UC Office of the President
Student Policy Research Papers

Title
Why are People Dying From Guns? An Analysis of Gun Mortality Rate and Gun Laws

Permalink
https://escholarship.org/uc/item/3kh204b7

Author
Pan, Joey

Publication Date
2023-08-08

Joey Pan

Dr. Butters

POL 195

June 14, 2023

Why are People Dying From Guns? An Analysis of Gun Mortality Rate and Gun Laws

On average, 120 Americans are killed with guns daily.[1] One way to curb the instances of gun violence is to implement effective gun policies supported by extensive empirical evidence. To further understand the topic of gun violence and gun laws, this research paper will address the research question: What is the relationship between Open-Carry handgun laws in the United States and the gun mortality rate due to handgun discharge excluding instances of intentional self-harm?

I focused solely on the gun mortality rates and laws related to handgun discharges because handguns are involved in 59% of U.S. non-negligent manslaughters and gun murders in 2020.[2] In addition, I narrowed down the categories of gun laws that I will be focusing on. The reason for picking gun laws regarding Open-Carry handgun laws is that there is less available research for this category of gun law.

After determining my independent variable–Open-Carry handgun laws, slight changes also need to be made to my dependent variable–gun mortality rate due to handgun discharge

---

[1] Everytown Research & Policy. "Firearms Are the Leading Cause of Death for American Children and Teens." Everytown Research & Policy, 13 Feb. 2023, everytownresearch.org/graph/firearms-are-the-leading-cause-of-death-for-american-children-and -teens/.

[2] Gramlich, John. "What the Data Says about Gun Deaths in the U.S." *Pew Research Center*, Pew Research Center, 26 Apr. 2023, www.pewresearch.org/short-reads/2023/04/26/what-the-data-says-about-gun-deaths-in-the-u-s/.

excluding instances of intentional self-harm. There is little casual correlation between open-carry gun laws and gun mortality due to suicide. As a result, I focused on gun mortality due to reasons other than instances of intentional self-harm during my data collection process.

Significance of Issue

The issues of gun violence strongly affect the state of California and the United States as a whole. When we examine the rates of firearm homicides per 100,000 population for high-income countries with populations of 10 million and more, the United States ranks first on the list with a rate of 4.12 per 100,000 population.[3] The more alarming issue regarding this ranking is that the United States outranks every other country by a huge margin with the second-highest country only at a rate of 1.82 per 100,000 population.[4] Statistically speaking, citizens of the United States do have a higher chance of getting killed by a gun than almost every other country in the world. There are a lot of potential factors that drove up the firearm mortality rate in the United States: gun safety education, gun laws, gun ownership, etc. However, more in-depth statistical research is needed to determine a causal relationship with any of these factors.

While the state of California is ranked 44th out of 50 for firearm mortality rate in the United States,[5] this piece of statistics can be very misleading. When looking at a four-year period from 2018-2021, about 47% of gun death in the state of California are by homicide which is

[3] IHME. "On Gun Violence, the United States Is an Outlier." *Institute for Health Metrics and Evaluation*, 31 May 2022, www.healthdata.org/acting-data/gun-violence-united-states-outlier.

[4] IHME. "On Gun Violence, the United States Is an Outlier." *Institute for Health Metrics and Evaluation*, 31 May 2022, www.healthdata.org/acting-data/gun-violence-united-states-outlier.

[5] Attorney General Rob Bonta. "Gun Violence Data." *State of California - Department of Justice - Office of the Attorney General*, 20 Sept. 2022, oag.ca.gov/ogvp/data.

significantly higher than the 39% national average.[6] Despite having one of the strictest gun laws in the United States, homicide by firearm is still a severe issue in the state of California. In January of 2023, two mass shootings in California took place in two separate communities resulting in eighteen death in the same week.[7] The reasons for this phenomenon are similar to those mentioned in the previous paragraph. The issue of gun violence matter because we should prevent innocent people from dying from guns and investigate systematic mistakes that led to mass shootings and homicide happening in the first place.

Background

Even though the topics of gun law and gun mortality have been researched extensively, there is still not enough evidence to confidently suggest a causal relationship between the two. However, there are several things that we know from past research that can help with my current research. A past research report published by the RAND Corporation[8] is useful because it is a team of social sciences research specialists examining over 200 research outcomes to select researches that are methodically rigorous. They are able to filter out a lot of research and produce synthesized results and recommendations for different categories of gun laws. According to their report, there is enough supporting evidence from past research that "shall-issue" concealed-carry

---

[6] EveryStat. "Everytown Research - EveryStat." *EveryStat.org*, 2016, everystat.org/#California.

[7] Diaz, Jaclyn, and Vanessa Romo. "At Least 18 Dead in 3 Days after Mass Shootings in California Devastate 2 Communities." *NPR*, 24 Jan. 2023, www.npr.org/2023/01/24/1151184424/california-mass-shootings-latest-monterey-park-half-moon-bay.

[8] Smart, Rosanna, et al. *The Science of Gun Policy: A Critical Synthesis of Research Evidence on the Effects of Gun Policies in the United States*. Santa Monica, Calif, Rand Corporation, 2020.

laws can increase firearm mortality rates.[9] "Shall-issue" concealed-carry laws refer to laws that grant applicants a concealed-carry permit once all the basic requirements are met.[10] However, there are still a lot of categories of gun laws that are deemed inconclusive by their report because of a lack of rigorous analysis.

In addition, a piece of past research published in the National Library of Medicine conducted an observational experiment examining 76,311 California adults that purchased a handgun in 2001 and followed them through 2013.[11] The researchers found an increased risk of arrest for violent crimes using handguns for individuals that have a criminal history of intimate partner violence. I think there is a lot of strength to the research design of this study. Researchers were able to conduct a time-series analysis from 2001 to 2013 and the sample size of 76,311 is highly representative of the total handgun-owning population of California. However, it would be more beneficial to see a more holistic approach to this research topic by looking at its implications for every state in the United States.

When researching the effect of open-carry gun laws and gun mortality, little reputable research can be found. However, a research article published in the BMJ Journals did catch my attention. The researchers concluded that the 2012 open-carry ban in California resulted in a

---

[9] Smart, Rosanna, et al. *The Science of Gun Policy: A Critical Synthesis of Research Evidence on the Effects of Gun Policies in the United States*. Santa Monica, Calif, Rand Corporation, 2020.

[10] Wilson, Nick. "Fact Sheet: Weakening Requirements to Carry a Concealed Firearm Increases Violent Crime." *Center for American Progress*, 4 Oct. 2022, www.americanprogress.org/article/fact-sheet-weakening-requirements-to-carry-a-concealed-firearm-increases-violent-crime/.

[11] Tomsich, Elizabeth A., et al. "Intimate Partner Violence and Subsequent Violent Offending among Handgun Purchasers." *Journal of Interpersonal Violence*, 12 Dec. 2021, p. 088626052110572, https://doi.org/10.1177/08862605211057268. Accessed 12 Mar. 2022.

lower rate of "firearm-related fatalities and NF hospitalizations (p<0.001)".[12] However, there are limitations to this piece of research. The most apparent limitation is that the research focused solely on the state of California and the implications of open-carry gun laws on other states remains unclear. This motivated me to provide new insights into the implications of open-carry gun laws for every state in the United States through independent research.

There are a lot of legislations that affect Open Carry handgun laws and Concealed Carry handgun laws in the United States. Every state has its own unique handgun laws, however, not all state has gun laws regarding Open Carry. The states that have handgun laws regarding open carry are California, Connecticut, Florida, Georgia, Hawaii, Iowa, Illinois, Indiana, Maryland, Michigan, Minnesota, Missouri, North Dakota, New Hampshire, New Jersey, New York, Oklahoma, Pennsylvania, Rhode Island, Tennessee, Texas, Utah, and Virginia. One example of such law would be California's Penal Code number 26350 which states that a person is guilty of "openly carrying an unloaded handgun".[13]

Theory

My theoretical answer to my research question is *an increase in the level of strictness of handgun laws should be associated with a decrease in the gun mortality rate.* My independent variables are the strictness level of open-carry handgun laws and concealed-carry handgun laws

---

[12] Callcut, Rachael A, et al. "Banning Open Carry of Unloaded Handguns Decreases Firearm-Related Fatalities and Hospital Utilization." *Trauma Surgery & Acute Care Open*, vol. 3, no. 1, Oct. 2018, p. e000196, www.ncbi.nlm.nih.gov/pmc/articles/PMC6203141/, https://doi.org/10.1136/tsaco-2018-000196.

[13] California Legislative Information. "Codes Display Text." *Leginfo.legislature.ca.gov*, leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PEN&division=5.&title=4.&part=6.&chapter=2.&article=1. Accessed 22 May 2023.

across all of the states in the United States. My dependent variable is the gun mortality rate due to handgun discharge excluding instances of intentional self-harm.

The causal mechanisms that explain how my independent variable affects my dependent variable are as the following. Stricter open-carry handgun laws would mean a reduction in the presence of guns in public. A decrease in the presence of guns in public would mean a reduction in the chance of suspects with the intent of murder possessing lethal handguns. A decrease in the chance of suspects with the intent of murder possessing lethal handguns would lead to a significant reduction in the number of handgun death in public. A significant decrease in the lethal handgun death in public should also correspond with an overall drop in the handgun mortality rate.

There are also other possible explanations that can affect the outcome of my dependent variable. Potential confounding variables like the unemployment rate can also affect the handgun mortality rate. When people lose their jobs, the likelihood of not being able to support themselves increases. When the likelihood of not being able to support themselves increases, the tendency to resort to crime increases. However, I would argue that this explanation is significantly weaker than the casual mechanism for my independent variable and dependent variable. While it is likely that people might resort to crime when they are unemployed, the possibility is way too insignificant to cause a change in the handgun mortality rate excluding instances of intentional self-harm.

Research Design and Data

My research is a large-n study involving quantitative data for both my independent variable and dependent variable. The sample size (N) of this study takes into account 47 states in

the United States while excluding New York, Delaware, and Massachusetts. The reason for

excluding the three states mentioned above is an issue with data collection.[14]

When determining the timeframe for my analysis, I conducted a cross-sectional analysis

looking at a 5-year period from 2015-2019. The reason for a cross-sectional analysis instead of a

time-series analysis is due to the data collection process. When attempting to retrieve data for an

individual year, results are suppressed for a lot of states. However, when attempting to retrieve

data for a 5-year period, data for most states are not suppressed.[15] Furthermore, I intentionally

chose 2019 as the end of my analysis. This is because of the COVID-19 event that occurred in

the year 2020 which could heavily impact the final result by presenting a lower mortality number

due to the lockdown order in the United States.

My independent variable is the strictness level of open-carry handgun laws across all of

the states in the United States. In order to operationalize my independent variable, I will be using

a database of State Firearm Laws compiled by the RAND Corporation[16]. I extracted the data for

open-carry gun laws for each state from the database to conduct my research. I assigned a

"0/1/2" categorical value to each state in order to differentiate different strictness levels of

open-carry handgun laws. The value "0" means that the state has no gun laws regarding

open-carry for handguns. The value "1" means that the state has permissive gun laws regarding

---

[14] Even though I was able to collect my independent variable data for all 50 states, I ran into some trouble collecting data for my dependent variable. When retrieving mortality data from the CDC website, all mortality rate data are suppressed for the three states. There are two potential reasons for this suppression. First, data on the CDC WONDER database are occasionally suppressed for confidentiality reasons. Second, results that are less than 10 are also suppressed.# As a result, I had to exclude the three states from the analysis.

[15] Centers for Disease Control and Prevention. "Underlying Cause of Death, 1999-2017 Request." *Cdc.gov*, 2017, wonder.cdc.gov/ucd-icd10.html.

[16] Cherney, Samantha, et al. "Development of the RAND State Firearm Law Database and Supporting Materials." *Www.rand.org*, 28 June 2022, www.rand.org/pubs/tools/TLA243-2-v2.html.

open-carry for handguns. According to the data source for my independent variable, "permissive gun laws" refer to gun laws that permit citizens to use guns under certain circumstances. The "Shall issue" concealed carry gun law mentioned in the background is a perfect example of permissive gun laws. The value "2" means that the state has restrictive gun laws regarding open-carry for handguns. "Restrictive gun laws" simply refer to laws that completely prohibit the use of guns under different circumstances. For example, restrictive open-carry gun laws often refer to laws that prohibit the carrying of guns in public.
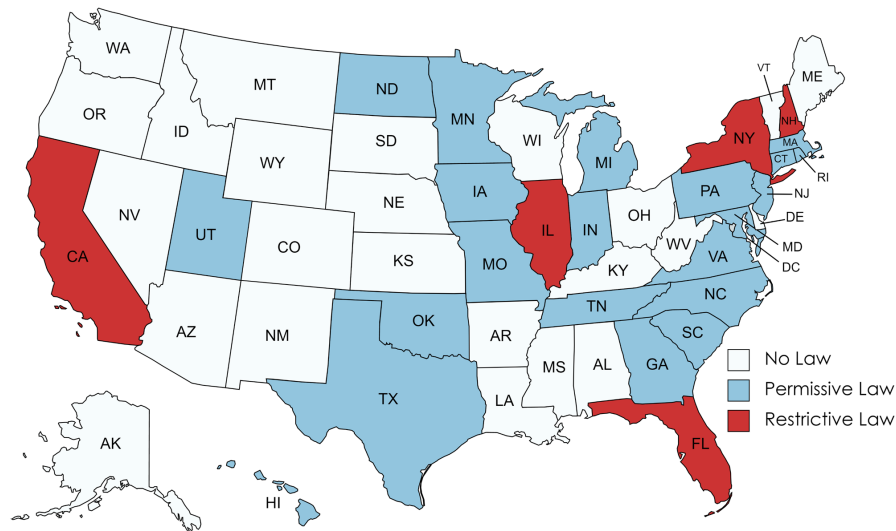
(Figure 1: Strictness Level of Open-Carry Handgun Laws in the United States)

I believe the data obtained from the RAND Corporation is a reliable measure of my independent variable concept. The data are derived from actual pieces of gun law codes from every state's website. Furthermore, the effect and the implementation date of each gun law are clearly listed as well. However, there are also weaknesses to this data set. For instance, the label "restrictive" or "permissive" is a broad categorization for gun laws. This categorization could affect the accuracy of my final result since small variations within the categories are not taken into account. As shown in Figure 1, 24 states have no laws, 19 states have permissive laws and 4

states have restrictive laws. In Figure 1, states with restrictive open-carry laws are marked in red. States with permissive open-carry laws are marked in blue. States with no laws are marked in white.

My dependent variable is the gun mortality rate due to handgun discharge excluding instances of intentional self-harm. In order to operationalize my dependent variable, I used the Mortality data from 2015-2019 on CDC WONDER Online Database. When retrieving the data, I picked the categories of "W32 (Handgun discharge-Exposure to inanimate mechanical forces), X93 (Assault by handgun discharge), and Y22 (Handgun discharge, undetermined intent)" for both the causes of death and underlying causes of death.[17] I intentionally left out the category of "X72 (Intentional self-harm by handgun discharge)" to eliminate mortality data due to suicide. The unit of analysis is on the state level for all ages, all origins, all weekdays, all places, and all races. I believe the data obtained from the CDC WONDER Database is a reliable measure of my dependent variable as the Centers for Disease Control and Prevention is an official government organization. The only weakness of this data set is the potential of mortality data that are unaccounted for. This could be an under-reporting of mortality data at the local level or an issue of data suppression due to confidentiality.

My first control variable is the number of hunting licenses or permits issued per state. The number of hunting licenses or permits issued per state is obtained from the U.S. Fish and Wildlife Services.[18] In order to match the cross-sectional time period from 2015-2019, I took the average number of paid hunting license holders from 2015-2019 and divided it by the average

[17] Centers for Disease Control and Prevention. "Underlying Cause of Death, 1999-2017 Request." *Cdc.gov*, 2017, wonder.cdc.gov/ucd-icd10.html.

[18] U.S. Fish and Wildlife Service. "Dashboard." *Us-East-1.Quicksight.aws.amazon.com*, us-east-1.quicksight.aws.amazon.com/sn/accounts/329180516311/dashboards/48b2aa9c-43a9-4ea6-887e-5465bd70140b?directory_alias=tracs-quicksight.

total state population during 2015-2019. I believe the data from the U.S. Fish and Wildlife Services is a reliable measure of my control variable concept. The strength of this dataset is the reputability of the government organization. The only weakness of this data set is not accounting for any illegal use of hunting weapons.

My second control variable is the unemployment rate per state. The data for the average total population are obtained from the same CDC WONDER database to ensure consistency. The unemployment rates per state are obtained through the County-Level Data Sets from the U.S. Department of Agriculture–Economic Research Service.[19] After obtaining the raw data for the unemployment rate per state from 2000-2020, I cleaned my data by taking the average unemployment rate from 2015-2019 for each state. I believe the validity of this data set from the Department of Agriculture–Economic Research Service is ensured by its governmental organization nature. However, the only weakness of this data set is the extra layer of data collection: The result produced by the Department of Agriculture–Economic Research Service is obtained by going through the American Community Survey and converting to their own metrics.

The analysis of the data in this research was completed by conducting a regression analysis using my independent and dependent variables while controlling for both of my control variables. The regression analysis is conducted to determine whether there is a discernible statistical relationship between the strictness level of open-carry handgun laws across all of the states in the United States and the gun mortality rate due to handgun discharge excluding instances of intentional self-harm.

---

[19] U.S. Department of Agriculture–Economic Research Service. "USDA ERS - County-Level Data Sets: Download Data." *Www.ers.usda.gov*, www.ers.usda.gov/data-products/county-level-data-sets/county-level-data-sets-download-data/.

When conducting the research project, there was a concern with the accuracy of the final regression analysis since New York, Delaware, and Massachusetts are omitted from the analysis. However, this concern is minimized because all three states are classified into different categories by the RAND Corporation data set, reducing concerns for non-reporting bias. Delaware has no open-carry laws regarding handguns. Massachusetts has permissive open-carry laws regarding handguns. New York has restrictive open-carry laws regarding handguns.[20] The omission of one observation for each independent variable category will limit the inaccuracy of the final results.

Findings

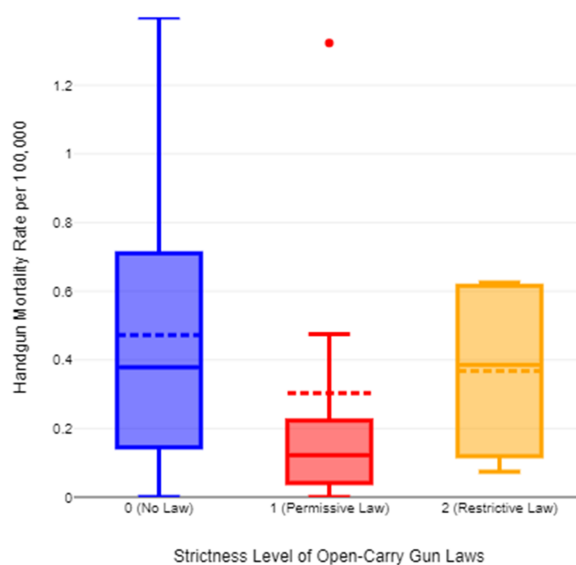| Dependent Variable: Gun mortality rate due to handgun discharge excluding instances of intentional self-harm			
	Coefficient	Standard Error	P>|t|
The strictness level of open-carry handgun laws (Independent Variable)			
1 (Permissive Gun Laws)	-.011037	.153019	0.943
2 (Restrictive Gun Laws)	.1505469	.2585861	0.564
Number of hunting licenses issued per state (Control Variable)	15.04671	6.311057	0.022
Unemployment rate per state (Control)	.0625639	.0789762	0.433
Constant	-.1159026	.4200231	0.784
Adjusted R-Squared	0.0669		
N (Sample Size)	47		

(Table 1: Regression Results Using STATA)

---

[20] Cherney, Samantha, et al. "Development of the RAND State Firearm Law Database and Supporting Materials." *Www.rand.org*, 28 June 2022, www.rand.org/pubs/tools/TLA243-2-v2.html.

My initial hypothesis is that an increase in the level of strictness of handgun laws should be associated with a decrease in the gun mortality rate. However, after conducting my regression analysis using STATA, I did not find support for my initial hypothesis. Specifically, when comparing the category of states that have permissive open-carry handgun laws to states that have no open-carry handgun laws (the reference category), the results suggest there is no statistically discernible relationship. As shown in Table 1, the coefficient of -0.011037 suggests a slight negative relationship between permissivity and hand-gun deaths but the results are not statistically significant (p-value = 0.943). When comparing the category of states that have restrictive open-carry handgun laws to states that have no handgun laws, the results also suggest there is no statistically significant relationship. As shown in Table 1, the coefficient 0.1505469 is not statistically discernable from 0. In conclusion, there is no statistical correlation between the strictness level of open-carry handgun laws and gun mortality rate due to handgun discharge excluding instances of intentional self-harm.

As shown in Table 1, when examining the relationship between the control variable–unemployment rate per state— and handgun deaths, the results suggest there is no statistically discernible correlation. However, when examining the relationship between the control variable–the number of hunting licenses issued per state—and the dependent variable, the results suggest there is a positive correlation. As shown in Table 1, the coefficient is 15.04671 (p-value = 0.022), implying that a one-unit increase in the number of hunting licenses issued per state is correlated with a 15.04671 increase in handgun deaths per 100k residents. There are several potential factors that can cause this relationship to form. First, hunting rifles can be lethal when used against human targets. Therefore, it is highly likely that mortality data can be caused by hunting rifles. Second, hunting licenses are generally easier to obtain compared to handguns.

To put into context, the background check processes for hunting licenses are usually faster and less complex compared to firearms. As a result, the number of hunting licenses can influence the handgun mortality rate to a certain extent.

(Figure 2: Average Handgun Mortality Rate for each category of Open-Carry Handgun Laws)

However, it is also important to examine the bivariate relationship between the strictness level of open-carry handgun laws and gun mortality rates due to handgun discharge excluding instances of intentional self-harm. As shown in Figure 2, we can clearly observe that states that have some form of open-carry handgun laws demonstrated a lower average handgun mortality rate. I am surprised by this bivariate relationship because states that have restrictive open-carry laws actually demonstrated a higher average handgun mortality rate than states that have permissive open-carry gun laws. One of the reasons could be the fact that the sample size of 4 for states with restrictive laws increases the margin of error.

It is important to note that there is an outlier for states that have permissive gun laws in Figure 2. The outlier is Virginia with a mortality rate of 1.323. The reason for this anomaly could be due to the party control in the state of Virginia. While the Democratic Party controls the upper

chamber, the Republican Party controls the state legislature.[21] Since the Republican Party is known for anti-gun control, it is hard for the Democratic Party in the state of Virginia to pass any strict gun control laws. Although there is no statistical correlation between the independent variable and the dependent variable from my regression results, we are cautious in concluding that open-carry handgun laws have no effect on the gun mortality rate due to handgun discharge excluding instances of intentional self-harm.

Limitations

There are also several limitations to my analysis, many of which apply to the general study of gun laws and gun mortality in addition to my own research presented here. The first limitation is the difficulty of capturing the potential minimum effect of recently implemented gun policies, both related to open carry but also related to other regulations on gun ownership. Since a lot of policies are newly implemented, it is hard to statistically capture their significance given the short amount of time since the implementation.[22]

Second, there are small variations to open-carry handgun laws and concealed-carry handgun laws across all 50 states. For example, two states might both have permissive

---

[21] Ballotpedia. "Party Control of Virginia State Government." *Ballotpedia*, ballotpedia.org/Party_control_of_Virginia_state_government.

[22] RAND. "Methodological Challenges to Identifying the Effects of Gun Policies." *Www.rand.org*, www.rand.org/research/gun-policy/analysis/essays/methodological-challenges-to-identifying-the -effects-of-gun-policies.html.

open-carry laws but the requirements for obtaining a permit are different for each state.[23] It is

hard to capture all the small variations across all 50 states.

Research Implications

When considering implications for future research, it is important to acknowledge the

fact that a lot more factors can affect the handgun mortality rate. A time-series analysis can be

conducted in the future to improve the accuracy of the results. Changes resulting from

implementing gun laws can take a long time to even be observed.

Furthermore, future research should also include more related control variables. One

example can be the percentage of Republican voters per state. This control variable is important

because it dictates the composition of the state government, which is a determining factor for

passing gun laws. Future research should also include more independent variables. One example

can be Concealed-Carry gun laws. This independent variable is important because of the

interconnectedness of various categories of gun laws, both open and concealed carry. Future

research should also consider other outcome variables, like the number of injuries due to

handguns. While it is important to prevent people from dying from handguns, it is also necessary

to minimize non-fatal injuries due to handguns.

Conclusion

In conclusion, this research analyzed the relationship between Open-Carry handgun laws

in the United States and the gun mortality rate due to handgun discharge excluding instances of

intentional self-harm. While my hypothesis is causally sound, my regression results did not

---

[23] Cherney, Samantha, et al. "Development of the RAND State Firearm Law Database and Supporting Materials." *Www.rand.org*, 28 June 2022, www.rand.org/pubs/tools/TLA243-2-v2.html.

support my initial hypothesis. My findings suggest that the relationship between Open-Carry handgun laws in the United States and the gun mortality rate due to handgun discharge excluding instances of intentional self-harm is statistically not discernable from 0. However, the bivariate relationship between the independent variable and the dependent variable suggests that states that have some form of open-carry handgun laws demonstrated a lower average handgun mortality rate. This research is significant to move forward due to the fact that gun policies in the United States are closely related to the lives of American citizens. It is important for researchers to continue to analyze empirical data to produce evidence-based policy recommendations for policymakers.

Bibliography

Everytown Research & Policy. "Firearms Are the Leading Cause of Death for American

      Children and Teens." Everytown Research & Policy, February 13, 2023.

      https://everytownresearch.org/graph/firearms-are-the-leading-cause-of-death-for-america

      n-children-and-teens/.

Attorney General Rob Bonta. "Gun Violence Data." State of California - Department of Justice -

      Office of the Attorney General, September 20, 2022. https://oag.ca.gov/ogvp/data.

Ballotpedia. "Party Control of Virginia State Government." Ballotpedia, n.d.

      https://ballotpedia.org/Party_control_of_Virginia_state_government.

California Legislative Information. "Codes Display Text." leginfo.legislature.ca.gov. Accessed

      May 22, 2023.

      https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PEN&division

      =5.&title=4.&part=6.&chapter=2.&article=1..

———. "Law Section." leginfo.legislature.ca.gov. Accessed May 22, 2023.

      https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=26350&

      lawCode=PEN.

Callcut, Rachael A, Anamaria M Joyce Robles, and Matthew W Mell. "Banning Open Carry of

      Unloaded Handguns Decreases Firearm-Related Fatalities and Hospital Utilization."

      Trauma Surgery & Acute Care Open 3, no. 1 (October 2018): e000196.

      https://doi.org/10.1136/tsaco-2018-000196.

Centers for Disease Control and Prevention. "Underlying Cause of Death, 1999-2017 Request."

      Cdc.gov, 2017. https://wonder.cdc.gov/ucd-icd10.html.

Cherney, Samantha, Andrew R. Morral, Terry L. Schell, Sierra Smucker, and Emily Hoch.

      "Development of the RAND State Firearm Law Database and Supporting Materials."

      www.rand.org, June 28, 2022. https://www.rand.org/pubs/tools/TLA243-2-v2.html.

Diaz, Jaclyn, and Vanessa Romo. "At Least 18 Dead in 3 Days after Mass Shootings in

      California Devastate 2 Communities." NPR, January 24, 2023.

      https://www.npr.org/2023/01/24/1151184424/california-mass-shootings-latest-monterey-

      park-half-moon-bay.

EveryStat. "Everytown Research - EveryStat." EveryStat.org, 2016.

      https://everystat.org/#California.

Gramlich, John. "What the Data Says about Gun Deaths in the U.S." Pew Research Center. Pew Research Center, April 26, 2023. https://www.pewresearch.org/short-reads/2023/04/26/what-the-data-says-about-gun-deaths-in-the-u-s/.

IHME. "On Gun Violence, the United States Is an Outlier." Institute for Health Metrics and Evaluation, May 31, 2022. https://www.healthdata.org/acting-data/gun-violence-united-states-outlier.

RAND. "Methodological Challenges to Identifying the Effects of Gun Policies." www.rand.org, n.d. https://www.rand.org/research/gun-policy/analysis/essays/methodological-challenges-to-identifying-the-effects-of-gun-policies.html.

Smart, Rosanna, Andrew R Morral, Sierra Smucker, Samantha Cherney, Terry L Schell, Samuel Peterson, Sangeeta C Ahluwalia, et al. *The Science of Gun Policy : A Critical Synthesis of Research Evidence on the Effects of Gun Policies in the United States*. Santa Monica, Calif: Rand Corporation, 2020.

Tomsich, Elizabeth A., Julia Schleimer, Mona A. Wright, Susan L. Stewart, Garen J. Wintemute, and Rose M. C. Kagawa. "Intimate Partner Violence and Subsequent Violent Offending among Handgun Purchasers." *Journal of Interpersonal Violence*, December 12, 2021, 088626052110572. https://doi.org/10.1177/08862605211057268.

U.S. Department of Agriculture–Economic Research Service. "USDA ERS - County-Level Data Sets: Download Data." www.ers.usda.gov, n.d. https://www.ers.usda.gov/data-products/county-level-data-sets/county-level-data-sets-download-data/.

U.S. Fish and Wildlife Service. "Dashboard." us-east-1.quicksight.aws.amazon.com, n.d. https://us-east-1.quicksight.aws.amazon.com/sn/accounts/329180516311/dashboards/48b2aa9c-43a9-4ea6-887e-5465bd70140b?directory_alias=tracs-quicksight.

Wilson, Nick. "Fact Sheet: Weakening Requirements to Carry a Concealed Firearm Increases Violent Crime." Center for American Progress, October 4, 2022. https://www.americanprogress.org/article/fact-sheet-weakening-requirements-to-carry-a-concealed-firearm-increases-violent-crime/.