



Published in final edited form as:

Ann Surg. 2017 September ; 266(3): 432–440. doi:10.1097/SLA.0000000000002376.

Firearm Deaths in America: Can We Learn From 462,000 Lives Lost?

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Abstract

Objective—We sought to determine whether state firearm legislation correlated with firearm-related fatality rates (FFR) during a 15-year period.

Background—The politicized and controversial topic of firearm legislation has been grossly understudied when the relative impact of American firearm violence is considered. Scientific evidence regarding gun legislation effectiveness remains scant.

Methods—Demographic and intent data (1999–2013) were collected from the Centers for Disease Control and Prevention’s Web-Based Injury Statistics Query and Reporting System database and compared by state firearm legislation rankings with respect to FFR. State scorecards were obtained from firearm-restrictive (Brady Campaign/Law Center against Gun Violence [BC/LC]) and less-restrictive (National Rifle Association) groups. FFR were compared between restrictive and least-restrictive states during 3 periods (1999–2003, 2004–2008, 2009–2013).

Results—During 1999 to 2013, 462,043 Americans were killed by firearms. Overall FFR did not change during the 3 periods (10.89±3.99/100,000; 10.71±3.93/100,000; 11.14±3.91/100,000; $P=0.87$). Within each period, least-restrictive states had greater unintentional, pediatric, and adult suicide, White and overall FFR than restrictive states (all $P<0.05$). Conversely, no correlation was seen, during any of the 3 time periods, with either homicide or Black FFR—population subsets accounting for 41.7% of firearm deaths.

Conclusions—Restrictive firearm legislation is associated with decreased pediatric, unintentional, suicide, and overall FFR, but homicide and Black FFR appear unaffected. Future funding and research should be directed at both identifying the most effective aspects of firearm legislation and creating legislation that equally protects every segment of the American population.

Keywords

Brady; firearms; gun; gun control; homicide; injury prevention; legislation; NRA; suicide

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The authors report no conflicts of interest.

The impact of firearm-related injury on life in the United States is staggering. In the latest Centers for Disease Control and Prevention (CDC) data, firearm-related injury was reported as the third leading cause of injury death, accounting for over 36,000 American fatalities in 2015.¹ Suicide comprises the largest portion of firearm death and, contradicting the notion that firearm injury is an “urban problem,” suicide rates are greatest in rural locations.^{1,2} Firearms remain the most lethal means of suicide as over 95% of attempts with a firearm are fatal.³ Equally foreboding, homicide is the number 1 cause of death in Black Americans between the ages of 15 and 34, and of these, 91% are the result of firearms.¹

When all firearm injuries are considered, over 100,000 Americans are killed or injured each year as a result of firearms and nonfatal firearm injuries have increased from 22.1 to 26.7 per 100,000 population during the last decade.^{1,4} These injuries burden both the medical community and the American healthcare system with massive costs. In a recent report, Spitzer et al estimated the cost of initial hospitalizations alone for patients injured by firearms in America to be \$734.6 million per year—a figure that multiplies to several billions when long-term medical care and employment loss are included.^{1,5,6}

For the severely injured, gunshot wounds are often a surgical disease. In the largest existing study of gunshot wound patients at an urban Level 1 trauma center, 75% required at least 1 operative procedure and many required multiple surgical procedures.⁷ The surgical care of firearm injury patients in these urban settings may be increasing in complexity as well. Recent reports demonstrated that patients are presenting more frequently with numerous gunshot wounds, as parts of multiple firearm injured patient scenarios, with greater anatomic Injury Severity Scores, and requiring more blood product transfusions than in the past.^{7,8}

Despite these data, little scientific research has been devoted to firearm injury prevention when the relative fatality and injury burden of firearms is considered. Introduced in 1996, the Dickey Amendment mandated that “none of the funds made available for injury prevention and control at the CDC may be used to advocate or promote gun control.”⁹ This ban, widely interpreted as a warning to firearm researchers, had a profound effect on both federal funding and firearm injury prevention research. Gun violence research publications decreased by 64% between 1998 and 2012 while firearm-related fatality rates (FFR) did not.¹⁰ In fact, a 2016, systematic review by the Eastern Association for the Surgery of Trauma on firearm-related injury prevention searched all articles published from 1900 to 2016 on the topic and deemed 26 articles suitable for inclusion—many of which were published by the same few firearm researchers.¹¹ Media coverage of mass shooting events has brought attention to what physicians have known for years—that firearm injuries in America are a major public health issue. After the Newtown, Connecticut firearm homicide of 20 children and 6 elementary school staff in 2012, President Obama directed the CDC to once again begin research on firearm-related violence and focused on the enforcement and review of firearm legislation.¹²

Firearm legislation has been sporadically introduced in an effort to prevent firearm-related injuries. Traditionally, federal firearm legislation has been limited with the majority of laws decided upon by individual states. Resulting firearm legislation thus varies considerably from state to state and may be more or less restrictive than current federal laws. Our primary

study objective was to determine if FFR differ between states with respect to firearm legislation, during a 15-year period. We also sought to determine if the relationship between state firearm legislation and FFR differed by sex, race, age, or intent.

METHODS

Institutional Review Board (IRB) exemption was granted by the University of Pennsylvania IRB prior to study initiation.

Data Source

Using the Centers for Disease Control and Prevention Web-Based Injury Statistics Query and Reporting System (WISQARS) database, firearm mortality data from all 50 states were collected.¹ The CDC's WISQARS is an online, publicly accessible database that provides injury data collected from state-filed death certificates reported to the National Center for Health Statistics. The system relies on the International Classification of Disease (ICD-10) coding system for injury diagnosis and provides fatality rates per 100,000 population. WISQARS data are further subcategorized by state, race, sex, age, injury mechanism, and intent (suicide, homicide, unintentional).

Data Collection/Study Population

Data were collected on all firearm-related deaths in all 50 states during the study period of 1999 to 2013. Database outputs with fewer than 10 case counts are not reported by the WISQARS database for identity protection purposes. To overcome missing data suppression, data were collected in 5-year time intervals (1999–2003; 2004–2008; 2009–2013) to optimize aggregate counts. For this same reason, only White and Black, the 2 largest American populations by race, were used for analysis. Study definitions were kept congruent with WISQARS definitions. All deaths under the age of 14 were considered pediatric; however for pediatric suicides the age threshold was extended to 18 years to reduce suppression of rare events.

State Firearm Legislation

The Brady Campaign to Prevent Gun Violence has released yearly scorecard “grades” evaluating firearm legislation in each state since 1997. The grading system evolved over time and, in 2007, a complementary numeric scoring system was developed as well. Since 2013, the Brady Campaign to Prevent Gun Violence and Law Center to Prevent Gun Violence (BC/LC), 2 organizations dedicated to reducing gun violence, have produced annual scorecards comparing all 50 states.¹³ The BC/LC use their legislative experience to assess individual state firearm laws and evaluate their strength to decrease gun violence. Points are assigned and tallied for each state (greater numeric score indicating more restrictive firearm legislation), a letter grade is then assigned based on numeric totals. The major categories of firearm legislation considered during the creation of each scorecard are shown in Table 1. An “A” grade is assigned to states with the most restrictive legislation and an “F” is given to the states with the least. In the current report, the 2004 scorecard contains only assigned “A to F” grades, while the 2009 and 2014 scorecards have both grades and numerical scores.

The National Rifle Association (NRA) also has a grading system, based on United States legislators. The NRA, an organization dedicated to the preservation of the right to purchase, possess and use firearms, assigns United States Congress members “A to F” grades based on their voting records, public statements, and responses to NRA gun legislation questionnaires. Converse to BC/LC grades, the NRA assigns “A” grades to lawmakers supporting the least restrictive legislation and “F” grades to Congress members supporting the most restrictive firearm legislation. Generally, grades are only available to NRA members, but NRA grades for the incoming 113th Congress (2013–2015), released after the 2012 election, have been previously reported and were utilized for comparison in the current analysis.¹⁴ States were assigned a NRA grade for study purposes, based on the majority of individual senator and representative grades from each state, and then NRA and BC/LC state scorecard grades were compared.

Data Analysis and Statistics

States were dichotomized based on BC/LC and NRA Scorecard grades into 2 study groups, “A to D” states and “F” states to mimic academic, pass/fail grading systems, and then compared during each of the 3, 5-year time intervals. These study comparison groups, determined a priori, were designed to analyze the global effects of restrictive and nonrestrictive firearm legislation in a “some versus none” or “pass versus fail” manner. As state firearm laws and their resulting scorecard grades changed during the 15-year study period, individual scorecards were utilized to classify states during each 5-year period. The 2004, 2009, and 2014 scorecards were utilized to analyze the 1999 to 2003, 2004 to 2008, and 2009 to 2013 periods, respectively. Only 1 single NRA scorecard was available for the analysis, and this 2012 NRA scorecard was used to additionally evaluate the 2009 to 2013 time period.

Our primary outcome measure was FFR per 100,000 United States population between the years of 1999 to 2013. Secondary measured outcomes included FFR stratified by race, sex, age, and intent. Age-adjusted fatality rates were calculated from WISQARS data with United States Census Bureau population estimates applied. The US Census Bureau’s Population Estimates program measures yearly population changes (births, deaths, domestic, and international migration) and adds it to the last decennial census to produce updated population estimates every year.¹⁵ Population estimates were aggregated for multiyear reports to produce rates.

All variables were compared with respect to the primary outcome measure, firearm-related fatality rate. Continuous data were reported as mean (\pm standard deviation) FFR per 100,000 and statistical comparison of continuous variables was performed using Student *t* test and analysis of variance, with *P* values adjusted for multiple comparisons using Bonferroni correction. All analyses were performed with IBM SPSS Statistics for Windows, Version 24.0 (IBM Corp, Armonk, NY).

RESULTS

Overall Firearm Fatality Rates

Over the 15-year study period, 462,043 Americans were killed by firearms (Table 2), most often due to suicide ($n=270,085$ [58.5%]) or homicide ($n=172,986$ [37.4%]; Fig. 1). Males had greater FFR than females (19.31 ± 6.58 vs. 3.06 ± 1.43 ; $P<0.001$) and Black Americans had greater FFR than White Americans (15.85 ± 8.17 vs. 10.06 ± 3.81 ; $P<0.001$). Although pediatric FFR were less than those of adults, 6016 children below the age of 14 were killed by firearms during the study period. Analysis of FFR due to homicide revealed Black homicide FFR were 6 times greater than White homicide FFR (11.34 ± 7.40 vs. 1.84 ± 1.01 ; $P<0.001$).

Firearm Fatality Rates by 5-year Intervals

When 5-year intervals were compared in Table 2, overall FFR did not vary by time period (1999–2003, 10.89 ± 3.99 ; 2004–2008, 10.71 ± 3.93 ; 2009–2013, 11.14 ± 3.91 ; $P=0.87$). With the exception of Black female FFR, which decreased between the first and last time periods (1999–2003, 3.81 ± 2.59 vs. 2009–2013, 2.49 ± 2.01 ; $P=0.005$), no significant differences in FFR were detected between 5-year intervals with respect to sex, race, suicidal, or homicidal intent. Unintentional deaths (1999–2003, 0.33 ± 0.24 vs. 2004–2008, 0.24 ± 0.22 ; $P=0.005$) and unintentional pediatric deaths (1999–2003, 0.17 ± 0.17 vs. 2004–2008, 0.06 ± 0.11 ; $P=0.001$ and 1999–2003, 0.17 ± 0.17 vs. 2009–2013, 0.05 ± 0.10 ; $P<0.001$) decreased during the 15-year study period.

Firearm Legislation and State Scorecards

Assessment of state firearm legislation scorecards and grading was undertaken (Table 3). State grades changed yearly based on the BC/LC scorecards. While 8 states were graded by the BC/LC as “F” states in 2004, 37 and 27 states received “F” grades in 2009 and 2014, respectively. The BC/LC 2004 scorecard contained only assigned “A to F” grades but the 2009 and 2014 BC/LC scorecards included both grades and numerical scores. Mean numeric scores differed by assigned grade both in 2009 (“A to D,” 43.39 ± 19.49 vs. “F,” 7.76 ± 4.94 , $P<0.001$) and 2014 (“A to D,” 29.11 ± 31.67 vs. “F,” -17.50 ± 8.60 , $P<0.001$). When BC/LC 2014 and NRA 2012 scorecards were compared, grades were markedly different. Only 1 (2.0%) state, Colorado, shared the same BC/LC and NRA grade, while most conflicted (eg, a “F” BC/LC grade and “A” NRA grade).

Comparisons of FFR by 5-year interval and BC/LC grade were then performed (Table 4). Statistically significant differences in FFR between “A to D” states and “F” states were detected during all 3 study intervals. Within each period, “F” states had greater female, male, White, unintentional, pediatric, and adult suicide, and overall FFR than restrictive, “A to D” states (all $P<0.05$). Overall pediatric FFR also differed by state BC/LC grade, with greater FFR (2004–2008, 0.35 ± 0.31 vs. 0.71 ± 0.47 , $P=0.003$; 2009–2013, 0.41 ± 0.30 vs. 0.83 ± 0.53 ; $P=0.001$) observed in “F” rather than “A to D” states. Likewise, unintentional pediatric FFR were $\times 3$ higher in 1999 to 2003 (0.13 ± 0.13 vs. 0.39 ± 0.21 ; $P=0.012$) and $\times 4$ higher in 2009 to 2013 (0.02 ± 0.04 vs. 0.08 ± 0.13 ; $P=0.025$) in “F” as compared with “A to D” states. Conversely, no correlation with BC/LC grade was seen, during any of the 3 time

periods, with either homicide or Black FFR—population subsets accounting for 41.7% of overall firearm deaths (Fig. 2).

Lastly, FFR were compared with respect to 2012 NRA state scorecard grades (Table 5). Once again, significant differences in FFR were detected with respect to sex, White, pediatric, unintentional, adult and pediatric suicide, and total FFR when NRA grade “A to D” states were compared with NRA grade “F” states. Important and contrary to BC/LC state grade comparisons though, states graded favorably by the NRA (“A to D”) for having less restrictive firearm legislation, had greater FFR for each of these segments of the US population.

DISCUSSION

The most important finding of this study is that restrictive state firearm legislation was associated with decreased unintentional, pediatric, suicide, and overall FFR when compared with less restrictive states. Equally important, we determined that homicide and Black American FFR appeared unaffected by the same restrictive legislation. Overall, our study showed that states with restrictive firearm legislation had decreased FFR compared with those with less restrictive legislation, but the decrease was not uniform across all populations.

The association between state firearm legislation and FFR has been reported.^{11,16–25} These prior studies though have focused on either specific laws, brief study periods, specific populations, or specific intents. Instead, the current study evaluates state firearm legislation in a realistic manner by examining the overall, aggregate effects of state legislation throughout an extended, 15-year time period. This prolonged study duration facilitates the detection of FFR fluctuations, limitation of uncommon event underreporting, and the evaluation of several major firearm injury intents and population subsets. To our knowledge, the present study is among the first to examine the role of race and US state legislation with firearm fatalities.²⁵

The current report has demonstrated that restrictive firearm legislation is associated with lower FFR in each of the 3 measured time periods although the overall FFR remained unchanged. Specific population subsets were also evaluated. Perhaps the most compelling relationships between state firearm legislation and FFR we discovered were in respect to White, suicidal, and unintentional firearm fatality populations. Firearm-related suicide, responsible for the death of 270,085 US citizens during this study period, was the most common cause of firearm-related death over the past 15 years. Suicide is most common among the White population in the United States making the effect of firearm legislation on FFR for both White and suicide subsets intuitive.²⁶ The potential for further legislative improvement remains however. A 2013 survey found that a majority of the American population, including those who currently own guns, support policies that limit firearms to better protect the population.²⁷ Unfortunately, firearm legislation has become heavily politicized and, despite the rhetoric and intense media coverage, little change to create meaningful legislation has occurred.²⁸ To this end, we were unable to demonstrate any change in the overall FFR during the past 15 years.

Previous reports have focused on individual laws when examining the effects of gun legislation on firearm injury.^{11,16,18–21} Through an in-depth analysis of individual state legislation, Kalesan et al¹⁸ determined that few existing individual state firearm laws were associated with a reduction in FFR. Based on their model, the federal implementation of universal background checks for firearm and ammunition purchases and firearms identification with either micro-stamping or ballistic fingerprinting had the greatest potential to decrease mortality. The authors concluded that the federal adoption of these 3 laws would reduce United States FFR to less than 0.16 per 100,000. In contradistinction to our study though, Kalesan et al assessed individual laws over the single 2010 year to produce their theoretical model. Alternatively, we utilized state legislation aggregates over a 15-year period to examine how the simultaneous existence of both restrictive and nonrestrictive firearm laws affects FFR.

Another important finding of the present report is that current restrictive firearm legislation does not appear to impact either firearm homicide rates or Black FFR. There are several potential explanations for these findings. Homicides comprised nearly 40% of all firearm-related fatalities but showed no association with state firearm legislation. Likely, firearm legislation directed at decreasing firearm-related homicide addresses different factors than laws aimed at preventing firearm-related suicide or unintentional death. A 2014 report revealed decreased homicide rates in states with 3 or more laws regulating firearm dealers while these same legislative measures have been ineffective in preventing firearm-related suicide.^{18,19} Moreover, the current study did not analyze the effect of neighboring state firearm legislation on FFR. The Bureau of Alcohol, Tobacco, Firearms, and Explosives reports a significant number of crimes occur with firearms purchased in less restrictive states.²⁹ Thus for firearm homicide, state legislative impact on FFR may in fact be diluted by surrounding state firearm legislation.

We have also demonstrated that firearm fatalities are different in White and Black populations. In the Black population, FFR was unchanged regardless of state firearm legislation while the same legislation correlated with White FFR. Again, these differences are due to the interplay of multiple complex social, political, and economic variables but there are several plausible partial explanations for this finding. The effect of legislation on White or Black FFR likely reflects individual state laws and the different manners in which White and Black populations die from firearms. Wintemute²⁶ demonstrated that firearm-related suicide was more prevalent in White populations while firearm-related homicide was most common in young Black men. Our study has corroborated these findings, confirming that 22% of White and 83% of Black firearm deaths were secondary to homicide. Due to this demonstrated relationship between the Black population and homicide FFR, many of the same mentioned factors deemed important to homicide observations are relevant to the Black population FFR as well.

Racial disparities are well documented in surgical and trauma care and the underlying structural causes of these disparities also merit consideration.^{30,31} Firearm violence affects each US population segment differently and is infrequently random.³² Beard et al³³ found race correlated with firearm injuries after controlling for other commonly cited markers of social disadvantage. Similarly, Black children were hospitalized after firearm injuries more

frequently than other children, regardless of economic status.³⁴ We have provided further insights into this complex issue by examining the impact of state firearm legislation on race. Our findings suggest that legislation put into effect to protect Americans against firearm injury may not do so equally.

We acknowledge our study limitations. Although we utilized the most comprehensive national firearm fatality dataset currently available, several shortcomings exist. Firearm fatalities are often underreported and there is no standardized medical examiner classification of intent.³⁵ Data suppression of rare events to ensure health information protection leads underestimation of FFR.³⁶ Finally, the WISQARS state database reports only firearm fatalities. While the number of injuries far exceeds fatalities, state data regarding firearm injuries is neither comprehensive nor accessible.^{4,7} Since most firearm injuries are nonfatal, many associations are unmeasurable when only fatalities are considered. A comprehensive database of all firearm injuries including fatalities would greatly facilitate future firearm injury research and prevention.

Other considerations are also important. State firearm legislation scorecards are not subject to the scientific rigors of the peer review process and are published by groups with political agendas. To balance this inherent bias, we utilized scorecards from 2 well-established yet opposing organizations to analyze state FFR and achieved similar results. While an objective third-party panel to assess and score state firearm research is ideal, the firearm research funding to take on such an endeavor is unavailable at present. Additionally, when creating the NRA scorecard, the assumption was made that NRA grades of the elected federal officials would mirror the elected state officials, those actually responsible for signing firearm laws into the state legislature. Finally, we recognize that correlation does not prove causation. Firearm fatalities are likely due to the interplay of innumerable, complex variables, many of which are not captured in the WISQARS database.

Firearm violence is a public health issue responsible for over 30,000 American lives lost and an estimated \$48 billion in healthcare costs and lost wages annually.^{1,6} As surgeons, we have focused our efforts on prolonging life. Future work should apply lessons learned from successful prior public health campaigns such as the reduction in motor vehicle fatalities and tobacco cessation.^{37,38} The marked decrease in tobacco use over the past decade has been partially attributed to federal and state interventions which have included legislative acts to raise taxes on tobacco purchases, increased FDA regulation and promoted involvement of the medical community through evidence-based smoking cessation counseling.³⁸

In conclusion, over 462,000 American civilians have been killed by firearms over the past 15 years. While the overall FFR did not change during this period, restrictive state firearm legislation was associated with a decrease in unintentional, pediatric, suicide, and overall FFR when compared with less restrictive states. Homicide and Black FFR appear unaffected by the same restrictive measures. Future efforts should be directed at identifying effective aspects of current legislation while ensuring that all segments of the United States population are protected by firearm legislation. Obtaining adequate funding for the establishment of comprehensive firearm injury databases, injury prevention programs and research are the important next steps.

Acknowledgments

The authors are indebted to the careful manuscript critique of Drs Therese S. Richmond and Charles C. Branas.

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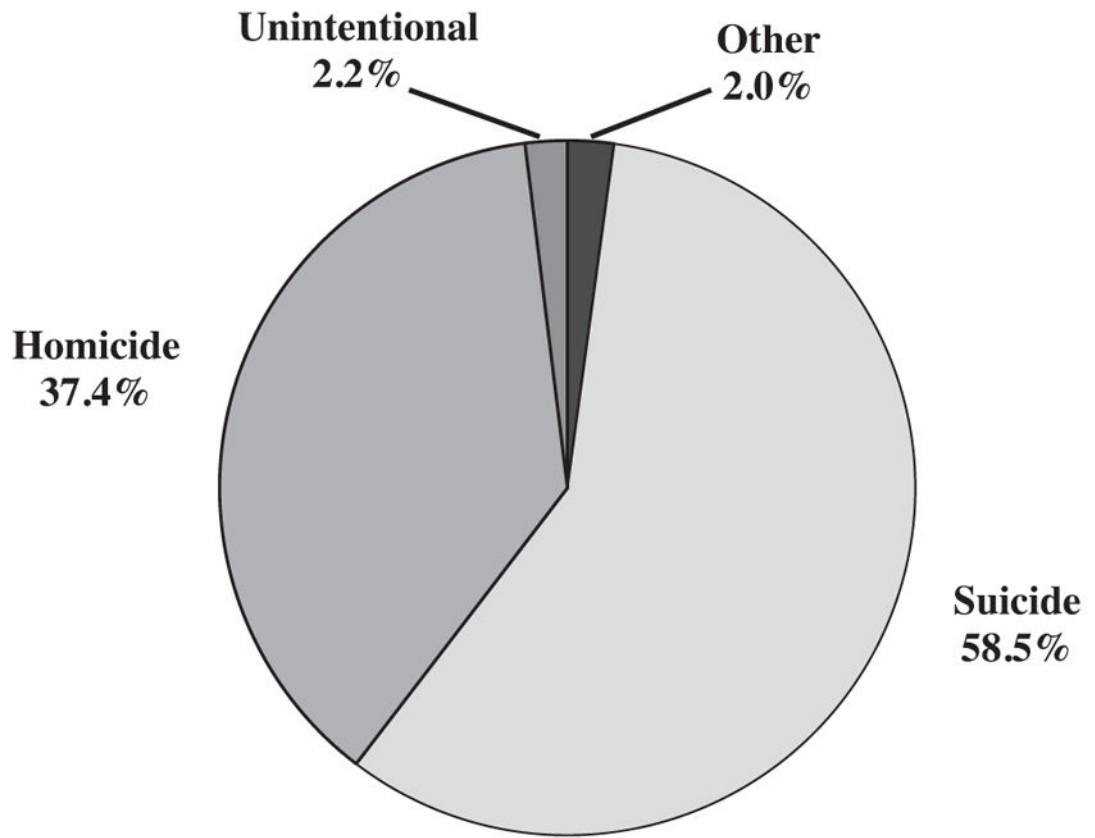


FIGURE 1.
Firearm fatalities during 1999 to 2013 were compared by intent.

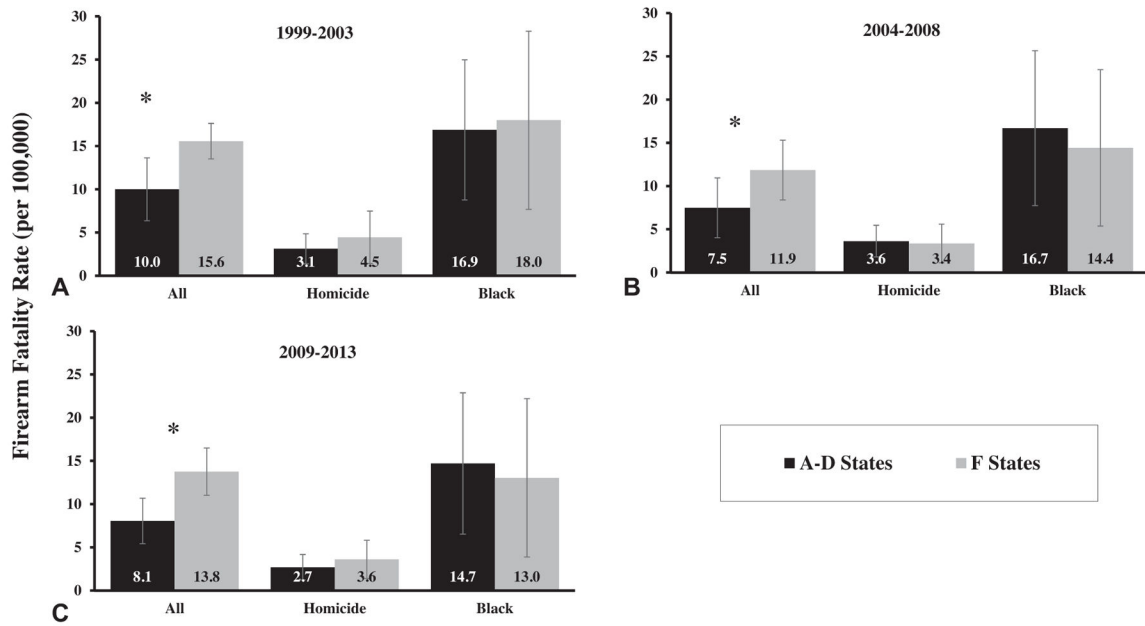


FIGURE 2.

Firearm-related fatality rates per 100,000 population per year were compared between states with the more restrictive firearm legislation, “A to D” states (black bars) and least restrictive legislation, “F” states (gray bars), over 5-year intervals. Comparisons demonstrating statistical significance ($P < 0.05$) are marked with an asterisk (*).

TABLE 1

State Firearm Legislation

Background checks
Gun dealer sales
Consumer and child safety
Firearms in public places
Gun owner responsibility
Classes of weapons, ammunition, and magazines
Investigating gun crimes
Local authority to regulate
Other: medical gag laws, nullification of federal law, gun industry immunity statutes

Areas of policy considered by The Brady Campaign to Prevent Gun Violence and Law Center to Prevent Gun Violence to create annual state legislative scorecards.

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TABLE 2

United States Firearm Fatalities and Rates, 1999 to 2013

	1999–2013		Fatality Rates by 5-yr Interval				P Value
	Fatalities	Fatality Rate	1999–2003	2004–2008	2009–2013		
Sex							
Female	64,017	3.06 ± 1.43	3.05 ± 1.46	2.91 ± 1.38	3.20 ± 1.50	0.60	
Male	398,026	19.31 ± 6.58	19.41 ± 6.79	19.04 ± 6.71	19.49 ± 6.49	0.94	
Race/ethnicity							
White	338,406	10.06 ± 3.81	10.12 ± 3.89	9.73 ± 3.78	11.31 ± 3.92	0.84	
Female	50,645	3.03 ± 1.47	2.96 ± 1.44	2.86 ± 1.43	3.27 ± 1.60	0.35	
Male	287,761	17.56 ± 6.34	17.43 ± 6.40	17.06 ± 6.34	17.95 ± 6.28	0.78	
Black	112,821	15.85 ± 8.17	17.06 ± 8.38	15.01 ± 8.98	13.81 ± 8.67	0.17	
Female	11,563	3.01 ± 2.05	3.81 ± 2.59*	2.69 ± 2.26	2.49 ± 2.01*	0.010	
Male	101,258	28.69 ± 15.91	30.69 ± 15.44	27.57 ± 16.89	25.08 ± 16.36	0.23	
Pediatric (<14 yrs)	6016	0.75 ± 0.43	0.85 ± 0.60	0.62 ± 0.46	0.64 ± 0.48	0.06	
Unintentional (<14 yrs)	992	0.13 ± 0.15	0.17 ± 0.17* [^]	0.06 ± 0.11*	0.05 ± 0.10 [^]	<0.001	
Unintentional	9957	0.27 ± 0.20	0.33 ± 0.24*	0.24 ± 0.22*	0.21 ± 0.18	0.010	
Suicide	270,085	7.10 ± 2.87	6.99 ± 2.77	6.80 ± 2.81	7.47 ± 3.06	0.48	
(<18 yrs)	9224	1.13 ± 0.75	1.26 ± 0.88	0.98 ± 0.79	1.07 ± 0.72	0.21	
Homicide	172,986	3.32 ± 1.99	3.33 ± 2.01	3.43 ± 2.12	3.19 ± 1.94	0.82	
Black	93,262	11.34 ± 7.40	11.9 ± 7.10	11.90 ± 7.81	10.88 ± 7.64	0.64	
White	74,931	1.84 ± 1.01	1.92 ± 1.13	1.92 ± 1.09	1.69 ± 0.84	0.62	
Total	462,043	10.92 ± 3.90	10.89 ± 3.99	10.71 ± 3.93	11.14 ± 3.91	0.87	

Overall number of firearm-related fatalities and comparison of firearm-related fatality rates (mean ± SD) per 100,000 population by 5-year intervals. Differences between time intervals that remained significant after Bonferroni correction are marked with an asterisk (*) or caret ([^]).

TABLE 3

Brady Campaign to Prevent Gun Violence and Law Center to Prevent Gun Violence, State Report Cards by Year Compared With 2012 NRA Grade

	2004	2009	2014	2012 (NRA)
Alabama	F	F	D-	A
Alaska	D-	F	F	A
Arizona	D	F	F	A
Arkansas	D	F	F	A
California	A-	B	A-	F
Colorado	D	F	C	C
Connecticut	A-	B	A-	F
Delaware	C	D	B-	F
Florida	D+	F	F	A
Georgia	D	F	F	A
Hawaii	A-	C	B+	F
Idaho	F+	F	F	A
Illinois	B+	C	B	F
Indiana	D	F	D-	A
Iowa	C+	F	C-	F
Kansas	C+	F	F	A
Kentucky	F	F	F	A
Louisiana	F	F	F	A
Maine	D-	F	F	C
Maryland	A-	B	A-	F
Massachusetts	A-	B	B+	F
Michigan	D+	D	C	A
Minnesota	C-	F	C	A
Mississippi	F	F	F	A
Missouri	D+	F	F	A
Montana	F	F	F	A
Nebraska	B-	F	D	A
Nevada	D	F	F	A
New Hampshire	D-	F	D-	A
New Jersey	A-	B	A-	F
New Mexico	F	F	F	B
New York	B+	B	A-	F
North Carolina	C	D	F	A
North Dakota	D	F	F	A
Ohio	D-	F	D	A
Oklahoma	D-	F	F	A
Oregon	C-	F	D+	F
Pennsylvania	D+	D	C	A

	2004	2009	2014	2012 (NRA)
Rhode Island	B-	B	B-	F
South Carolina	D+	F	F	A
South Dakota	D	F	F	A
Tennessee	D+	F	F	A
Texas	D-	F	F	A
Utah	D-	F	F	A
Vermont	D-	F	F	C
Virginia	C-	F	D	A
Washington	D+	F	C	F
West Virginia	D	F	F	A
Wisconsin	C+	F	C-	A
Wyoming	F	F	F	A

The Brady Campaign to Prevent Gun Violence and Law Center to Prevent Gun Violence assign an “A” grade to states with the most restrictive legislation and an “F” grade to states with the least. The National Rifle Association (NRA) scorecard was created from grades assigned by the NRA to United States Congress members. An “A” grade was assigned to a state where the majority of lawmakers supported less restrictive legislation, an “F” to a state where the majority of lawmakers supported more restrictive legislation.

TABLE 4

United States Firearm-related Firearm Fatalities by Year and Scorecard Comparison

	1999-2003			2004-2008			2009-2013		
	"A to D" States (n=42)	"F" States (n=8)	P Value	"A to D" States (n=13)	"F" States (n=37)	P Value	"A to D" States (n=23)	"F" States (n=27)	P Value
Sex									
Female	2.76 ± 1.37	4.54 ± 0.90	<0.001	1.66 ± 0.94	3.35 ± 1.25	<0.001	2.00 ± 0.85	4.23 ± 1.13	<0.001
Male	17.84 ± 6.10	27.65 ± 3.54	<0.001	13.70 ± 6.25	20.20 ± 5.86	0.002	14.47 ± 4.61	23.77 ± 4.48	<0.001
Race/ethnicity									
White	9.24 ± 3.54	14.77 ± 1.72	<0.001	5.83 ± 2.61	11.09 ± 3.13	<0.001	8.23 ± 2.67	13.93 ± 2.72	<0.001
Female	2.67 ± 1.34	4.51 ± 0.87	<0.001	1.54 ± 0.92	3.32 ± 1.29	<0.001	1.99 ± 0.88	4.37 ± 1.21	<0.001
Male	15.95 ± 5.78	25.19 ± 3.04	<0.001	10.44 ± 4.48	19.38 ± 5.17	<0.001	12.66 ± 4.05	22.45 ± 3.81	<0.001
Black	16.88 ± 8.10	17.99 ± 10.30	0.78	16.70 ± 8.96	14.42 ± 9.04	0.44	14.71 ± 8.17	13.04 ± 9.16	0.51
Female	3.55 ± 2.25	5.12 ± 3.88	0.30	2.56 ± 1.59	2.74 ± 2.47	0.81	2.48 ± 1.76	2.50 ± 2.24	0.97
Male	30.71 ± 15.32	30.60 ± 17.16	0.99	32.10 ± 17.21	25.98 ± 16.72	0.28	27.19 ± 15.61	23.28 ± 17.06	0.41
Pediatric (<14 yrs)	0.75 ± 0.53	1.36 ± 0.75	0.06	0.35 ± 0.31	0.71 ± 0.47	0.003	0.41 ± 0.30	0.83 ± 0.53	0.001
Unintentional	0.13 ± 0.13	0.39 ± 0.21	0.01	0.04 ± 0.05	0.06 ± 0.13	0.32	0.02 ± 0.04	0.08 ± 0.13	0.03
Unintentional	0.27 ± 0.18	0.71 ± 0.19	<0.001	0.11 ± 0.09	0.28 ± 0.23	0.010	0.10 ± 0.08	0.31 ± 0.20	<0.001
Suicide	6.40 ± 2.51	10.09 ± 1.93	0.001	3.57 ± 1.76	7.94 ± 2.14	<0.001	5.06 ± 2.10	9.53 ± 2.08	<0.001
Pediatric (<18 yrs)	1.12 ± 0.78	2.03 ± 1.06	0.05	0.30 ± 0.28	1.22 ± 0.77	<0.001	0.65 ± 0.42	1.43 ± 0.73	<0.001
Homicide	3.12 ± 1.73	4.45 ± 3.03	0.09	3.63 ± 1.83	3.36 ± 2.23	0.66	2.70 ± 1.47	3.61 ± 2.21	0.10
Black	12.04 ± 7.15	11.19 ± 7.27	0.77	12.89 ± 7.33	10.16 ± 7.71	0.28	12.12 ± 7.35	9.79 ± 7.86	0.29
White	1.80 ± 1.09	2.60 ± 1.18	0.07	1.36 ± 0.63	1.80 ± 0.89	0.10	1.22 ± 0.50	2.09 ± 0.88	<0.001
Total firearm	10.00 ± 3.63	15.57 ± 2.06	<0.001	7.49 ± 3.45	11.85 ± 3.46	0.001	8.05 ± 2.63	13.76 ± 2.73	<0.001

United States firearm-related fatality rates (mean ± SD) per 100,000 population, comparison based on Brady Campaign to Prevent Gun Violence and Law Center to Prevent Gun Violence Scorecard for each time period: 1999 to 2003, 2004 to 2008, and 2009 to 2013.

TABLE 5

United States Firearm-related Fatality Rate Comparison by 2012 National Rifle Association Scorecard (2009–2013)

	“A to D” States (n=37)	“F” States (n=13)	<i>P</i> Value
Sex			
Female	3.76 ± 1.28	1.63 ± 0.81	<0.001
Male	22.00 ± 5.06	12.35 ± 4.52	<0.001
Race/ethnicity			
White	12.82 ± 3.07	6.98 ± 2.64	<0.001
Female	3.83 ± 1.41	1.69 ± 0.90	<0.001
Male	20.45 ± 4.81	10.83 ± 4.17	<0.001
Black	14.46 ± 9.36	11.94 ± 6.27	0.27
Female	2.81 ± 2.14	1.57 ± 1.23	0.06
Male	26.06 ± 17.57	22.29 ± 12.47	0.48
Pediatric (<14 yrs)	0.74 ± 0.50	0.36 ± 0.31	0.01
Unintentional	0.07 ± 0.11	0.01 ± 0.02	0.005
Unintentional	0.27 ± 0.18	0.05 ± 0.05	<0.001
Suicide	8.70 ± 2.30	3.99 ± 2.12	<0.001
Pediatric (<18 yrs)	1.31 ± 0.66	0.41 ± 0.38	<0.001
Homicide	3.40 ± 2.05	2.60 ± 1.52	0.20
Black	11.27 ± 8.24	9.83 ± 5.78	0.57
White	1.84 ± 0.87	1.24 ± 0.58	0.03
Total firearm	12.65 ± 3.09	6.83 ± 2.56	<0.001

United States firearm-related fatality rates (mean ± SD) per 100,000 population, comparison based on 2012 National Rifle Association Scorecard.