Violence Prevention Focused on Children and Youth: Firearms Laws, Restrictions on Firearm Acquisition

Summary Evidence Table

Author & year Design suitability: design Type of analysis Quality of execution (# of limitations) Specific limitations	Intervention; additional intervention components when used (date) Comparison	Study period Location Unit of analysis Sample size Sample characteristics Follow-up % and length	Results Reported effect measure	Reported baseline	Reported effect (p value)	Value used in review (p value)
Britt[1,a] 1996 Greatest: time-series with comparison Autoregressive Integrated Moving Average (ARIMA), examine effect of law and timing of effect Fair (3) Description: minimal population description Outcome: ecological measurement[b] Confounding: no control for some important confounders	Intervention: DC law, Firearm Control Regulations Act—ban on handgun purchases, registration of pre-owned handguns, and safe gun storage regulations (signed 7/23/76; fully in effect since 2/21/77) Control: Baltimore, MD (no comparable law), and before-and-after comparison	1968-1987/89 Washington, DC and Baltimore, MD DC and Baltimore as units of analysis Sample size: 2 cities Sample characteristics: comparable socio-demographics and crime rates Follow-up %: NA; region-wide study Follow-up length: 21 yrs	Monthly firearm-related and non-firearm-related homicide counts	None reported	Change in monthly firearm-related homicide counts (1968–1987, no effect, confirmed by additional years of data, 1987–1989) FBI data: Washington 1.5 (NS) Baltimore –2.6 ($p<0.05$) NCHS data (change in natural logarithm [ln] rate): Washington –0.002 (NS) Baltimore –3.8 ($p<0.01$)	Relative % change in homicide rates: Not calculable (no baseline provided)

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Kleck[2] 1993 Least; cross-sectional Regression Fair (2) Outcome: ecological measurement[b] Confounding: no control for some important confounders	Intervention: ban on handgun possession, ban on handgun sales, ban on Saturday Night Specials (SNS) (multiple dates, not specified) Control: cities with no such laws	1980 (1979–1981) USA, cities with populations >100,000 Cities with >100,000 residents in 1980 as unit of analysis n = 170 Multiple sample characteristics summarized Follow-up % and length: NA	Natural logarithm of difference in total and firearm-related-specific crime, suicide, and unintentional injury rate between cities that had specified bans and those that did not	None reported	Effects of ban on handgun possession: Homicide total: 0.087 (NS) Assault total: 0.022 (NS) Robbery total: 0.104 (NS) Rape total: –0.092 (NS) Suicide total: –0.062 (NS) Firearm-related unintentional death: 0.009 (NS) Effects of ban on handgun sales: Homicide total: 0.001 (NS) Assault total: –0.106 (NS) Robbery total: –0.105 (NS) Rape total: –0.112 (NS) Suicide total: –0.066 (NS) Firearm-related unintentional death: –0.099 (NS) Effects of Saturday Night Specials ban: Homicide total: 0.083 (NS) Assault total: 0.069 (NS) Robbery total: 0.060 (NS) Rape total: 0.084 (NS) Suicide total: 0.094 (NS) Firearm-related unintentional death: 0.063 (NS)	Relative % change: Ban on handgun possession: Homicide total: 9.1 (NS) Assault total: 2.2 (NS) Robbery total: 11.0 (NS) Rape total: –8.8 (NS) Suicide total: –6.0 (NS) Firearm-related unintentional death: 0.9 (NS) Ban on handgun sales: Homicide total: 0.1 (NS) Assault total: –10.1 (NS) Robbery total: –9.9 (NS) Rape total: –10.6 (NS) Suicide total: –6.4 (NS) Firearm-related unintentional death: –9.4 (NS) Saturday Night Specials ban: Homicide total: 8.7 (NS) Assault total: 7.1 (NS) Robbery total: 6.2 (NS) Rape total: 8.8 (NS) Suicide total: 9.9 (NS) Firearm-related unintentional death: 6.5 (NS)

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Loftin[3] 1991 Greatest: time-series with comparison Before-and-after t-test and Autoregressive Integrated Moving Average (ARIMA) Fair (4) Description: no population description Outcome: ecological measurement[b] Confounding: no control for some important confounders Other biases: change in rates before law adoption, population changes not accounted for	Intervention: DC law, Firearm Control Regulations Act—ban on handgun purchases, registration of pre-owned handguns, and safe gun storage regulations (signed 7/23/76; fully in effect since 2/21/77) Control: neighboring counties with no such law, and before-and-after comparison	1968–1987 Washington, DC and adjacent comparison counties of MD and VA (combined; DC-MD-VA SMSA) DC and adjacent comparison counties (combined) as unit of analysis Sample size: 3 regions Sample characteristics not described Follow-up %: NA; region-wide study Follow-up length: 19 yrs	Monthly homicide and suicide counts: pre-law average levels and change after the law	Firearm-related homicides (deaths/month): DC: 13.0 MD/VA: 5.8 Non-firearm-related homicides: DC: 7.3 MD/VA: 3.0 Firearm-related suicides: DC: 2.6 MD/VA: 9.2 Non-firearm-related suicides: DC: 4.4 MD/VA: 9.9	Change in firearm-related homicides (deaths/month): DC: –3.3 (p<0.001) MD/VA: –0.4 (NS) Change in non-firearm-related homicides: DC: –0.3 (NS) MD/VA: 0.7 (p<0.05) Change in firearm-related suicides: DC: –0.6 (p<0.05) MD/VA: 1.1 (p<0.05) Change in non-firearm-related suicides: DC: –0.4 (NS) MD/VA: –0.2 (NS)	Relative % change (total estimates calculated from firearm-related and non-firearm-related estimates) Firearm-related homicide: –19.9 (p<0.001) Total homicide: –20.4 (NS) Firearm-related suicide: –12.6 (p <0.005) Total suicide: –18.1 (NS)

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McDowall[4] 1996 Greatest: time-series with comparison Before-and-after change t-test Fair (4) Description: minimal population description Outcome: ecological measurement[a] Confounding: no control for some important confounders Other biases: change in rates before law adoption, population changes not accounted for	Intervention: DC law, Firearm Control Regulations Act—ban on handgun purchases, registration of pre-owned handguns, and safe gun storage regulations (signed 7/23/76; fully in effect since 2/21/77) Control: Boston and Memphis—similar size cities with no such law, and before-and-after change comparison	1968–1987/1990 Washington, DC and Baltimore, Boston, and Memphis DC and Baltimore, Boston, and Memphis as units of analysis Sample size: 4 regions Sample characteristics not described Follow-up %: NA; region-wide study Follow-up length: 19–22 years	Monthly homicide and suicide counts: change in average levels before and after the law	None reported	Change in firearm-related homicides (deaths/month): DC: 2.08 (1968–1990) Memphis: 0.74 (1968–1987) Boston: –0.80 (1968–1987) Baltimore: –3.01 (1968–1987) Change in non-firearm-related homicides: DC: 0.61 (1968–1990) Memphis: 0.37 (1968–1987) Boston: –0.31 (1968–1987) Baltimore: –1.41 (1968–1987) Change in firearm-related suicides: DC: –0.47 (1968–1990) Memphis: 0.65 (1968–1987) Boston: 0.10 (1968–1987) Baltimore: 0.17 (1968–1987) Change in non-firearm-related suicides: DC: –0.33 (1968–1990) Memphis: 0.30 (1968–1987) Boston: –0.26 (1968–1987) Baltimore: –0.62 (1968–1987)	Relative % change not calculable. Baseline rates not provided for comparison cities; data collection periods in this report differ for intervention and comparison cities, but available in earlier study[3]

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Roth[5] 1999 Greatest: time-series with comparison Regression Fair (4) Description: population Outcome: ecological measurement[b] Follow-up: short follow-up period Confounding: no control for some important confounders	Intervention: Federal Violent Crime Control and Law Enforcement Act banning manufacture, transfer, and possession of certain semiautomatic firearms and large capacity ammunition magazines, plus restrictions on firearms dealer licensing and age of gun acquisition (1994) Control: states that had similar laws before 1994	1980–1995 USA, 42 states State as unit of analysis n = 42 Sample characteristics: U.S. states, populations not described Follow-up %: NA, statewide study Follow-up length: 1 year	Percentage difference between predicted and observed firearm homicide rates	None reported	States (n = 15) that had no similar assault weapons ban before and had prior ban on juvenile handgun possession; New York state excluded because of enactment of other firearms laws in same period: –6.7 (NS)	Relative % change in firearm homicide rates, comparing states with and without similar weapons bans prior to federal ban; intervention and comparison states had prior bans on juvenile handgun possession; New York and California excluded from comparison because of enactment of other firearms laws in same period: –6.7 (NS)

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Vernick[6] 1999 Moderate: retrospective design with comparison Pre-post proportions of requests for traces of crime firearms; proportions of banned guns traced to purchase year pre- and post-ban in ban and non-ban cities. Fair (4) Description: population Sampling: convenience sample of 16 cities in Youth Crime Gun Interdiction Initiative (YCGII), excluding Washington, DC Outcome: ecological measurement[b] Confounding: no control for some important confounders	Intervention: MD law banning manufacture and sale of SNS (passed 1988, effective 1990) Control: 15 YCGII cities without such a law	1985–1996/1997 Location: Baltimore and 15 comparison cities City as unit of analysis, n = 16 Population characteristics not provided Follow-up %: NA Follow-up length: 12 years retrospective	Relative % of banned crime gun trace requests (process by which law enforcement identifies source of weapon) among all gun trace requests in other cities compared with Baltimore, after the law, controlling for confounders	Baltimore, before the law: 13.6% Other cities before the law: 17.6%	Ratio of % of banned crime gun trace requests among all gun trace requests in other cities compared with Baltimore, after the law, controlling for some confounders: 2.3 (p value <0.05)	Relative % change in proportion of crime guns used between July 1996 and April 1997 that were traced to purchase dates before and after the ban, in Baltimore and comparison cities: –107.6 (p value NA)

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Weil[7] 1997 Moderate: time-series with no comparison Regression Fair (4) Description: population Outcome: ecological measurement[b] Follow-up: short follow-up period Confounding: no control for some important confounders	Intervention: MD law banning sales of assault pistols and high-capacity ammunition magazines (1994) Comparison: no separate control population, before-and-after comparison only	1989–1995 Location: Baltimore, MD Baltimore (data from first 6 months of each year) as unit of analysis Population characteristics not provided Follow-up %: NA; region-wide study Follow-up length: 6 months	Difference between expected and actual number of assault guns recovered in first 6 months of 1995	None reported	Expected number of assault guns recovered: 52.5 Actual number of assault guns recovered: 24 55% reduction (p = 0.018)	Relative % change: –55.0 (p value = 0.018)

ARIMA Autoregressive Integrated Moving Average; ln (natural logarithm); DC,Washington, D.C.; FBI Federal Bureau of Investigation; MD Maryland; NCHS National Center for Health Statistics; NS not statistically significant; NA not applicable or not available; SMSA Standard Metropolitan Statistical area; SNS Saturday Night Special; VA Virginia; YCGII Youth Crime Gun Interdiction Initiative

Footnotes

[a]Articles excluded because they report on the same intervention in the same population were:

Jones ED. The District of Columbia's "Firearms Control Regulation Act of 1975": the toughest handgun control law in the United States - or is it? Ann Am Acad Polit Soc Sci 1981;455:138–49.

Nicholson R, Garner A. The analysis of the Firearms Control Act of 1975: handgun control in the District of Columbia. Washington, DC: United States Conference of Mayors, 1980.

[b] In ecological measurement, exposures and outcomes are measured in the same population, but it cannot be determined whether those in the population who are exposed are also those with the outcome (or whether those in the population who are not exposed are also those without the outcome), and thus, whether exposure and outcome are associated.

References

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