Mental Health and Policy

Nicholas Salvador Chavez

January 7, 2026

Introduction

This study examines Suicide Rates in 2023, determines statistically significant predictor variables, and provides policy recommendations based on findings. Suicide rates have increased for the majority of years throughout the past few decades, according to the Centers for Disease Control (CDC). This increase is a cause for concern and research to aid in public policy evaluation/implementation. As a result, this Empirical Analysis was conducted to determine key predictors to help recommend policy advancements.

Literature Review

The ACA and Suicide-Related Behavior:

Cho and Lee (2024) found that heightened health insurance coverage improves access to mental health services and therefore contributes to Suicide Prevention. Pre-ACA Suicide Risk for the Medicare coverage recipients were initially higher than Private coverage recipients. Post-ACA suicide risk saw a decrease for the Medicare coverage recipients and an increase for the private coverage recipients. Post-ACA concluded with privately covered recipients having higher rates of suicide risk than those covered through Medicare. The research of Cho and Lee set the stage for a need for research on Medicare and its effect on Suicide. However, it did not test suicide directly but viewed attempts and suicidal thoughts. By looking at the implementation of the Affordable Care Act, and these mental well-being proxy variables, it was indicated that allowing cheaper means of healthcare overall saw a decrease in these suicidal behaviors.

Medicaid Expansion and Suicide Rates:

Subsequent research by Patel, Barnes, Osazuwa-Peters, and Beirut (2022) found that Medicaid expansion states had lower rates overall than non-expansion states. The study concluded that expansion of Medicaid is associated with a weakening of the increasing suicide rate and prescribes that policies that aim to make healthcare more accessible are the appropriate way to address the problem of increasing suicide rates. They addressed this by exploring the changes in suicide rates in states that expanded their Medicaid and states that did not. This study indicated an overall trend of increasing suicide rates from 2000 to 2018.

Both these studies explored the effects around implementation of public policy and their effects on suicide rates. Much of the literature does the same. The current state of the discussion focuses on the implementation of such policies and finding a difference in groups, specifically groups using a cost reducing healthcare policies and those who do not. The consensus is that those policies have tended to decrease the suicide rate, suicidal thoughts, and suicide attempts. Limitations, however, include analyzing the specific policies while not accounting for differences in The legislature that influences these degrees of effect.

Gun Control and Suicide:

Additional research by Rodríguez Andrés and Hempstead indicates a strong correlation between firearm control and suicide rate (2010), concluding that restricting access to lethal means has been identified as an effective approach to suicide prevention. The state of the discussion had been long-standing, with a 1999 review of the literature by Miller and Hemenway, which focuses on the availability of firearms and suicide in the United States. The combination of literature success and a multi-faceted approach to suicide prevent utilizing mulitple methods.

Empirical Approach

Utilizing python I conducted an Ordinary Least Squares analysis on Suicide Rates for States within the United States. Suicide Rates were the response variable, while state-level gun law strictness, health coverage, cost of medical expenses, per capita income, and state government spending were used as predictor variables. The data was cleaned and merged via Python, a script available for viewing, while formatting issues were fixed in Excel. State government spending, per capita income, cost of medical expenses, and healthcare coverage were standardized to prevent numerical problems. Controls were implemented with statistically significant regressors. Poverty rate, Median Age, and Rural Population were included as controls after initial regression to test the consistency of statistically significant variables.

The Data

Data was gathered from KFF (The independent source for health policy research, polling, and news), CDC, Giffords Law Center, World Population Review, and National Institute on Minority Health and Health Disparities. The majority of the data was observed in the year 2023 to uphold consistency, yet the control poverty rates represent the years from 2019 to 2023. Gun law data was gathered from the Giffords Law Center. Health insurance coverage, hospital expenses, and total state expenditure were gathered from KFF. Median age, Rural states, and per capita income were gathered from the World Population Review. Suicide Rates was gather from the Centers for Disease Control. Poverty Rates were gathered from the National Institute on Minority Health and Health Disparities. Gun law data or state-level gun restriction was a rank determined by the Giffords Law Center, in which 1 would be the state with the strictest gun restriction laws, and 50 would be the state with the least gun restriction. Suicide rate indicates the number of deaths per 100,000 of the population.

Empirical Results

Through the Analysis, state-level gun law strictness and cost of medical care were found to both be statistically significant at the 5% level. State-level gun law strictness was significant at the 1% level. To measure state-level gun law strictness, this study utilizes the Giffords Law Center Scorecard (2023). While the Giffords Center is an advocacy organization, its scorecard provides a comprehensive, quantified inventory of state statutes that has been utilized in previous public health literature (e.g., Zeoli et al., 2018). To account for potential weighting bias, this study focuses on the raw legislative presence rather than the assigned letter grades. Note that the state-level gun strictness variable was a ranking of 1 to 50, where 1 would be the state with the most strictness and 50 the state with the least strictness. That being said, this variable has a statistically significant coefficient of 2.637 with a p-value < 0.000. Interpreted to be with an increase in rank by 1, suicide rates saw an increase by approximately 2.637 deaths per 100,000. In a broader interpretation, the lack of gun restrictions has a positive correlation with the suicide rate. The medical expenses variable was provided by KFF and represents expenses per adjusted inpatient day, which include expenses incurred for both inpatient and outpatient care. Medical expense had a statistically significant coefficient of 1.3684 at the 5% level, and the p-value of 0.039.

Medical Expense was a standardized variable, and interpretation is in non-measured units. The relationship between Medical Expense and Suicide Rate appears to be conditional on overall State Spending. While Medical Expense is a significant predictor in the full model, its significance fades when broader spending controls are removed. Importantly, the state-level gun strictness variable remained robust and significant across both specifications. With the fourth ordinary least squares regression, I introduced controls which include poverty rates, age percentages, and population to control for Socioeconomic, demographic, and geographical factors. State spending and medical expenses were kept to account for institutional quality. The controlled regression held statistical significance for state-level gun strictness, yet the coefficient decreased to 0.1925 while the p-value was significant at the 10%, 5%, and 1% level. The 95% confidence interval for state-level gun control was [0.087,0.298], indicating a positive correlation between lack of gun strictness and suicide rates with 95% confidence.

Discussion and Conclusion

State-level gun restrictions held significance in the discussion of how to lower suicide rates, and this conclusion is not a new revelation. Much of the previous literature held the same stance from Miller and Hemenway in 1999 to Rodríguez Andrés and Hempstead in 2011. Data gathered from 2023 additionally held this conclusion. Although Medical Expense held significance, once controlling for other factors, no significance was observed. Yet, in additional studies medicare had been observed to have positive effects on mental health services as expressed by Cho and Lee (2024) in their assessment of the Affordable Care Act in relation to suicide related behavior, indicating that economic pressure is another factor in analysis, yet income held no significance in this analysis. Overall, regarding suicide in the United States, a prescription to prevent suicide is the restriction of gun laws overall, not targeted gun restrictions suggested by Rodríguez Andrés and Hempstead, which leads to a reduction in suicide. Additionally, economic pressure and policies similar to the Affordable Care Act can lead to improvements as well.

References

Rodríguez Andrés, A., Hempstead, K. (2011) Gun Control and Suicide: The impact of state firearm regulation in the United States, 1995-2004. Science Direct, Health Policy, pg 95 - 103. https://doi.org/10.1016/j.healthpol.2010.10.005

Annual Gun Law Scorecard. (2023). Giffords Law Center https://giffords.org/lawcenter/resources/scorecard2023/

April M Zeoli, Alexander McCourt, Shani Buggs, Shannon Frattaroli, David Lilley, Daniel W Webster, Analysis of the Strength of Legal Firearms Restrictions for Perpetrators of Domestic Violence and Their Associations With Intimate Partner Homicide, American Journal of Epidemiology, Volume 187, Issue 11, November 2018, Pages 2365–2371, https://doi.org/10.1093/aje/kwy174

Cho, S., & Lee, K. (2024). Association between insurance type and suicide-related behavior among US adults: The impact of the Affordable Care Act. Psychiatry Research, 333, 115714. https://doi.org/10.1016/j.psychres.2024.115714

Health Insurance Coverage of Population Ages 0-64. (2023) KFF. https://www.kff.org/state-health-policy-data/state-indicator/health-insurance-coverage-population-0-64/?currentTimeframe=1&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D

Hospital Expenses per Adjusted Inpatient Day. (2023). KFF. https://www.kff.org/health-costs/state-indicator/expenses-per-inpatient-day/?currentTimeframe=0&selectedRows=%7B%22states%22:%7B%22all%22:%7B%7D%7D%7D&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D

Median Age by State. (2023). World Population Review. https://worldpopulationreview.com/state-rankings/median-age-by-state

Miller, M., Hemenway, D. (1999). The relationship between firearms and suicide: A review of the literature. Science Direct, Aggression and Violent Behavior, pg 59 - 75. https://doi.org/10.1016/S1359-1789(97)00057-8

Moffitt RA. The Deserving Poor, the Family, and the U.S. Welfare System. Demography. 2015 Jun;52(3):729-49. doi: 10.1007/s13524-015-0395-0. PMID: 26047935; PMCID: PMC4487675. https://pmc.ncbi.nlm.nih.gov/articles/PMC4487675/

Most Rural States in the U.S. (2023). World Population Review. https://worldpopulationreview.com/state-rankings/most-rural-states

Patel H, Barnes J, Osazuwa-Peters N, Bierut LJ. Association of State Medicaid Expansion Status With Rates of Suicide Among US Adults. JAMA Netw Open. 2022 Jun 1;5(6):e2217228. doi: 10.1001/jamanetworkopen.2022.17228. PMID: 35704315; PMCID: PMC9201676. https://pmc.ncbi.nlm.nih.gov/articles/PMC9201676/

Per Capita Income by State. (2023). World Population Review. https://worldpopulationreview.com/state-rankings/per-capita-income-by-state

Social, Economic, & Cultural Environment Poverty - Table. (2019 - 2023). National Institute on Minority Health and Health Disparities. https://hdpulse.nimhd.nih.gov/data-portal/social/table?age=001&age_options=ageall_1&demo=00007&demo_options=poverty_3&race=00&race_options=race_7&sex=0&sex_options=sexboth_1&socialtopic=080&socialtopic_options=social_6&statefips=00&statefips_options=area_states

Suicide Rates by State. (2023). Centers for Disease Control. https://www.cdc.gov/suicide/facts/rates-by-state.html

Total State Expenditure. (2023). KFF. https://www.kff.org/state-health-policy-data/state-indicator/total-state-spending/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D