

Online Supplemental File 5

Table 4. Law and Regulation Reforms

Study	Design	Study time period	Country (region)	Intervention	Results	
Other law and regulation reforms						
Studdert et al., 2010 ^{S15}	Time-series	2001–2006	Australia	In 1986, all new cars were required to have a catalytic converter to limit carbon monoxide emissions. From 1997 to 1999 subsequent laws were implemented to further reduce carbon monoxide emissions.	During the study period there was a decline in suicide rates by motor vehicle exhaust from 2.6 deaths per 100,000 in 2001 to 1.1 in 2006, representing a 57% decline in annual incidence.	Total: -
Nordentoft et al., 2006 ^{S16}	Time-series	1970–2000	Denmark	Law aimed at restricting access: household gas without carbon monoxide (1980), introduction of automobile catalytic converters (1989), the availability of barbiturates (1987), analgesics (1984 and 2000).	There was a decrease in household gas suicide rates (from 5.3 for men and 1.3 for women in 1970 to 0.0 deaths per 100,000 for both sexes in 2000), an increase in car exhaust suicide rates (from 0.3 for men and 0.0 for women in 1970 to 2.3 and 0.1 deaths per 100,000 for men and women, respectively), a decrease in barbiturates suicide rates (from 3.4 for men and 4.5 for women to 0.0 deaths per 100,000 for both sexes), and an increase in analgesics suicide rates (from 0.1 for men and 0.3 for women in 1970 to 0.8 and 0.6 deaths per 100,000 for men and women, respectively).	<i>Household gas</i> Male: - Female: - <i>Car exhaust</i> Male: + Female: + <i>Barbiturates</i> Male: - Female: - <i>Analgesics</i> Male: + Female: +
Nordentoft et al., 2007 ^{S17}	Time-series	1970–2000	Denmark	Law aimed at restricting access: household gas without carbon monoxide (1980), introduction of automobile catalytic converters (1989), and the availability of barbiturates (1987).	Same results as Nordentoft et al 2006	<i>Household gas</i> Male: - Female: - <i>Car exhaust</i> Male: + Female: + <i>Barbiturates</i> Male: - Female: -

Pridemore et al., 2009 ^{S18}	Interrupted time-series	1997–2006	Slovenia	In January 2003, legislation was introduced to establish a minimum age of 18 years to purchase and consume alcohol. There were also new laws limiting where and when alcohol could be purchased.	Following the intervention there was no statistically significant change in suicide mortality among women. Among men there was an 10% decrease in suicide mortality, equivalent to a decrease of 3.6 suicide deaths per month.	Total: - Male: -- Female: -
Myung et al., 2015 ^{S19}	Cross-sectional	2005–2013	South Korea	In 2011–12, a national policy was implemented restricting the use of paraquat, a common farming agrochemical.	Following the intervention, the suicide rate from herbicides or fungicides decreased from 31.4 to 16.9 per 10 million, representing a 46% reduction.	Total: --
Cha et al., 2016 ^{S20}	Time-series	1983–2013	South Korea	In 1999, South Korea implemented a paraquat (non-selective herbicide) management plan that was later revised in 2005. In 2011 the re-registration of paraquat was cancelled, and a ban on all sales was implemented in October 2012.	Between 2011 and 2013 the suicide mortality rate from pesticides decreased from 5.26 to 2.67 per 100,000. Compared with expected trends, the suicide rate from pesticides declined by an additional 37% (rate ratio = 0.63; 95% CI: 0.55, 0.73), equivalent to 847 (95% CI: -1180, -533) saved lives.	Total: -- Male: -- Female: --
Kim et al., 2017 ^{S21}	Pre-post, with no control group	2009–2013	South Korea	In 2011–12, a national policy was implemented restricting the use of paraquat, a common farming agrochemical.	The intervention was associated with a 39% reduction in pesticide-related suicide mortality (AOR = 0.61; 95% CI: 0.58, 0.64).	Total: --
Yamasaki et al., 2005 ^{S22}	Time-series	1965–1994	Switzerland	In 1994, the Swiss tax on tobacco increased fourfold in comparison with that in 1965. Excise taxes for alcoholic beverages did not change during the time period.	Increasing tobacco tax laws were associated with a reduction in the suicide rate ($\beta = -0.15$; $p < 0.001$), and increasing alcohol tax laws were associated with an increase in the suicide rate ($\beta = 0.042$; $p < 0.001$) among men. These laws were not significantly associated with suicide rates among women.	<i>Tobacco tax</i> Male: -- Female: NA <i>Alcohol tax</i> Male: ++ Female: NA
Morgan et al., 2007 ^{S23}	Interrupted time-series	1993–2004	United Kingdom (England and Wales)	In September 1998, legislation was introduced to limit paracetamol (acetaminophen) packaging to 16 tablets in general stores, 32 tablets in pharmacies, and retailers were no longer able to sell more than 100 tablets at a time to those without a prescription.	There was a downward step-change in the annual age-standardised mortality rate of -2.7 (SE: 0.6; $p = 0.003$) per million following the 1998 intervention. This trend was similar for poisoning deaths involving aspirin, antidepressants, and to a lesser degree, paracetamol compounds.	Total: --

Hawton et al., 2013 S24	Interrupted time-series	1993–2009	United Kingdom (England and Wales)	In September 1998, legislation was introduced to limit paracetamol (acetaminophen) packaging to 16 tablets in general stores, 32 tablets in pharmacies, and retailers were no longer able to sell more than 100 tablets at a time to those without a prescription.	In the 11 years following the intervention there was an estimated overall decrease in paracetamol poisoning deaths of 43%, representing 765 fewer deaths than what would have been predicted without the intervention.	Total: --
Lester et al., 1992 S25	Pre-post, with no control group	1950–1975	United Kingdom (Scotland)	In 1963, domestic gas was detoxified by lowering the carbon monoxide content.	Prior to 1963 the slope in suicide rate from domestic gas was +0.19. The slope in suicide rate from domestic gas declined (-0.22) following the intervention.	Total: --
Skilling et al., 2008 S26	Pre-post, with no control group	1980–2003	United Kingdom (Scotland and Grampian)	On January 1 st 1993, all new cars were required to be fitted with a catalytic converter to remove carbon monoxide from the emissions.	There was a significant decrease in suicide rates by motor vehicle gas inhalation in Grampian (from 134.1 to 64.1 deaths per 100,000; $p = 0.017$) and Scotland (from 94.1 to 38.9 deaths per 100,000; $p = 0.001$).	Total: --
Cylus et al., 2014 S27	Time-series	1968–2008	United States	In 1935, the Federal Unemployment Insurance Program was created, providing each State with the autonomy to organize their own unemployment program. As a result, the amount of unemployment benefits vary substantially by State, which may have a differential impact on suicide rates during economic downturns.	The impact of unemployment rates on suicide mortality was offset by higher unemployment benefits ($\beta = -0.57$; 95% CI: -0.86, -0.27). These findings were similar between men and women, but had a greater effect on younger individuals (20–24 years) when compared with older individuals (45–54 years).	Total: --
Kaufman et al., 2019 S28	Quasi-experimental	1990–2015	United States	The federal minimum wage has increase from US\$3.80 in 1990 to US\$7.25 in 2015, adjusting for inflation reveals no substantial change. A total of 29 states have increased their minimum wage above the federal limit, whereas 21 states have maintained the lower federal minimum wage.	Among adults aged 18-64 year with a high school education or less, a US\$1 increase in minimum wage was associated with between a 3.4% (95% CI: 0.4%, 6.4%) and 5.9% (95% CI: 1.4%, 10.2%) reduction in the suicide rate. From 1990 to 2015, it was estimated that a US\$1 increase above the federal minimum could have prevented 27,550 suicide deaths. No effect was found among those with a college degree or more.	<i>With high school education or less</i> Total: -- <i>With college degree or more</i> Total: +

Gertner et al., 2019 ^{S29}	Panel design (with and without laws)	2006–2016	United States	In 2007, the Fair Minimum Wage Act was implemented to increase the federal minimum wage. Several states adopted the Act between 2007 and 2009.	A one-dollar increase in the real minimum wage was associated on average decrease of 1.9% (95% CI: -0.031%, -0.007%) in the annual state suicide rate. This decrease resulted in roughly 8,000 fewer deaths by suicide.	Total: -- Male: -- Female: -
Rambotti; 2020 ^{S30}	Pooled cross-sectional design	2000–2015	United States	The Supplemental Nutrition Assistance Program (SNAP), formerly known as the Food Stamp Program, was first introduced in 1964. The Earned Income Tax Credit (EITC) has been adopted by 29 states plus DC, and aims to provide tax credits to low and moderate income working individuals and families.	A one standard deviation increase in SNAP and EITC participation across states was associated with a 0.17 and 0.04 standard deviation reduction in the suicide death rate, respectively. A one standard deviation increase in SNAP participation was associated with 31,612 fewer suicide mortalities overall (24,811 fewer male suicide mortalities) during the study period.	<i>SNAP</i> Total: -- Male: -- Female: - <i>EITC</i> Total: - Male: - Female: -
Birckmayer et al., 1999 ^{S31}	Time-series	1970–1990	United States	The minimum legal drinking age (MLDA) between states changed considerable in the 1970s and 1980s. In 1970, 33 states had a legal drinking age of 21 years. Between 1970 and 1975 some states began lowering the MLDA. These laws were then increased again in 1977. By 1988 all states had a MLDA of 21 years.	Between 1970 and 1990 the states with a MLDA of 18 years had an 8% and 6% higher suicide rate in youth aged 18–20 and 21–23 years, respectively, in comparison with states that had a legal limit of 21 years. These laws were not significantly associated with suicide rates in youth aged 15–17 years.	<i>Lower MLDA</i> 15–17 years: + 18–20 years: ++ 21–23 years: ++
Grucza et al., 2012 ^{S32}	Retrospective	1990–2004	United States	The minimum legal drinking age (MLDA) between states changed considerable in the 1970s and 1980s. In 1970, 33 states had a legal drinking age of 21 years. Between 1970 and 1975 some states began lowering the MLDA. These laws were then increased again in 1977. By 1988 all states had a MLDA of 21 years.	When looking at the full cohort (born 1949–72) women who lived in states with lower MLDA had a higher risk of dying by suicide (OR = 1.12, 95% CI: 1.05, 1.18, $p = 0.0003$) in comparison with men (OR = 0.97, 95% CI: 0.95, 1.00, $p = 0.048$). Younger women (born 1960–72) who lived in states with a lower MLDA had a higher risk of dying by suicide (OR = 1.17, 95% CI: 1.10, 1.24, $p < 0.0001$) than their older counterparts (born 1949–59).	<i>Full cohort</i> Total: + Male: -- Female: ++ <i>Younger cohort</i> Male: - Female: ++ <i>Older cohort</i> Male: - Female: -

Markowitz et al., 2003 ^{S33}	Time-series	1976–1999	United States	Excise taxes on beer have been implemented at various times across states, and within state changes to the nominal tax occur often. The state laws on blood alcohol concentration (BAC) for youth while driving were first implemented in 12 states at a level of 0.10 during 1976. Since 1976 the alcohol laws for youth drivers have become stricter with lower limits of 0.08 first introduced in Oregon in 1983. Beginning in the 1980s some states introduced zero tolerance laws for alcohol consumption for youth drivers under the legal age.	A 10% increase in beer excise taxes was associated with a significant reduction of 2.4 to 5% in suicide mortality among males, depending on the age group. States with 0.08 BAC laws and zero tolerance laws while driving were associated with a 0.7% and 0.8% reduction in suicide mortality, respectively, among males aged 20–24 years. Beer excise taxes and alcohol consumption laws for youth drivers were not significantly associated with suicide mortality among females.	<i>Real beer tax</i> Male 10–14: -- Male 15–19: -- Male 20–24: -- Female 10–14: - Female 15–19: - Female 20–24: -- <i>0.08 BAC</i> Male 10–14: + Male 15–19: - Male 20–24: -- Female 10–14: - Female 15–19: -- Female 20–24: - <i>Zero tolerance</i> Male 10–14: - Male 15–19: -- Male 20–24: -- Female 10–14: - Female 15–19: -- Female 20–24: -
Son et al., 2011 ^{S34}	Time-series	1995–2004	United States	Excise taxes for spirits, wines, and beer have been used as a method to deter problematic substance use. Each state in the US implements their own laws and excise taxes for alcohol.	State excise tax for beer and spirits were not significantly associated with suicide mortality. A 10% increase in state excise taxes in any given year for wine was significantly associated with a 0.3% decrease in the state-level suicide deaths, equivalent to 3 lives saved per 100,000.	<i>Wine tax</i> Total: -- <i>Spirit tax</i> Total: - <i>Beer tax</i> Total: +
Grucza et al., 2014 ^{S35}	Repeated cross-sectional	1990–2004	United States	During the 1990s many states started adopting smoke-free air legislation that banned individuals from smoking in private worksites, restaurants, and bars. At the same time, many states started increasing excise taxes for cigarettes and other tobacco products.	A \$1 increase in state-level excise taxes per pack of cigarettes was associated with an 12% reduction in suicide mortality (OR = 0.89, 95% CI: 0.87, 0.93; $p < 0.001$). A one-point increase on a six-point scale for smoke-free air policies was associated with a 3% reduction in suicide mortality (OR = 0.97, 95% CI: 0.96, 0.98; $p < 0.001$). These policies were more effective in men than women, and younger individuals (18–40 years) than older (>40 years) individuals.	<i>Cigarette tax</i> Total: -- <i>Smoke-free laws</i> Total: --
Firearm law and regulation reforms						

Chapman et al., 2006 ^{S36}	Time-series	1979–2003	Australia	In 1996, Australia introduced major gun law reforms that included a ban on semi-automatic firearms, pump-action shotguns, and rifles. They also initiated a firearm buyback program.	Prior to the law there was an annual mean of 491.7 firearm suicide mortalities (1979–96), which decreased to 246.6 after the intervention (1996–2003). This represents a significant difference of trends (rate ratio = 0.95; 95% CI: 0.92, 0.99; $p = 0.007$).	Total: --
Baker et al., 2007 ^{S37}	Time-series	1979–2004	Australia	In 1996–97, the National Firearms Agreement (NFA) was implemented in Australia, which prohibited certain types of firearms, in particular semi-automatic rifles and semi-automatic and pump action shotguns.	Suicide rates by firearm pre- and post-NFA both showed decline, but the observed suicide rates post-NFA were consistently lower than the predicted values and fell outside the 95 percent confidence interval limits for the predicted rates. This suggested that the NFA legislation had a significant effect on reducing firearm suicide mortality.	Total: --
Klieve et al, 2009 ^{S38}	Quasi-experimental	1964–2005	Australia (Queensland)	The 1997 national firearms agreement (NFA).	Prior to 1988, the rate of firearm suicides in Australia was around 6 per 100,000. For Queensland, significant declines in firearm suicide rates were observed both before and after the introduction in the NFA: -7.2% before (rate ratio = 0.93; $p < 0.0001$) and 6.5% after (rate ratio = 0.94; $p = 0.0002$), resulting in a 2004 suicide rate of 2.2 per 100,000. No significant difference was observed between these trends ($p = 0.7878$). For Australia, while significant declines were observed before and after the NFA (1988–1996: 3.9% reduction; rate ratio = 0.96; $p < 0.0001$; 1997–2004: 7.1% reduction; rate ratio = 0.93; $p < 0.0001$), resulting in a 2004 suicide rate of 1.7 per 100,000, the difference between these trends was significant ($p = 0.01$).	Male: -
Lee et al., 2010 ^{S39}	Time-series	1915–2004	Australia	In 1996–1997, the National Firearms Agreement (NFA), which involved stricter firearm laws and the buy-back and destruction of over 600,000 firearms within a few months.	Using multiple tests, there was no evidence of structural breaks that occurred around the time of the NFA legislation, suggesting that the NFA did not have any large effects on reducing firearm suicide rates in Australia.	Total: -

McPhedran et al., 2012 ^{S40}	Time-series	1907–2007	Australia	In 1996, Australian firearms legislation, called National Firearms Agreement (NFA), was tightened significantly.	Suicide rates by firearm pre- and post-NFA showed decline. There was a lack of structural breaks in firearm suicide for those aged 15–44 years, suggesting the intervention had little impact on reducing firearm suicide mortality among these age groups. The intervention may have had an impact in those aged 35–44 years, but it is unlikely due to inconsistencies in the data.	15–24 years: - 25–34 years: - 35–44 years: --
Chapman et al. 2016 ^{S41}	Time-series	1979–2013	Australia	In 1996, Australia introduced major gun law reforms that included a ban on semiautomatic rifles and pump-action shotguns and rifles and also initiated a program for buyback of firearms.	In the 17 years following the announcement of the new gun laws, the rate of firearm suicide declined to a mean of 0.99 (95% CI: 0.87, 1.13) per 100 000. The rate of firearm suicide was declining by an average of 3% per year before gun law reforms, and this decline increased to 4.8% per year after the introduction of revised gun laws. Total (firearm + nonfirearm) suicide annual death rates had been increasing by a mean of 1.0% per year before the introduction of the gun control laws, for an overall mean of 12.3 (95% CI: 11.9, 12.7) per 100 000, but declined to a mean of 1.5% per year after the introduction of the 1996 gun laws, for an overall mean of 11.7 (95% CI: 11.1, 12.3) per 100 000.	Total: --
Gilmour et al., 2018 ^{S42}	Quasi-experimental	1961–2015	Australia	In 1997, the Australian National Firearms Agreement (NFA) was implemented. This agreement restricted access to some classes of firearms, regularized and tightened state-level licensing laws, and introduced a gun buyback scheme and amnesty that led to the recall of approximately 640000 guns	Among women, the NFA had no additional impact on firearm-related suicides (the difference-in-difference term = 0.98; $p = 0.3$). Among men, the NFA had less of an effect on the trend for firearm-related suicide deaths (the difference-in-difference term = 1.01; $p < .001$).	Male: ++ Female: -
Snowdown et al., 1992 ^{S43}	Quasi-experimental	1968–1989	Australia (South Australia)	In 1977, South Australia adopted the <i>Firearm Act</i> , which resulted in stricter laws on gun ownership. The law was implemented in 1980.	Firearms suicide rates in South Australia declined significantly after 1980, following proclamation of gun legislation, in contrast to the four other larger States where an increase in firearms suicides was recorded. Among	Male: - Female: -

					men, firearm suicide declined from 8.0 per 100,000 (1977–79) to 6.2 following the intervention (1980–82). A similar decline took place among women (0.9 per 100,000 [1977–79] to 0.5 [1980–82]).	
Cantor et al., 1995 ^{S44}	Retrospective	1990–1993	Australia (Queensland)	In January 1992, the Weapons Act took effect, which requires owners of long arms (rifles and shotguns) to be licensed.	Mean annual firearm suicide rates declined significantly ($p < 0.05$) in metropolitan and provincial city areas after the legislation (from 3.6 to 2.3 per 100,000, and from 5.2 to 3.1 per 100,000, respectively). Significant declines also occurred among men and in those aged 15–29 years.	<i>Metropolitan</i> Male: -- Female: - <i>Provincial city</i> Male: -- Female: + <i>Rural</i> Male: + Female: -
Ozanne-Smith et al. 2004 ^{S45}	Quasi-experimental	1979–2000	Australia (Victoria)	In 1988, a national firearm amnesty and buyback scheme was implemented in Victoria. The Victorian response, the 1996 Firearms Act, changed existing regulations.	After the 1988 legislative revisions, statistically significant reductions in Victorian frequencies of firearm related suicides ($p = 0.008$) was seen. Further declines in overall firearm related suicides followed the additional legislative reforms in 1996.	<i>1988 legislation</i> Total: -- <i>1996 legislation</i> Total: --
Kapusta et al., 2007 ^{S46}	Time-series	1985–2005	Austria	In July 1997, more stringent legislation laws were implemented restricting the acquisition and possession of firearm in Austria.	In the period following the intervention (1998–2005), there was a significant negative trend ($\chi^2 = 88.0$; $p < 0.0001$) with a steady decline in the firearm suicide rate of 4.7% per year. The rate of firearm suicides among some age groups significantly decreased after a more stringent firearm law had been implemented.	Total: --
Niederkröth et al., 2009 ^{S47}	Time-series/ Pre-post, with no control group	1986–2006	Austria	In July 1997, the Austrian firearm law was tightened. The new legislation increased the minimum age for purchase of handguns, semiautomatic, and repeating firearms to 21 years. Regular checks of safe gun storage in homes were also implemented.	The new legislation was associated with a significant downward trend in firearm suicide rates among youth aged 10–19 years ($\beta = -0.2$; 95% CI: -0.3, 0.1). On the whole, firearm suicide rates after the firearm legislation reform were significantly lower than before.	Total: --
König et al. 2018 ^{S48}	Interrupted Time-Series	1985–2016	Austria	In 1997, firearm legislation reform added several prerequisites necessary before	The firearm suicide rate per 100,000 was relatively stable for the Austrian population from 1985 to 1998 (1985: 4.0; 1998: 3.7).	Total: --

				obtaining a firearm certificate, such as background checks, passing a psychological test, installation of safe storage for firearm and ammunition, etc.	Following the 1997 legislation, the firearm suicide rate declined down to its lowest rate in 2008 with 2.4 per 100,000.	
Rich et al. 1990 ^{S49}	Time-series	1973–1977	Canada (Toronto, Ontario)	In 1978, Canadian gun control legislation (Bill C-51) was enacted.	The 1978 legislation may have led to a decrease in suicide mortality by firearm among men, as the number of firearm deaths decreased from 20 in 1973 to 14 in 1982.	Male: --
Lester et al., 1993 ^{SS0}	Pre-post, with no control group	1969–1985	Canada	In 1977, legislation (Bill C-51) was implemented to restrict the use of firearms in Canada.	The mean annual firearms suicide rate increased slightly from 4.3 per 100,000 (1969–1976) to 4.72 per 100,000 following the legislation (1977–85). However, the linear trend following the legislation (1977–85) showed a significant reduction in firearm suicide rates ($\beta = -0.13, p < 0.05$).	Total: +
Carrington et al., 1994 ^{SS1}	Interrupted time-series	1965–1989	Canada	In 1978, Bill C-51 was enacted, making it mandatory to obtain a Police permit before acquiring a firearm, and prohibiting the possession of handguns.	The firearm suicide rate increased from 1965 to 1977 from 3.2 to 5.5 per 100,000 ($p < 0.001$), then decreased to 4.1 per 100,000 in 1989 ($\beta = -0.07; p = 0.03$).	Total: -- 15–19 years: - 20–24 years: -- 25–29 years: - 30–34 years: - 35–39 years: - 40–44 years: - 45–49 years: - 50–54 years: - 55–59 years: - 60–64 years: - >65 years: +
Leenaars et al., 1997 ^{SS2}	Pre-post, with no control group	1969–1985	Canada	In 1977, legislation (Bill C-51) was enacted which placed restrictions on the acquisition, availability, possession, storing, and selling of firearms in Canada.	Prior to the passage of the Act, the firearm suicide rate was increasing, however, after passage of the Act the firearm suicide rate began to decrease between 1977 and 1985 (the slope of the regression line = $-0.13; p < 0.05$).	Total: + 15–24 years: ++ 25–34 years: + 35–44 years: -- 45–54 years: -- 55–64 years: -- 65–74 years: + >75 years: ++
Bridges, 2004 ^{SS3}	Pre-post, with no control group	1984–1998	Canada	In 1991, Canadian Bill C-17 was implemented to restrict the use of firearms.	After the passage of Bill C-17, the rates of firearm suicide declined from 4.1 per 100,000 (1984–90) to 3.2 (1991–98) ($p < 0.001$). The	Total: --

					slope of the regression line following the legislation was $\beta = -0.19$ ($p = 0.02$).	
Caron, 2004 ^{SS4}	Time-series	1981–1996	Canada (Northern Québec)	In 1992, the Canadian Firearms Act (Bill C–17) aimed at improving the safe storage of firearms.	The firearm suicide rate decreased significantly following the legislation ($p < 0.001$). There were age and sex-differences in the associations between firearm suicides and change in suicide by other means.	Total: -- Male: -- Female: -- 0–24 years: -- 25–34 years: -- 35–44 years: -- 45–64 years: - >65 years: -
Caron et al. 2008 ^{SS5}	Interrupted time-series	1987–2001	Canada (Québec)	In 1992, Canada implemented the regulations associated with Bill C–17, which forced firearm owners to safely store their firearms.	Firearm suicide rates have dropped among men and women, but the downward trends were not significant when compared to those prior to the law (4.4 deaths per 100,000 [1987–91] to 3.7 deaths per 100,000 [1992–2001] following the legislation).	Total: - Male: - Female: -
Thomsen et al., 1991 ^{SS6}	Pre-post, with no control group	1984–1987	Denmark	On January 1, 1986, a more rigorous Firearms Act took effect, which required a licence for all shotguns owners.	A reduction in the number of suicides is seen after the introduction of the legislation (reduction of 17%), but it could not be ascribed to an effect of the law as the number of shotgun suicide cases was almost unchanged (before: 129; after: 107).	Total: -
Lubin et al. 2010 ^{SS7}	Pre-post, with no control group	2003–2008	Israel	In 2006, a policy change in the Israeli Defense Forces was implemented to reduce adolescents' access to firearms.	Following the change in policy there was a decrease in firearm suicide rates over the weekend among those aged 18–21 years, from a mean of 10 per year (2003–2005) to a mean of 3 per year (2007–2008) ($p < 0.001$). There were no significant changes in rates of suicide during weekdays.	Total: --
Beautrais et al. 2006 ^{SS8}	Time-series	1985–2002	New Zealand	By the end of 1996, a more restrictive firearms legislation was introduced in New Zealand. The legislation was an amendment to the 1992 Arms Act.	After the legislation, the mean annual rate of firearm-related suicides decreased by 46% for the total population ($p < 0.0001$), 66% for youth (15–24 years; $p < 0.0001$) and 39% for adults (≥ 25 years; $p < 0.01$) from 1993–2002.	Total: -- 15–24 years: -- >25 years: --
Ludwig et al., 2000 ^{SS9}	Time-series/ Pre-post, with control group	1985–1997	United States	In 1994, the Brady Handgun Violence Prevention Act was established, which created a mandatory waiting period and	Changes in rates of firearm suicide for the treatment states were significantly lower than the control states for those aged ≥ 55 years (-0.92 per 100,000; 95% CI: -1.43, -0.42). This reduction in firearm suicides for those aged	≥ 21 years: - ≥ 55 years: -- <i>No waiting period (partial Brady)</i>

				background checks for handgun sales.	≥55 years was much stronger in states that had instituted both waiting periods and background checks (-1.03 per 100,000; 95% CI: -1.58, -0.47) than in states that only changed background check requirements (-0.17 per 100,000; 95% CI: -1.09, 0.75).	≥21 years: - ≥55 years: - <i>Full Brady</i> ≥21 years: - ≥55 years: --
Conner et al., 2003 ^{S60}	Repeated Cross-sectional	1999–2000	United States	Firearm restriction laws, such as the Brady Handgun Violence Prevention Act (Public Law 103-109) and the Violence Against Women Act (Public Law 103-322) carried federal mandates on firearm restrictions that necessitated implementation in many states whereas other states had similar, pre-existing laws already in effect.	Compared to states with restrictive firearm laws, women had higher suicide incidence rate ratios in states with modest (incidence rate ratio = 1.6; 95% CI: 1.3, 2.0) and unrestrictive laws (incidence rate ratio = 1.6; 95% CI: 1.2, 2.0). The analysis of men showed comparable results: modest firearm laws (incidence rate ratio = 1.5; 95% CI: 1.3, 1.8); unrestrictive firearm laws (incidence rate ratio = 1.5; 95% CI: 1.2, 1.8).	<i>Unrestrictive compared to restrictive laws</i> Male: ++ Female: ++ <i>Modest compared to restrictive laws</i> Male: ++ Female: ++
Madhavan et al. 2019 ^{S61}	Cross-sectional study	2014–2015	United States	The Brady score ranks 50 states based on a series of 33 firearm policies, state firearm death rates, and state crime firearm export rates. Child access prevention laws have been implemented in several states with the aim to keep firearms away from youth.	After controlling for state-level sociodemographic factors, the state-level Brady score was not associated with pediatric firearm suicide rates. Child access prevention laws were associated with firearm suicide rates among youth ($\beta = -0.22$; 95% CI: -0.44, -0.00; $p = 0.04$).	<i>Brady laws</i> Total: - <i>Child access prevention laws</i> Total: --
Cummings et al. 1997 ^{S62}	Ecological study	1979–1994	United States	From 1989–1993, firearm safe storage laws were adopted in 12 states. The laws required firearms owners to store their loaded firearms in such a way that children could not readily obtain access to them.	The associations of state safe storage laws with firearm-related suicide deaths among youth younger than 15 years was weak (rate ratio = 0.81; 95% CI: 0.66, 1.01) and was not statistically significant.	Total: -
Sen et al., 2012 ^{S63}	Repeated cross-sectional/time-series	1996–2005	United States	State background checks for firearm purchase. States with laws are compared with states without the laws.	Firearm suicide deaths were lower when states had background checks for mental illness (incidence rate ratio: 0.96; 95% CI: 0.92, 0.99), fugitive status (incidence rate ratio: 0.95; 95% CI: 0.90, 0.99) and misdemeanors	Total: -- <i>Restraining order</i> Total: -- <i>Mental illness</i> Total: -- <i>Fugitive</i>

					(incidence rate ratio: 0.95; 95% CI: 0.92, 1.00).	Total: -- <i>Misdemeanor</i> Total: - <i>Other miscellaneous</i> Total: ++
Sloan et al. 1990 ^{S64}	Repeated cross-sectional with control	1985–1987	United States and Canada (King County, Washington [control: Vancouver, Canada])	King County, Washington, was compared with Vancouver, Canada (control group), where firearm regulations are more restrictive.	The rate of suicide by firearms was significantly higher in King County (relative risk = 2.34; 95% CI: 1.90, 2.88), because the rate of suicide by handguns was 5.7 (95% CI: 4.08, 7.93) times higher than the control.	Total: --
Loftin et al. 1991 ^{S65}	Time-series	1968–1987	United States (District of Columbia)	In 1976, the District of Columbia adopted a law that placed strict regulations on the purchase, sale, transfer, or possession of handguns by civilians.	The mean frequency of firearm suicide mortalities declined by about one quarter in the period after the law went into effect. Firearm suicides declined from a mean of 2.6 per month to 2.0 per month, equivalent to a 23% reduction.	Total: --
Crifasi et al. 2015 ^{S66}	Quasi-experimental	1981–2012	United States (Connecticut and Missouri)	In 1995, Connecticut established a mandatory permit-to-purchase (PTP) system applicable to all handgun buyers, making background check and training compulsory to purchase a handgun. In 2007, Missouri repealed its PTP system.	Connecticut's firearm suicide rate was 15.4% lower than the synthetic control states. In comparison, Missouri's repeal of its PTP law was associated with a firearm suicide rate that was 16.1% higher than the synthetic control states	<i>Connecticut laws</i> Total: -- <i>Missouri laws</i> Total: ++
Marinelli et al., 2013 ^{S67}	Pre-post, with no control group	2005–2010	United States (Connecticut)	In 2009, Connecticut implemented a firearm buy-back program.	The incidence of firearm-related deaths, including firearm suicide mortality, was unchanged in the two years following the implementation of the firearm-back program.	Total: unchanged
Kivisto et al. 2018 ^{S68}	Quasi-experimental study	1981–2015	United States (Indiana and Connecticut)	In 1999, Connecticut became the first state to enact firearm seizure legislation. In 2005, Indiana followed suit and enacted their own fire seizure laws.	In the ten years following its enactment, Indiana's firearm seizure law was associated with a 7.5% reduction in firearm suicides mortality. The enactment of Connecticut's law was associated with a 1.6% reduction in firearm suicides immediately after its passage and a 13.7% reduction in firearm suicides in the post-Virginia Tech period (2007), when	Indiana: -- Connecticut: --

					enforcement of the law substantially increased.	
Castillo-Carniglia et al. 2019 ^{S69}	Quasi-experimental study	1981–2000	United States (California)	In 1991, California implemented legislation that mandated a background check for all firearm purchases. The laws also prohibited firearm purchase and possession for persons convicted within the past 10 years of certain violent crimes.	Between 1997 and 2000 there was an overall decline in firearm-related suicides. The average difference in the rate of firearm suicides between California and synthetic control in the ten years following the intervention period was -0.7 per 100,000, corresponding to a 10.9% decrease.	Total: -
Rosengart et. 2005 ^{S70}	Time-series	1979–1998	United States.	State-level firearm laws: (1) “shall issue” laws permitting an individual to carry a concealed weapon unless restricted by another statute; (2) a minimum age of 21 years for handgun purchase; (3) a minimum age of 21 years for private handgun possession; (4) one firearm a month laws which restrict handgun purchase frequency; and (5) junk firearm laws which ban the sale of certain cheaply constructed handguns.	No law was associated with a statistically significant change in firearm suicide rates.	<i>Shall issue law</i> Total: - <i>Minimum purchase age</i> Total: no difference <i>Minimum possession age</i> Total: - <i>One a month</i> Total: + <i>Junk gun ban</i> Total: -
Rodriguez Andres et al., 2011 ^{S71}	Time-series	1995–2004	United States	State-level firearm legislation across three categories: (1) general prohibition, (2) behavioural prohibition, and (3) criminal prohibition	Firearms regulations which function to reduce overall gun availability (general prohibition) have a significant deterrent effect on male suicide (incidence rate ratio = 0.94; standard error = 0.01), while regulations that seek to prohibit high risk individuals from owning firearms have a lesser effect.	<i>General prohibition</i> Male: -- <i>Behavioural prohibition</i> Male: -- <i>Criminal prohibition</i> Male: +
Fleegler et al. 2013 ^{S72}	Ecological and repeated cross-sectional	2007–2010	United States	State-level firearm legislation across five categories of laws: (1) curb firearm trafficking, (2) strengthen Brady background checks, (3) improve child	Compared with the quartile of states with the fewest laws, the quartile with the most laws had a lower firearm suicide rate (incidence rate ratio = 0.63; 95% CI: 0.48, 0.83).	<i>Firearm trafficking</i> Total: + <i>Strengthen Brady checks</i>

				safety, (4) ban military-style assault weapons, and (5) restrict guns in public places.		Total: -- <i>Child safety</i> Total: -- <i>Ban assault weapons</i> Total: -- <i>Guns in public places</i> Total: --
Anestis et al. 2015a ^{S73}	Cross-sectional	2010	United States	Impacts of three state laws: (1) permit to purchase a handgun, (2) registration of handguns, and (3) license to own a handgun.	States with any of these laws in place in 2010 exhibited lower firearm suicide rates, and an overall smaller proportion of suicides in such states resulted from firearms.	<i>Permit to purchase a handgun</i> Total: -- <i>Registration of handguns</i> Total: -- <i>License to own handguns</i> Total: --
Anestis et al., 2015b ^{S74}	Cross-sectional	2013	United States	Impact of four handgun laws: (1) waiting periods, (2) universal background checks, (3) gun locks, and (4) open carrying regulations.	Each of the four handgun laws were associated with significantly lower firearm suicide rates. In addition, states that implemented any of the four laws saw a decreased suicide rate in subsequent years, whereas the only state that repealed one of these laws saw an increased suicide rate.	<i>Waiting period</i> Total: -- <i>Universal background</i> Total: -- <i>Gun locks</i> Total: -- <i>Open carrying regulations</i> Total: --
Anestis et al. 2017 ^{S75}	Time-series	2013–2014	United States	Impact of four state handgun laws: (1) mandatory waiting periods, (2) universal background checks, (3) gun lock requirements, and (4) limitations on open carry.	States with universal background checks and mandatory waiting periods were associated with a decrease in suicide rates from 2013 to 2014. States with regulating gun lock use and restricting open carry of handguns laws did not differ significantly from states that did not have the laws implemented.	<i>Mandatory waiting periods</i> Total: -- <i>Universal background checks</i> Total: -- <i>Gun lock requirements</i> Total: -

						<i>Limitations on open carry</i> Total: -
Kaufman et al. 2018 ^{S76}	Time-series	2010–2014	United States	State-level firearm laws: (1) dealer regulations; (2) background checks for private sale; (3) license to purchase or own; (4) junk gun regulations; (5) reporting requirements for lost or stolen gun; (6) multiple purchase.	Stronger state-level firearm laws were associated with lower firearm suicide rates regardless of the strength of the other states' laws. Counties with low state scores had the highest rates of firearm suicide.	Total: --
Anestis et al., 2018 ^{S77}	Cross-sectional study	2014–2017	United States	Three state-level firearm laws: (1) universal background checks; (2) mandatory waiting periods; (3) child access prevention.	States with strong firearm legislation were inversely associated with the statewide overall ($\beta = -0.44, p = 0.012$) and firearm suicide rates ($\beta = -0.55, p < 0.001$), but not with non-firearm suicide rates ($\beta = -0.02, p = 0.925$). Firearm ownership rates moderated the association between firearm legislation strength and statewide overall suicide rates.	Total: --
Siegel et al. 2019 ^{S78}	Panel design (with vs without laws)	1991–2016	United States	Included 10 laws: (1) universal background checks, either through point-of-purchase checks or a permit to purchase requirement; (2) ban on handgun possession for people convicted of a violent misdemeanor; (3) age 21 limit for handgun possession; (4) "shall issue" laws; (5) permitless carry laws; (6) prohibition against gun trafficking; (7) ban on "junk guns"; (8) "stand your ground" laws; (9) assault weapons ban; and (10) ban on large-capacity ammunition magazines.	When examined individually, four of the 10 firearm laws were significantly associated with overall suicide rates. However, after simultaneously controlling for all 10 firearm laws, only two laws were significantly related to suicide rates: bans on junk guns were associated with 6.6% lower suicide rates (95% CI: 3.6%, 9.7%) and permits to carry laws were associated with 5.0% higher suicide rates (95% CI: 0.2%, 9.9%). None of the other laws were significantly associated with overall suicide rates.	<i>Universal background checks</i> Total: - <i>Violent misdemeanor</i> Total: - <i>21 age limit</i> Total: - <i>Shall issue</i> Total: + <i>Permitless carry laws</i> Total: ++ <i>Trafficking</i> Total: - <i>Junk gun ban</i> Total: -- <i>Stand your ground law</i> Total: -

						<i>Assault weapon ban</i> Total: + <i>Large-capacity ammo ban</i> Total: -
Ghiani et al. 2019 ^{S79}	Time-series	2005–2015	United States	Index of state-level firearm control (sum of dichotomous indicators for 133 regulations from 14 types of state-level gun laws, including three provisions restricting access to individuals with a history of mental health issues or who have been deemed in court to be a danger to themselves.	Overall, a six-point increase in the score was associated with 3.3% decrease (incident rate ratio = 0.97; 95% CI: 0.94, 1.00) in the firearm suicide incidence rate. The association was stronger in men than women.	Total: -- <i>Male</i> Total: -- 15–24 years: -- 25–34 years: -- 35–44 years: -- 45–54 years: -- 55–64 years: -- 65–74 years: -- 75–84 years: - > 85 years: - <i>Female</i> Total: - 15–24 years: -- 25–34 years: -- 35–44 years: -- 45–54 years: - 55–64 years: - 65–74 years: - 75–84 years: - > 85 years: -
Leung et al. 2019 ^{S80}	Cross-sectional study	2017	United States	Four state-level firearm legislations were included: (1) dealer regulations; (2) mandatory waiting periods; (3) local authority, and (4) universal background checks.	States with more firearm control policies had lower firearm ownership rates, which were further associated with lower firearm suicide rates among men	<i>Dealer regulations</i> 15–24 years: -- 25–44 years: - 45–64 years: - > 65 years: - Total: - <i>Waiting period</i> 15–24 years: -- 25–44 years: - 45–64 years: - >65 years: - Total: --

						<i>Local authority</i> 15–24 years: - 25–44 years: - 45–64 years: - > 65 years: - Total: - <i>Background checks</i> 15–24 years: - 25–44 years: - 45–64 years: + > 65 years: - Total: -
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Note: CI = confidence interval; AOR = adjusted odds ratio; β = beta coefficient; SE = standard error; OR = odds ratio; χ^2 = chi-square; - = not statistically significant reduction; -- = statistically significant reduction; + = not statistically significant increase; ++ = statistically significant increase