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15	VIRGINIA DUNCAN, et al.,	17-cv-1017-BEN-JLB
16	Plaintiffs,	DECLARATION OF PROFESSOR
17	V.	DANIEL W. WEBSTER IN SUPPORT OF DEFENDANT
18		XAVIER BECERRA'S OPPOSITION TO PLAINTIFFS'
19	XAVIER BECERRA, in his official capacity as Attorney General of the	MOTION FOR PRELIMINARY
20	State of California; et al.,	Date: June 13, 2017
20	Defendants.	Time: 10:00 a.m.
21		Judge: Hon. Roger T. Benitez
.22		Action Filed: May 17, 2017:
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28		·
	Webster Decl. ISO Detendant's Opp	osition to P1 $(1/-cv-101/-BEN-JLB)$

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I, Daniel W. Webster, under penalty of perjury, declare and state:

I am Professor of Health Policy and Management, Co-Director for
 Research at the Center for the Prevention of Youth Violence, and Director of the
 Johns Hopkins Center for Gun Policy and Research at the Johns Hopkins
 Bloomberg School of Public Health. Additionally, I head the Johns Hopkins Baltimore Collaborative for Violence Reduction.

I began my career in public safety research in 1985 as a Research
Associate at the University of Michigan's School of Public Health, and have
devoted most of my research since then on gun-related injuries and violence. I have
a Master of Public Health degree from the University of Michigan and a doctorate
in Health Policy and Management from the Johns Hopkins School of Public Health.
This graduate training included many advanced courses in epidemiology, research
methods, and statistical analysis.

Immediately prior to joining the faculty at Johns Hopkins, I directed a 14 3. program on violence research at the Washington (D.C.) Hospital Center. I joined 15 16 the faculty of the Johns Hopkins School of Public Health in 1992, and since 2010 17 have been a tenured Professor of Health Policy and Management with a joint appointment in the School of Education's Division of Public Safety Leadership. I 18 19 teach graduate courses on violence prevention. Previously, I taught courses in research and evaluation methods at Johns Hopkins, direct the PhD program in 20 Health and Public Policy, and served on the steering committee of a pre- and post-21 doctoral training program in violence prevention research funded by the National 22 Institutes of Health. 23

4. I have directed numerous studies related to gun violence and its
prevention. I have published over 100 articles in scientific, peer-reviewed journals,
the vast majority of these addressed some aspect of violence and/or firearm injuries
and their prevention. I am the lead editor of a book entitled <u>Reducing Gun Violence</u>
<u>in America: Informing Policy with Evidence and Analysis</u> by Johns Hopkins

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University Press (2013), and am the lead author for two chapters and co-author on
 three other chapters in this book. In addition, I recently served as special editor or
 co-editor of three special issues on gun violence for top tier public health journals.
 My curriculum vita, detailing these publications, is attached as Exhibit 1 to this
 Declaration.

5. The Johns Hopkins Center for Gun Policy and Research was
established to conduct rigorous research into gun policy questions, look objectively
at all available data, and analyze and report the results. Where the data and
research, considered objectively, support a particular policy, we say so. Where the
data and research do not support a particular policy, we say that as well. Our goal
is not to advance any particular policy or agenda, but to use data and research to
inform public policy decisions.

6. I make this declaration on the basis of my training and expertise, the
research discussed below, and the work I have done in this case to date. I am being
compensated at \$350/hour. In the past four years I have testified as an expert in the
following cases:

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a. *Rocky Mountain Gun Owners v. Hickenlooper*, Denver District Court case 13CV33879, Case matter 2013-EXAD-076563.

b. Wrenn v. District of Columbia, Civil Action No. 15-00162 (CKK)

c. Heller v. District of Columbia, Civil Action No. 08-01289 (D.D.C.)

- d. Norberg v. Badger Guns, Inc., No. 10 CV 020655 (Circuit Court of Wisconsin, Milwaukee County)
- e. *Lopez v. Badger Guns, Inc.*, No. 10 CV 018530 (Circuit Court of Wisconsin, Milwaukee County, Civil Division)
- f. *Cook v. Hickenlooper*, Civil Action No. 13-CV-1300-MSK-MJW (D. Colo.)

g. Kolbe v O'Malley, No.: 1:13-cv-02841-CCB (D. Md.)

1 7. There are data and good reasons to indicate that design and capabilities 2 of firearms can potentially affect the likelihood that an intended target or by-stander 3 at a shooting will be wounded as well as the severity of wounds resulting from 4 criminal shootings. Particularly relevant is the capacity of a firearm's ammunition 5 feeding device. In comparison to other magazines which feed ammunition to semi-6 automatic firearms, large capacity magazines (LCMs)—those that hold more than 7 10 rounds—increase the number of rounds that can be fired without the shooter 8 having to take the time to reload.

9 8. A firearm's ability to accept LCMs and effectively and rapidly fire a 10 large number of rounds from LCMs are what distinguish what is commonly referred to as assault weapons from other firearms. There is evidence that these 11 12 design features of assault weapons make them especially appealing to criminals and those who commit mass shootings. A study of handgun purchasers in California 13 14 prior to that state's ban of assault weapons found that assault pistols were more likely to be purchased by individuals with criminal histories; the more serious the 15 16 prior offenses, the higher the likelihood that the handgun purchased was an assault 17 pistol. The share of handguns purchased which were assault pistols was 2% if the 18 purchaser had no criminal history, 4.6% if the purchaser had a history of minor 19 criminal offenses, 6.6% for those with a previous criminal gun charge, and 10% for 20 those who had previously been charged with two or more serious violent offenses.¹ 21 I conclude from this research that features of assault pistols, some of which are 22 common to assault rifles, particularly the ability accept detachable LCMs, are attractive to criminals. 23

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9. Efforts to ban assault weapons and LCMs have followed their use in mass shootings in public places including some of the deadliest shootings in our

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¹ Wintemute, Garen J., Mona A. Wright, Carrie A. Parham, Christiana M. Drake, and James J. Beaumont, Criminal activity and assault-style handguns: a study of young adults, Annals of Emergency Medicine 32:44-50 (1998).

1	nation's history. Prior to the Federal ban of LCMs, these include the following		
2	high-profile mass shootings:		
3	a. The 1984 shooting at a McDonald's restaurant in California that led		
4	to 21 deaths and 19 with nonfatal wounds.		
5	b. A schoolyard shooting in Stockton, California in 1989 which killed		
6	five children and left 29 others with nonfatal wounds.		
7	c. A 1989 workplace shooting in Louisville, Kentucky which left		
8	seven dead and 15 with nonfatal wounds.		
9	d. A 1991 shooting at a diner in Killeen, Texas that left 23 dead and		
10	27 more wounded.		
11	e. A 1993 shooting of 25 people on a Long Island Railroad train, six		
12	who died.		
13	f. A shooting on April 20, 1999 at Columbine High School in		
14	Littleton, Colorado in which assailants used an Intratec TEC-DC9		
15	assault pistol with a LCM and other guns to murder 13 students and		
16	wound an additional 23.		
17	g. A shooting in which 76 rounds were fired to wound 70 people at a		
18	crowded movie theatre in Aurora, Colorado on July 20, 2012 in		
19	which the assailant used a Smith & Wesson M&P15 assault rifle		
20	with a 100-round LCM. Twelve people lost their lives in this		
21	shooting.		
22	10. Among the mass shootings involving LCMS was the most deadly mass		
23	shooting in U.S. history at The Pulse nightclub in Orlando, Florida in 2016 in		
24	which the shooter used multiple 30-round magazines, some taped together to		
25	facilitate swift reloading. This shooting left 52 dead and another 50 people with		
26	gunshot wounds that they survived. It also includes a 2011 shooting in front of a		
27	supermarket in Tucson, Arizona that left six dead and 13 wounded including then		
28	U.S. Rep. Gabrielle Giffords who a suffered life-altering head wound. The Tucson		

shooter used a handgun with a LCM and was able to fire 31 rounds before being restrained when attempting to reload. The shooter in the mass murder of 20 young children and six adults at Sandy Hook Elementary School in Newtown, Connecticut and the shooter of 49 people, 32 who died, at Virginia Tech University also used LCMs.

When mass shootings occur in public, especially shootings that take 6 11. 7 place in public places, the shooter often selects an assault weapon or another firearm with a LCM. Data on 15 public mass shootings in the U.S. from 1984 to 8 9 1993 collected by Gary Kleck revealed that six (40%) involved assault weapons or other firearms equipped with LCMs.^{2,3} A collection of data by Mother Jones 10 magazine on 62 mass shootings in public places by lone shooters from 1982 11 through 2012 found that 33 (53.2%) perpetrators used firearms or LCMs that were 12 13 or would have been banned by the federal ban of assault weapons and LCMs.⁴ A 14 report by Everytown for Gun Safety examined data on mass shooting involving 15 four or more gunshot victims from 2009 through August 31, 2016 using the FBI's 16 Uniform Crime Reports/ Supplemental Homicide Reports data and media accounts.⁵ This study did not limit the sample to shootings in public places 17 18 involving lone shooters and thus included a large share of incidents of domestic 19 violence or other scenarios in which a small number of people were targeted and, 20 therefore, large ammunition capacity becomes less relevant than in the context of a 21 mass shooting in a public place with a lot of people (e.g., school, workplace). 22 Fifteen of 133 (11%) shootings involved a firearm with a LCM.

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² Kleck, Gary. Targeting Guns: Firearms and Their Control. New York: Aldine de Gruyter, pp. 124-126 (1997).
 ³ Koper, 2004, p. 14.
 ⁴ Mother Jones Magazine, US Mass Shootings, 1982-2012. Data from Mother Jones' Investigation, available at

http://www.motherjones.com/politics/2012/12/mass-shootings-mother-jones-full-26 data (2014).

⁵ Everytown for Gun Safety. *Analysis of Recent Mass Shootings* <u>https://everytownresearch.org/reports/mass-shootings-analysis/</u> Accessed January 27 30.2017. 28

Among all cases of mass shootings (4 or more victim fatalities) 1 12. 2 identified by Everytown, use of an assault weapon or other firearm with a LCM is 3 associated with more people who are shot (on average, 13.3 vs. 5.2%) or killed (on 4 average, 7.5 vs. 5.1) when compared with incidents in which LCMs are not used. 5 In other words, the average number of persons shot when the shooter had a LCM or 6 assault weapon that likely included a LCM was 2.5 times higher and the number 7 killed 47% higher than when no LCM was used. Similarly, Professor Christopher 8 Koper's re-analysis of his student's data from Mother Jones magazine's study of 9 public mass murders with firearm revealed that mass shootings with assault 10weapons, compared with mass shooting with other firearms, involved more 11 fatalities per incident (a mean of 10.4 vs. 7.4) and more victims with nonfatal 12 gunshot wounds (mean of 13.5 vs. 6.4).⁶ Dillon (2013) also reported that, compared with assaults carried out with firearms that did not have LCMs, mass 13 14 shootings in which firearms with LCMs were used had 60% more fatalities on 15 average (a mean of 10.19 vs. 6.35) and more than 3 times as many persons with nonfatal gunshot wounds (12.39 vs. 3.55). These findings are consistent with those 16 17 from a study of criminal shootings in Jersey City, NJ which found that, compared to 18 shootings with revolvers, shootings with semi-automatic pistols—which tend to 19 hold significantly more bullets than revolvers—had more shots fired and more 20 victims wounded.⁷

21 13. Unfortunately, data to more definitively determine the connections
22 between ammunition capacity and gun violence outcomes—the number of shots

 ⁶ Dillon, Luke, Mass Shootings in the United States: An Exploratory Study of the Trends from 1982-2012, Thesis for Master of Arts in Criminology, Law and Society, George Mason University, September 2013; Koper, Christopher S., Supplemental affidavit submitted as an expert witness in June, Shew et al. v. Daniel P Malloy, et al. Civil Action No. 3:13-CV-00739-AVC. U.S. District Court, District of Connecticut, January 6, 2014.

⁷ Reedy, Darin C., and Christopher S. Koper, Impact of handgun types on gun assault outcomes: a comparison of gun assaults involving semiautomatic pistols and revolvers, *Injury Prevention* 9:151-155 (2003).

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fired. the rate of fire, the number of victims, the number of wounds per victims, 1 2 lethality of woundings—have not been collected in any population. Gary Kleck, 3 Professor Emeritus from Florida State University, has a working paper that pieces 4 together various types of data in an attempt to discern whether there might be a logical connection between ammunition capacity or LCM use and outcomes in 5 criminal violence.⁸ Yet the data used by Kleck and the interpretations he makes of 6 the data are flawed. To determine the set of cases where it would be plausible that 7 8 involvement of LCM might be relevant to violence outcomes, Kleck searches for 9 cases in which *more than six victims have been shot*. His logic is that an ordinary 10 revolver can shoot six people without reloading and, thus, mass shootings with six 11 or fewer victims might have involved guns without LCMs. But because the rate at which shooters hit their human targets is low⁹, having more rounds available to 12 13 shoot within a short and presumably stressful interval could increase the odds of a 14 shooting leading to the wounding of one to five victims as well. Kleck then 15 identifies various online databases of cases involving shootings with six or more 16 victims where there is some information-from news media accounts-about 17 whether or not a LCM was used in the incident. Through this process, Kleck 18 identifies only 23 incidents in which more than six victims were shot at a single time and place in the U.S. for a period 1994-2013 and "were known to involve the 19 20 use of any magazines with capacities of ten rounds." (page 14) He then takes a 21 two-year period (2013-2014) of such cases—699 in all—and compares it against a 22 list compiled by the Violence Policy Center for mass shootings in which a LCM 23 was used and identifies two such cases. He uses this small ratio (2/699) to argue 24 ⁸ Kleck, Gary. Large-Capacity Magazines and the Casualty Counts in Mass Shootings: The Plausibility of Linkages. Working Paper, Social Science Research Network abstract 2741098. March 6, 2016.

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 - https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2741098
- 26 About 1 in 5 shootings reported by victims in the National Crime Victimization Survey result in a victim wounding. *Shotspotter* technology used to identify gunfire in urban areas identifies many time more shooting incidents than 27 are reported to police or that result in woundings. 28

that LCMs are irrelevant to high-casualty shootings. Kleck acknowledges that
news reports of mass shootings may not always report whether or not a LCM was
used, but fails to acknowledge that the online databases he and others use to study
mass shootings actually *rarely record the capacity of the firearm's magazine*. This
careless method, that pretends as if there is a valid surveillance system for tracking
use of LCM use when ammunition capacity is rarely recorded, produces very
misleading estimates of the use of LCMs in mass shootings.

8 14. Kleck also makes an argument ammunition capacity is only logically 9 relevant in incidents in which there is a high rate of fire over a short span of time. This is because longer intervals in an incident provide opportunities for a shooter to 10 load another magazine or switch to another gun within a few seconds. The concept 11 12 is partly defensible, but his measure-seconds elapsing per shot fired-is fraught with problems for large portion of the cases. For example, a shooter may fire 20 13 14 rounds in less than 10 seconds, wounding or killing many who do not have time to 15 escape or fight back, and then spend many minutes or hours "hunting" additional victims. In such cases, a measure of seconds elapsed per shot fired is very 16 misleading if the goal is to ascertain situations in which a shooter has the ability to 17 and does fire a large number of rounds very quickly and uninterrupted. Also lost in 18 Kleck's analysis and consideration is the fact that there is no way to measure the 19 incidents where there was the potential for a large number of casualties in a 20 21shooting but fewer occurred *due to the absence of a LCM*. That is, the impact of a shooter having fewer bullets in an ammunition feeding device may have an 22 important effect on reducing the likelihood that a case hits the victim threshold for a 23 mass shooting that is captured in mass shooting tracking projects that Kleck uses in 24 his analyses. 25

15. Studies of guns recovered by police and submitted for tracing to the
U.S. Bureau of Alcohol, Tobacco and Firearms (ATF) prior to the 1994 federal
assault weapon ban indicated that assault weapons accounted for between 1% to 8%

of such guns with the average of about 2%.¹⁰ Yet a study of murders of police 1 2 officers while on duty in 1994 found that assault weapons were used in 16% of the 3 murders and a firearm with a LCM was used to shoot 31% to 41% of the police officers murdered.¹¹ The Violence Policy Center examined data on law 4 5 enforcement officers murdered in the line of duty from the FBI for 1998-2001 and found 19.4 % (41 of 211) had been shot with an assault weapon.¹² 6

7 16. In contrast to the data indicating that assault weapons and LCMs 8 increase casualties from mass shootings. I am aware of no study or systematic data 9 that indicate that LCMs are necessary for personal defense more so than firearms 10 that do not have a LCM. That is, I know of no data indicating that victims of violent crime tend to need more than 10 rounds of ammunition in the rare instances 11 in which such persons use a firearm in self-defense or that persons equipped with 12 13 assault weapons or LCMs were more effective in protecting themselves than were 14 crime victims who used other types of firearms. For example, data from Colorado 15 for the time period 2004-2013 indicate that citizens rarely, if ever, face situations in 16 which they are defending their home against criminals and require more than 15 rounds. In Cooke v. Hickenlooper, 54 of 55 Colorado Plaintiff Sheriffs responded to 17 Defendant's Interrogatories requiring that they supply information describing cases 18 19 in their respective jurisdictions for every home invasion or robbery in a home to 20 which their department responded during the ten-year period 2004-2013. This 21 Interrogatory specifically asks for information on the circumstances, the number of 22criminal perpetrators, whether the perpetrators were armed and fired shots, whether 23 victims were armed and used guns in self-defense, whether victims' guns had a

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 ¹⁰ Kleck, Gary. *Targeting Guns: Firearms and Their Control.* New York: Aldine de Gruyter. (1997), pp. 112, 141-143.)
 ¹¹ W.C. Adler, F.M. Bielke, D.J. Doi, and J.F. Kennedy. Cops Under Fire: Law Enforcement Officers Killed with Assault Weapons and Guns with High-Capacity Magazines. Washington, DC: Handgun Control, Inc., 1995, p.4.
 ¹² Violence Policy Center, "Officer Down" Assault Weapons and the War on Law Enforcement, http://www.vpc.org/studies/officeone.htm (2003). 26 27

LCM, and the number of shots fired by the victims. A report of the data supplied 1 2 by Sheriffs completed by Dr. Jeffrey S. Zax shows that perpetrators discharged firearms in home invasions or home robberies a total of 46 times during the 10-year 3 study period, a rate of six per year or 1.25 per million population per year.¹³ During 4 5 this same time period, there were only two recorded instances in which a victim displayed a firearm with a LCM and there were no home invasion crimes in which a 6 7 victim fired 16 or more rounds. Thus, Colorado residents who live in jurisdictions 8 served by the 55 counties served by Sheriffs face an incredibly low risk of home 9 invasion, an even smaller risk of a home invasion in which the criminal fires shots, 10 and even more rarely, if ever, use a LCM in a manner in which extended 11 ammunition capacity is relevant for their defense of themselves and their families.

12 17. Some claim that bans of assault weapons and LCMs do not work; however, this is not the conclusion of Christopher Koper, the respected researcher 13 14 who has studied the role of assault weapons and LCMs in criminal violence and attempted to estimate the impact of the 1994 federal assault weapon ban. Koper 15 16 correctly identified a number of weaknesses in the federal assault weapons ban 17 which limited its impact, especially in the short-term. For example, the federal 18 assault weapons ban allowed "copycat" versions of the banned firearms to be 19 produced and sold following the ban as long as the new firearm model was not 20 identical to the banned gun. Another was that the federal ban "grandfathered" 21 currently owned assault weapons and LCMs, including allowing the ongoing sales 22 of those grandfathered assault weapons and LCMs. It is estimated that this involved 1.5 million assault weapons and 25 million LCMs.¹⁴ Similar to what I and 23 my colleagues observed when Maryland banned so-called "Saturday night special" 24

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 ¹³ Zax, Jeffrey S. Supplemental Report by Jeffrey S. Zax, Cooke, et al. V. Hickenlooper, September 13, 2013.
 ¹⁴ Koper, Christopher S. An Updated Assessment of the Federal Assault Weapons Ban: Impacts on Gun Markets and Gun Violence, 1994-2003.
 Philadelphia: University of Pennsylvania. (2004). Page 10 27 28

handguns,¹⁵ there was a sharp increase in sales of the to-be-banned assault weapons 1 2 just prior to the ban going into effect. The same was likely true for LCMs that were to be banned for sale. 3

These factors would suggest that the positive effects of the federal ban 18. on LCMs and assault weapons on violence would be somewhat muted as well as delayed. In other words, the full impact of the federal ban of LCMs and assault weapons have on violence would be expected to be delayed and somewhat gradual as pre-ban built-up stocks of LCMs and assault weapons would satisfy most of the demand for some time after the ban went into effect.

10 19. Koper's study of the effects of the federal ban of LCMs and assault 11 weapons in its early years indicated that there was a substantial decline in the 12 percentage of guns recovered by police that were assault weapons in six cities that were studied with declines ranging from 17% in Milwaukee (5.91% to 4.91%) to 13 72% in Boston (2.16% to 0.60%).¹⁶ Koper also examined pre-ban vs. post-ban 14 15 changes in the percentage of police-recovered firearms with LCMs in four selected cities with available data (for the early years of the ban period) and saw no evidence 16 of a decline in LCM use in crime.¹⁶ However, reporters from The Washington Post 17 18 obtained data from the Criminal Firearms Clearinghouse collected by the Virginia 19 State Police from 201 local law enforcement agencies across the state for the years 201993 through 2010, which included the ammunition capacity of the firearms 21 recovered by police. These data revealed that the percentage of police-recovered

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 ¹⁵ Webster, Daniel W., Jon S. Vernick, and Lisa M. Hepburn, Effects of Maryland's law banning Saturday night special handguns on homicides. American Journal of Epidemiology 155:406-412 (2002).
 ¹⁶ Koper, Christopher S., America's Experience with the Federal Assault Weapons Ban, 1994-2004: Key Findings and Implications, pages 157-171 in Reducing Gun Violence in America: Informing Policy with Evidence and Analysis, Daniel W. Webster and Jon S. Vernick, eds. Baltimore: Johns Hopkins University Press, at 163 (2013). Other pre-ban to post-ban changes in the percentage of police-recovered firearms that were assault weapons: -34% in Baltimore (1.88% to 1.25%), 32% in Miami, FL (2.53% to 1.71%), 32% in St. Louis (1.33% to 0.91%), and -40% in Anchorage, AK (3.57% to 2.13%). 24 25 26 27 28

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1 firearms that had LCMs rose steadily from about 13% in 1993 (the last full pre-ban 2 year) until 1997 when firearms with LCMs accounted for nearly 18% of guns 3 recovered by police. This increase was followed by a sharp decline following 1997 4 until LCM-equipped guns accounted for 10% of police-recovered firearms in 2004, 5 the year the federal assault weapon ban expired. Particularly striking in these data was the sharp increase in the share of police-recovered firearms with LCMs after 6 7 the federal ban expired in 2004. Firearms with LCMs rose from 10% in 2004 to 8 more than 14% in 2005, continuing to rise in subsequent years until LCM-equipped guns accounted for 22% of all police-recovered firearms in Virginia.¹⁷ This 9 10 temporal pattern in the percentage of police-recovered firearms equipped with LCMs suggests that the pre-ban increased supply of LCMs likely brought about by 11 12 a combination of increased domestic sales just prior to the ban and post-ban importation of LCMs (Koper 2004, pp. 65-67)¹⁶ predictably increased their use in 13 14 crime for a number of years before the blocked sales of new LCMs squeezed 15 supply, making them less available for use in crime only several years into the post-16 ban period. Expiration of the ban in 2004 provided a large supply of LCMs to meet pent up demand. 17

18 20. Though Koper has been relatively thorough in his examination of the 19 potential effects of the federal ban on assault weapons and LCMs on violent crime, 20 his analyses did not examine data for the full 10-year period the federal ban of 21 LCM and assault weapons was in effect because it was not available at the time he 22 completed his study. Excluding data from the last years when the ban was in effect, based on temporal pattern of LCM use from data from Virginia police, likely 23 24 underestimated the LCM ban's effects on gun violence. Koper's analyses of 25 longitudinal data that ended between 2000 and 2003 depending on the analysis, 26 largely tested differences between pre-ban and post-ban means. An underlying ¹⁷ Fallis, David, VA data show drop in criminal firepower during assault gun ban, The Washington Post, January 23, 2011. 27

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1 assumption behind such comparisons and statistical tests is that the potential effects 2 of the assault weapons and LCM ban would be observed immediately and be 3 constant over the post-ban time period. In his published reports, Koper did not 4 formally test whether the federal assault weapons ban had a delayed or gradual 5 effect on violent crime. Such a delayed or gradual effect is an outcome that would be more plausible than the immediate, constant change scenario that was tested, in 6 light of the market data Koper analyzed, the effects of permitting ongoing sales of 7 8 grandfathered assault weapons and LCMs, and trends in criminal use of LCMs in Virginia. For these reasons, it is my view that Koper's research is likely to 9 understate potential long-term public safety benefits of the federal ban of assault 10 weapons and LCMs. 11

Furthermore, as Koper has pointed out, only about 5% of those shot in 12 21. 13 criminal shootings victimizations are shot in incidents in which more than 10 rounds were fired, suggesting an upper-bound for the potential impact of LCM bans 14 15 on gun violence. Because trends in overall gun violence are influenced by myriad 16 of factors, some of the potentially most important of which are very difficult to 17 measure (e.g., drug market dynamics, gang disputes, social norms surrounding violence), it is possible that the federal ban of assault weapons and LCMs did 18 contribute to a proportionately small yet meaningful reduction in gun violence, but 19 available data and statistical models are unable to discern the effect. As Koper 20 21 points out, a one percent reduction in shootings in a nation with such high rates of 22 gun violence—undetectable in virtually any statistical analysis—translates to about 650 fewer shootings per year. (Koper 2013, p. 167.)¹⁶ 23

24 22. Due to the relative rarity of such events, especially during his study
25 period, Koper did not examine the potential impact of the federal assault weapon
26 and LCM ban on mass shootings in public places or the effects of the policy change
27 on the number of victims shot in such cases. Although no formal, sophisticated
28 analyses of the data on mass shootings in public places by lone shooters for the

period 1982-2012 collected by Mother Jones magazine has been performed to my 1 knowledge, a temporal pattern can be discerned that is consistent with a 2 hypothesized protective effect of the federal assault weapon and LCM ban and a 3 harmful effect of the expiration of that ban. Examining the data in Figure 1 4 5 (below), there is a noteworthy increase in the number of these incidents in the years leading up to the 1994 federal ban, a leveling off during the ban, and an increase 6 7 following the expiration of the ban (from an annual average of 1.5 for 1995-2004 to 4.1 for 2005-2016). 8



21 23. A more striking pattern is evident for the number of persons killed and 22 wounded in public mass shootings by lone shooters (Figure 2). The mean number 23 of persons shot per year in these incidents during the pre-ban years (1982-1994) 24 was 26.6, during the years the ban was in effect (1995-2004) it dipped to 21.1 25 (despite an upward pre-ban trajectory and the unusually large spike in 1999), and 26 more than doubled during the years since the ban has expired (66.1 in 2005-2016). 27 (Mother Jones Magazine 2017). These temporal changes could be due to a myriad 28

of factors, but the pattern of findings suggests that the federal assault weapons and 1 LCM ban could have had a protective effect against the type of shootings in which 2 the unique features of assault weapons and LCMs were most relevant and that 3 motivated calls for the ban. 4



18 I performed a series of negative binomial regression analyses to test 24. 19 whether the pattern I observed in trends for mass shootings and victims shot in 20 mass shootings were statistically significant and thus unlikely to be due to normal statistical fluctuation in the phenomena. These regression analyses use the annual 22 US population as a so-called offset variable, thereby eliminating the effect of a growing population during the 1982-2016 study period. Simple regressions that 24 tested for the effect of the 10-year federal ban of assault weapons and large capacity magazines indicated that the ban was associated with a statistically significant 26 62.6% reduction in the total number of victims shot in mass shootings during the 27 ban (Incidence Rate Ratio, IRR = .374, p = 0.010) and a statistically significant

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89.3% reduction in the number of victims shot in mass shootings in incidents 1 2 involving an assault weapon or other firearm with a LCM (IRR = .107, p = <.001). When I included a linear trend term in the model to control for pre-ban trend in 3 mass shooting victimizations, the statistically significant associations between the 4 5 AW/LCM ban years and the other years were essentially unchanged (-59.9% for all victims, IRR = .401, p = .017; -87.4% for all victims shot in mass shootings with an 6 AW or LCM, IRR = .126, p < .001). I also tested whether the effect of having the 7 8 federal AW/LCM ban grew over the years the ban was in effect. This is arguably a better way to model the effect due to the fact that there were large increases in AW 9 and LCM bans just prior to the ban and that more potential sales of AWs and LCMs 10 were blocked with each year the ban was in effect. Again, I found that, even after 11 12 controlling for population growth and pre-ban trend, the AW/LCM ban was associated with a 14.2% reduction in the rate of all mass shooting victimization for 13 14 each year the ban was in effect (IRR = .858, p = .012) and a 28.5% reduction in the 15 number of victims shot in public mass shootings where an AW or other firearm with a LCM was used (IRR = .725, p < .001). These associations were statistically 16 significant. 17

18 25. To date, there are no studies that have examined separately the effects
19 of an assault weapons ban, on the one hand, and a LCM ban, on the other hand,
20 likely because the two have usually been enacted together. It is my opinion that the
21 largest protective effect of these laws are due to restrictions on LCMs because
22 LCMs are used much more frequently than assault weapons.

23 26. LCMs can increase the ability of criminals and those attempting to kill
24 or wound large numbers of innocent people to maximize casualties from their
25 attacks. When shootings result in mass casualties, those in which a firearm with a
26 LCM is used result in 2.5 times as many people shot and 47% as many killed than
27 is the case in mass shootings with other types of firearms. Based on the threat that
28 they pose to public safety as well as the fear generated by mass shootings, the state

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1	of California's law restricting the maximum size of ammunition feeding devices to
2	10 seems prudent. Indeed, a lower limit could be justified. There is good reason to
3	believe that California's restriction in the capacity of ammunition feeding devices
4	for firearms would lead to modest reductions in gun violence. The federal LCM
5	ban appears to have led to a delayed decrease in the criminal use of LCMs and the
6	expiration of that law contributed to an increase in the use of LCMs in crime.
7	There is also data supporting the hypothesis that the federal ban and its expiration
8	were associated with changes in the number of people shot in mass shootings in
9	public places in a similar way.
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Executed	on: June 5, 2017	DaniepWWelisto
		DANIEL W. WEBSTER
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