed multiple magazines and, in 17 cases, the shooter possessed multiple firearms.[231] Even if magazine sizes were limited to 10 rounds, Kleck explained, the shooters either could have switched guns or reloaded in a few seconds and continued shooting—in fact, in 14 of the 23 incidents, the shooters did reload without bystander interference, so smaller magazines would not have made any difference.[232] The shooters did not reload in two incidents and it was not known whether the shooters reloaded in the remaining seven incidents.[233]

To determine whether more magazine changes would allow potential victims to escape, Kleck looked at the average rates of fire that mass shooters typically maintain.[234] If a shooter fires faster than the 2-4 seconds it takes to change magazines, then smaller magazines could slow the rate of fire and potentially allow more victims to escape between shots; if the shooters fire

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226 Kleck, *supra* note 175. Kleck defined LCMs as magazines holding more than 10 rounds. *Id.* at 33.

227 *Id.* at 32.

228 *Id.* at 39-40. Kleck noted that there were conflicting eyewitness reports about whether the Tucson shooter was trying to reload or his gun had jammed. *Id.*

229 *Id.* at 40.

230 *Id.* at 37. Kleck used the six-victim cutoff because a shooter could shoot as many as six persons with a six-shot revolver. Since the rationale for LCM bans is that they enable the shooter to fire more rounds without reloading and thus kill or injure more victims, Kleck explained, a lower numerical cutoff would have included more incidents in which the LCM likely had no effect on the number of victims. *Id.* at 33.

231 *Id.* at 40-42.

232 *Id.* at 42.

233 *Id.*

234 *Id.* at 42-44. Kleck's list of mass shootings involving known rates of fire included 17 of 23 incidents from his prior list in which information was available on the duration and number of rounds fired, plus an additional eight mass shootings that did not involve known LCM use for which such information was available. *Id.* at 43.

with average between-shot intervals lasting more than the 2-4 seconds it takes to change a magazine, the pauses due to magazine changes would not be any longer than the pauses between shots when not reloading, and thus additional magazine changes would not provide any greater opportunity to escape.[235] In the 25 shootings in which rates of fire could be determined, Kleck found only three occasions in which shooters fired more rapidly, averaging less than two seconds between rounds. In two of the three shootings, the shooters possessed multiple guns and simply could have switched guns with little or no pause in their shooting.[236] The one remaining incident in the 20-year study period involved the Tucson shooting, where the shooter fired rapidly, had only a single weapon, and was stopped when tackled by bystanders.[237]

Kleck concluded because that shooters' rates of fire typically are not slowed by changing magazines, LCM bans are unlikely to provide any significant benefit to mass shooting victims. Shooters still can fire equally large numbers of rounds using smaller capacity magazines.[238] Kleck attributed any increase in lethality more to the shooter's intention than to the LCM:

> [T]he larger number of rounds fired by LCM-using shooters is more likely to reflect the more lethal intentions prevailing among such shooters, just as their planned use of multiple guns and multiple magazines, and the unusually high fatality rate (deaths over total woundings) of their attacks are outward indications of a desire to shoot many people. Unfortunately, there are no known methods for reliably measuring the lethality of shooters' intentions independent of the outcomes of their crimes, making it impossible to statistically control for this factor in a multivariate statistical analysis and thereby isolate the effects of LCM use.[239]

While Kleck's analysis is not conclusive, it highlights the difficulties in determining the extent to which magazine size makes a difference in mass shootings. The matter is far more complicated—and thus demands more proof—than *Kolbe*'s simple arithmetic.[240]

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235 *Id.* at 42-44.

236 *Id.* at 44.

237 *Id.*

238 *Id.* at 44-45. *See* Volokh, *supra* note 119, at 1489 ("[M]ass shootings . . . usually progress over the span of several minutes or more. Given that removing a magazine and inserting a new one takes only a few seconds, a mass murderer—especially one armed with a backup gun—would hardly be stymied by the magazine size limit. It's thus hard to see large magazines as materially more dangerous than magazines of normal size.").

239 Kleck, *supra* note 175, at 45.

240 The district court in *Duncan v. Becerra*, 265 F. Supp. 3d 1106, 1122, 1129-30 (S.D. Cal. 2017), noted how several state experts defending the LCM ban conceded that supporting data is missing. For example, Daniel Webster, a professor of public health and gun violence researcher who also submitted an affidavit in *Kolbe*, stated that "[t]o date, there are no studies that have examined separately the effects of an assault weapons ban, on the one hand, and an LCM ban, on the other

Kolbe also relies on "lesson[s] learned" from Newtown, Tucson, and Aurora shootings that purportedly show how smaller magazines will save lives.[241] But the Fourth Circuit's descriptions of these shootings are misleading. The court twice claimed without citation that during the Newtown shooting nine children were able to run from classroom while the gunman paused to change a 30-round magazine.[242] While reported in a few media accounts,[243] this fact was never confirmed. The final report of the State's Attorney on the shooting states only that "[n]ine children had run out [Ms. Soto's] room and survived," without giving any details about why they were able escape.[244] The Hartford Current reported that six children ran past the shooter to safety when his gun jammed.[245] An earlier Hartford Current article stated that the children escaped because the shooter "stopped firing briefly, perhaps either to reload his rifle or because it jammed."[246] The article goes on to say that while it was possible the shooter mishandled or dropped a magazine while reloading, it also was possible that the gun jammed or that the children escaped while the shooter was firing at others in the room.[247] The article indicated that the children's statements about the incident were "not entirely consistent."[248]

Kolbe further declares says that during the Aurora movie shooting "a 100-round drum magazine was emptied without any significant break in the firing."[249] This never happened. Multiple sources, including the city's official after action report, state that the Aurora shooter fired 65 rounds from his AR-15 before the magazine jammed.[250] Even deposition testimony of

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hand . . . ." *Id.* at 1129 (quoting ¶ 25 in Webster's declaration) (internal quotations and emphasis omitted).

241 Kolbe v. Hogan, 849 F.3d 114, 128 (4th Cir. 2017).

242 *Id.* at 120 ("Nine terrified children ran from one of the classrooms when the gunman paused to reload . . . ."); *id.* at 128 ("[N]ine children were able to run from a targeted classroom while the gunman paused to change out a large-capacity thirty-round magazine.").

243 *See, e.g.*, Associated Press, *Little hero of Sandy Hook saved his pals*, NEW YORK POST (Oct. 19, 2013), https://nypost.com/2013/10/19/sandy-hooks-littlest-hero-slain-kid-urged-others-to-run/ (noting that the story was based on statements from the mother of the child who heroically urged his classmates to run when the shooter paused).

244 SANDY HOOK REPORT, *supra* note 160, at 10.

245 Dave Altimari & Steven Goode, *Details Emerge on Sandy Hook Shooting, Items Found In Lanza Rooms*, THE HARTFORD CURRANT (Oct. 19, 2013), http://www.courant.com/news/connecticut/hc-sandy-hook-shooting-details-20131018-story.html. *See also* Corinne Lestch, *Slain Newtown boy Jessie Lewis, 6, yelled 'run!' when Adam Lanza's gun jammed, allowing six classmates to run to safety*, NEW YORK DAILY NEWS (Oct. 19, 2013), http://www.nydailynews.com/news/national/slain-newton-boy-yelled-classmates-run-6-escaped-article-1.1490325.

246 Edmund H. Mahony, et al. *Sandy Hook Shooter's Pause May Have Aided Students' Escape,* THE HARTFORD CURRANT (Dec. 23, 2012), http://www.courant.com/news/connecticut/newtown-sandy-hook-school-shooting/hc-lanza-gunjam-20121222-story.html.

247 *Id.*

248 *Id.*

249 Kolbe v. Hogan, 849 F.3d 114, 128 (4th Cir. 2017).

250 *See Aurora Century 16 Theater Shooting: After Action Report for the City of Aurora* 12-13, TRIDATA DIVISION, (April 2014), https://justiceclearinghouse.com/wp-content/uploads/2017/10/

one of the state's experts in *Kolbe* acknowledges that the shooter's gun jammed and the magazine was not emptied.[251] *Kolbe* also says that the Tucson shooter "was finally tackled and restrained by bystanders while reloading his firearm."[252] But this fact is disputed. Eyewitness reports of the shooting are conflicting as to whether the gunman was subdued by bystanders when his handgun jammed or while reloading.[253]

This is not about whether shooters have been stopped while reloading—they have on multiple occasions.[254] But that proves nothing about whether the size of the magazine affected the outcome. Here, the question is whether the ability to accept larger-capacity magazines makes the AR-15 and other "assault weapons" much more dangerous than other semiautomatic firearms. That requires some credible proof that reducing magazine capacity will significantly reduce casualties in mass shootings or other crimes. Simple arithmetic and misleading anecdotal evidence are not enough.

Pistol grips, barrel shrouds, adjustable stocks, flash hiders, and the ability to accept 30-round magazines do not transform the civilian AR-15 into the functional equivalent of an M16, nor do they somehow make the AR-15 far more lethal than other civilian firearms. The combined effects of judicial ignorance about such features, anti-gun disinformation, and a failure to seriously examine the facts have driven the courts' conclusions to the contrary.

III. CONCLUSION

My purpose here is to demonstrate the importance of judges having accurate facts when making decisions about the constitutionality of "assault

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C16-AAR.pdf (indicating that the shooter fired 65 rounds from the rifle until it jammed); *see also* James Dao, *Aurora Gunman's Arsenal: Shotgun, Semiautomatic Rifle and, at the End, a Pistol,* THE NEW YORK TIMES (July 23, 2012), https://www.nytimes. com/2012/07/24/us/aurora-gunmans-lethal-arsenal.html; Susan Candiotti, *Source: Colorado shooter's rifle jammed during rampage,* CNN (July 22, 2012), https://www.cnn. com/2012/07/22/us/colorado-shooting-investigation/; Phil Tenser, *Aurora police testify in James Holmes' trial: 240 ballistic impacts found after theater shooting,* ABC 7 DENVER (May 12, 2015), https://www.thedenverchannel.com/news/movie-theater-shooting/aurora-police-department-crime-scene-investigators-found-76-spent-rounds-after-theater-shooting.

251 Johnson Dep. at J.A. 2442, *Kolbe*, 849 F.3d 114 (No. 14-1945).

252 *Kolbe*, 849 F.3d at 128.

253 For reports that the Tucson shooter's handgun jammed, *see* Sam Quinones & Michael Muskal, *Jared Loughner to be charged in Arizona shootings targeting Gabrielle Giffords,* LOS ANGELES TIMES (Jan. 9, 2011), http://articles.latimes.com/2011/jan/09/nation/la-na-0110-gabrielle-giffords-20110110; Joseph A. W. Fitzgerald, *Sheriff Releases Photos of '11 Tucson Shooting,* THE NEW YORK TIMES STUDENT JOURNALISM INSTITUTE (May 23, 2013), http://tucson13.nytimes-institute.com/2013/05/23/sheriff-releases-photos-of-11-tucson-shooting/.

254 The state in *Kolbe* presented news reports of multiple incidents in which shooters were stopped while reloading. *See* Brief of Defendant in Support of Motion for Summary Judgment Ex. 40 at J.A. 1326-67, *Kolbe*, 849 F.3d 114 (No. 14-1945).

weapon" bans. No one expects judges to be firearms experts, competitive shooters, or even occasional range visitors. But judges should be serious arbiters of facts, especially on a topic as susceptible to widely-disseminated disinformation and myths as "assault weapon" bans. Judges should not let honest unfamiliarity become willful ignorance, lest their judicial decisions become political narrative. Regrettably, this already seems to have happened in some cases.

Still, there are greater tragedies here than judicial incompetence or bias. By blessing simplistic and ineffective legislative attempts to reduce gun violence,[255] these court decisions obscure the complexities surrounding the actual causes of such violence. Reducing violence perpetrated by persons with guns—especially mass shooters—is much more complicated than banning "assault weapons." It requires effective and narrowly-tailored laws, mental health reform, media self-restraint, proper family guidance and supervision, enhanced security measures, and law enforcement competence. Judges also should not exaggerate the relative dangerousness of the AR-15 to justify their decisions when the civil rights of millions of law-abiding persons depend on those decisions. While public safety is a paramount concern, so is the freedom of responsible citizens to choose for themselves the firearms best suited to their self-defense needs.

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255 *See* Andrew R. Morral, et al., The Science of Gun Policy: A Critical Synthesis of Research Evidence on the Effects of Gun Policies in the United States, Rand Corporation 61-72 (2018) (concluding that available evidence is inconclusive that "assault weapon" bans have any effect on mass shootings or firearm homicides).