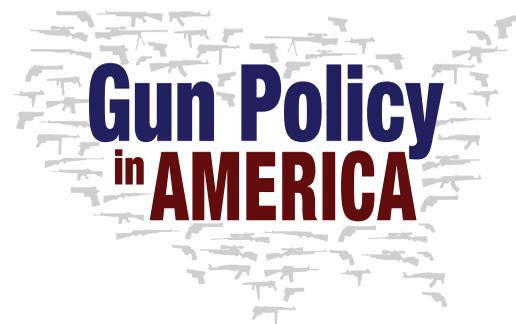


Effects of Background Checks on Suicide

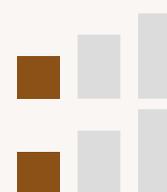


Summary: Evidence that background checks may reduce firearm suicides is moderate, and evidence that such laws may reduce total suicides is limited.

In 2004, the National Research Council (NRC) identified only four quasi-experimental studies that examine the impact of gun policies on suicide outcomes. One of these four was Ludwig and Cook (2000), which studied the impact of the 1994 Brady Act and found uncertain effects of the policy on total suicides, firearm suicides, and the proportion of adult suicides caused by a firearm. When restricted to suicides among those aged 55 and older, however, there was a statistically significant decrease in firearm suicides of around 6 percent and in the proportion of suicides involving a firearm of 2.2 percent. However, there was an offsetting increase in suicides by other means and thus only suggestive evidence of a statistically significant decrease in total suicides in this age group. A limitation of the Ludwig and Cook (2000) study is that it had an unfavorable ratio of estimated parameters to observations (less than one to six), meaning it could have misleading parameter estimates and confidence intervals (CIs) due to model

Key Findings

Background checks may **decrease** total suicides.



Evidence for this relationship is **limited**.

At least one study meeting our inclusion criteria and not otherwise compromised by noted methodological weaknesses reported a significant effect of the policy on the outcome, and no studies with equivalent or stronger methods provided contradictory evidence. Read more about [how we determined the strength of gun policy analysis research](#).

At least one study meeting our inclusion criteria and not otherwise compromised by noted methodological weaknesses reported a significant effect of the policy on the outcome, and no studies with equivalent or stronger methods provided contradictory evidence. Read more about [how we determined the strength of gun policy analysis research](#). Read more about [how we determined the strength of gun policy analysis research](#).

overfitting.^[1]

In another systematic review, Hahn et al. (2005) evaluated the effects of the gun-acquisition prohibitions that background checks enforce. That review identified one other study of suicide, but it was cross-sectional and did not meet our inclusion criteria. Hahn and colleagues concluded that “available evidence is insufficient to determine the effects of firearms acquisition restriction on public health and criminal violence” (p. 51).

Since the NRC (2004) and Hahn et al. (2005) reports, two additional studies provided evidence on the impact of background checks on suicide. Sen and Panjamapirom (2012)

assessed how different *types* of background checks conducted by states affected suicides between 1996 and 2005. They noted that the supply of state and local records to the NICS is voluntary and that substantial variation exists in state laws regarding the categories of records included in background checks. The authors characterized variation across states in background check requirements using an index of the comprehensiveness of such checks, as well as individual indicators for whether states check on restraining orders, mental illness, fugitive status, misdemeanors, and other miscellaneous records. Using state-level data from 1996 to 2005, the authors examined the effects of these types of checks and the effects of a state having a pre-Brady Act background check requirement on both firearm and total suicides. Their regression models included state-level covariates, a lagged outcome variable, and fixed effects for year and census subregion.

Sen and Panjamapirom (2012) found an effect of the total number of background check categories on firearm suicides (adjusted incidence rate ratio [IRR] = 0.98; 95-percent CI: 0.96,

1.00). Background checks for mental illness were related to lower firearm suicide and total suicide rates. Sen and Panjamapirom’s estimates suggest the post-policy firearm suicide rate to be 96 percent of the expected rate had this policy not been in effect and the total suicide rate to be 97 percent of the expected rate.

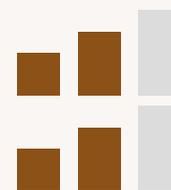
Background checks for fugitive status were also associated with lower firearm suicide and total suicide rates; the estimated effect

for checks of fugitive status suggests that these checks lower firearm suicide rates to 95 percent of what they would otherwise be, and they lower total suicide rates to 91 percent of

Background checks may

decrease

firearm suicides.



Evidence for this relationship is

moderate.

Two or more studies found significant effects in the same direction, and contradictory evidence was not found in other studies with equivalent or stronger methods.

Two or more studies found significant effects in the same direction, and contradictory evidence was not found in other studies with equivalent or stronger methods. Read more about [how we determined the strength of gun policy analysis research](#).

Experts Weigh In

Compare expert opinions on how background checks may affect suicide outcomes in your state and the U.S. as a whole. »

the expected rate. In this case, however, so few states changed this policy during the study time frame that these effects cannot persuasively be attributed to the background check policy as opposed to other factors affecting suicides in the states around the same time their laws changed. Checks for misdemeanor offenses were also associated with a firearm suicide rate just 95 percent of the expected rate without such checks, although the effect on total suicide was uncertain.

One additional study (Duggan, Hjalmarsson, and Jacob, 2011) examined the short-term effect of gun shows on firearm suicides. Absent state legislation to the contrary, gun-show vendors (and other private sellers) that are not federally licensed dealers are not required to conduct background checks on purchasers, which Duggan, Hjalmarsson, and Jacob (2011) referred to as the *gun-show loophole and which is hereafter termed the gun-show exception*. Some states have passed legislation requiring background checks for all buyers at gun shows. Duggan, Hjalmarsson, and Jacob (2011) examined whether there is a differential effect of gun shows on suicides (separating firearm from nonfirearm suicides, but not estimating total suicides) in a state that has a *gun-show exception* (Texas) compared with a state that has no such *exception* (California). Although they found small but suggestive decreases in firearm suicides in the four weeks after gun shows in Texas, effects were uncertain for nonfirearm suicides in Texas and for either outcome in California. However, the study focused only on background check requirements as they relate to gun shows and not on a broader set of background check policies. Moreover, as the authors acknowledged, their focus was on very short-term (four-week) and localized effects. The study had low statistical power, meaning that even if *gun-show exceptions* had meaningful effects on violence or homicide, these might not have been detected using this paper's procedures (see Wintemute et al., 2010). No covariates were included in the model to account for demographic, social, or economic differences between regions that could obscure any differential effects gun shows have in states with and without the *exception*.

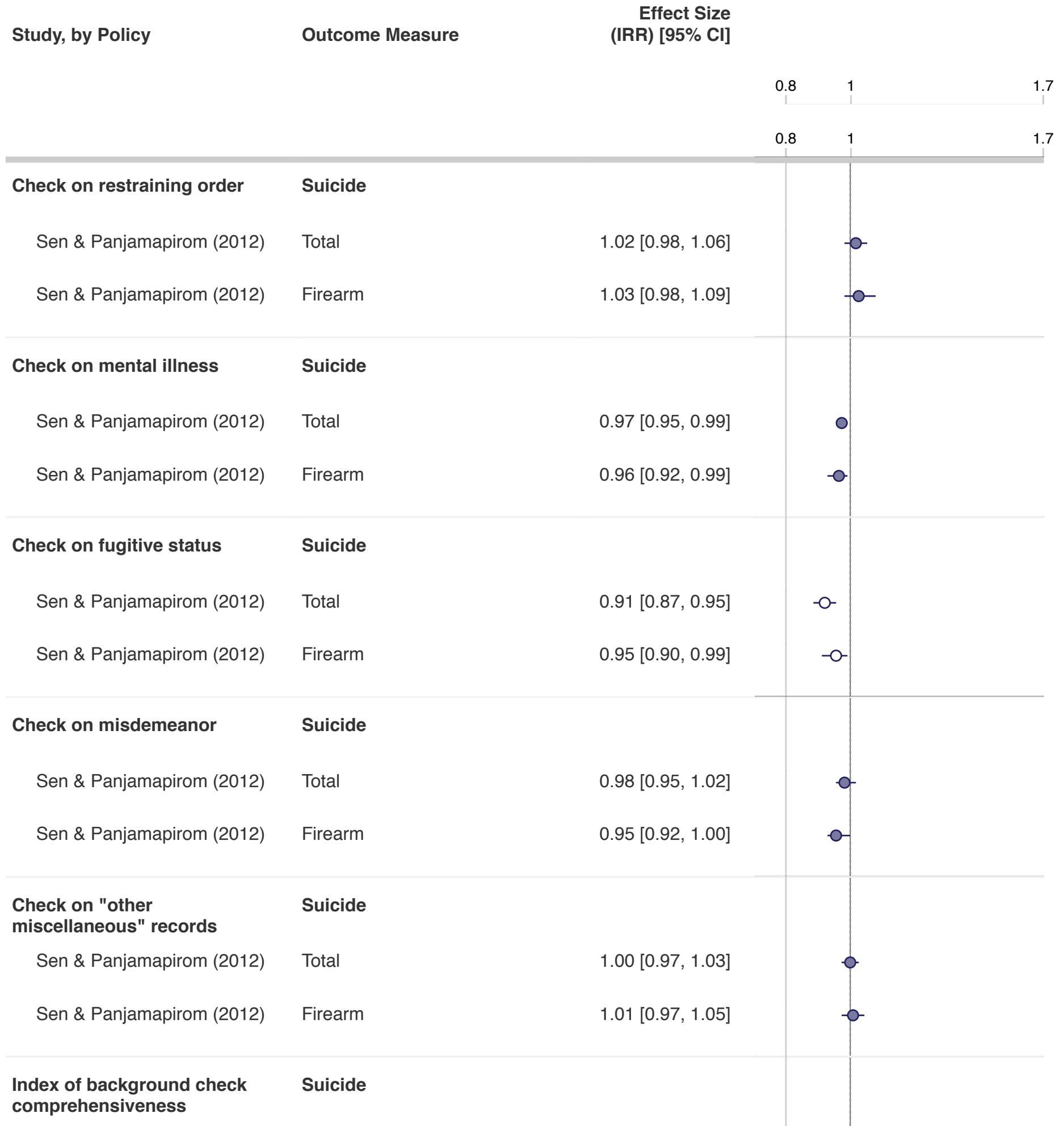
Finally, Swanson et al. (2016) evaluated how changes in state reporting of gun-disqualifying mental health records to the NICS affected suicide rates among individuals in Florida with a disqualifying mental health condition relative to individuals diagnosed with serious mental health illness but not prohibited from purchasing a firearm. The authors found no significant difference between suicide rates before and after implementing expanded NICS reporting for the two groups.

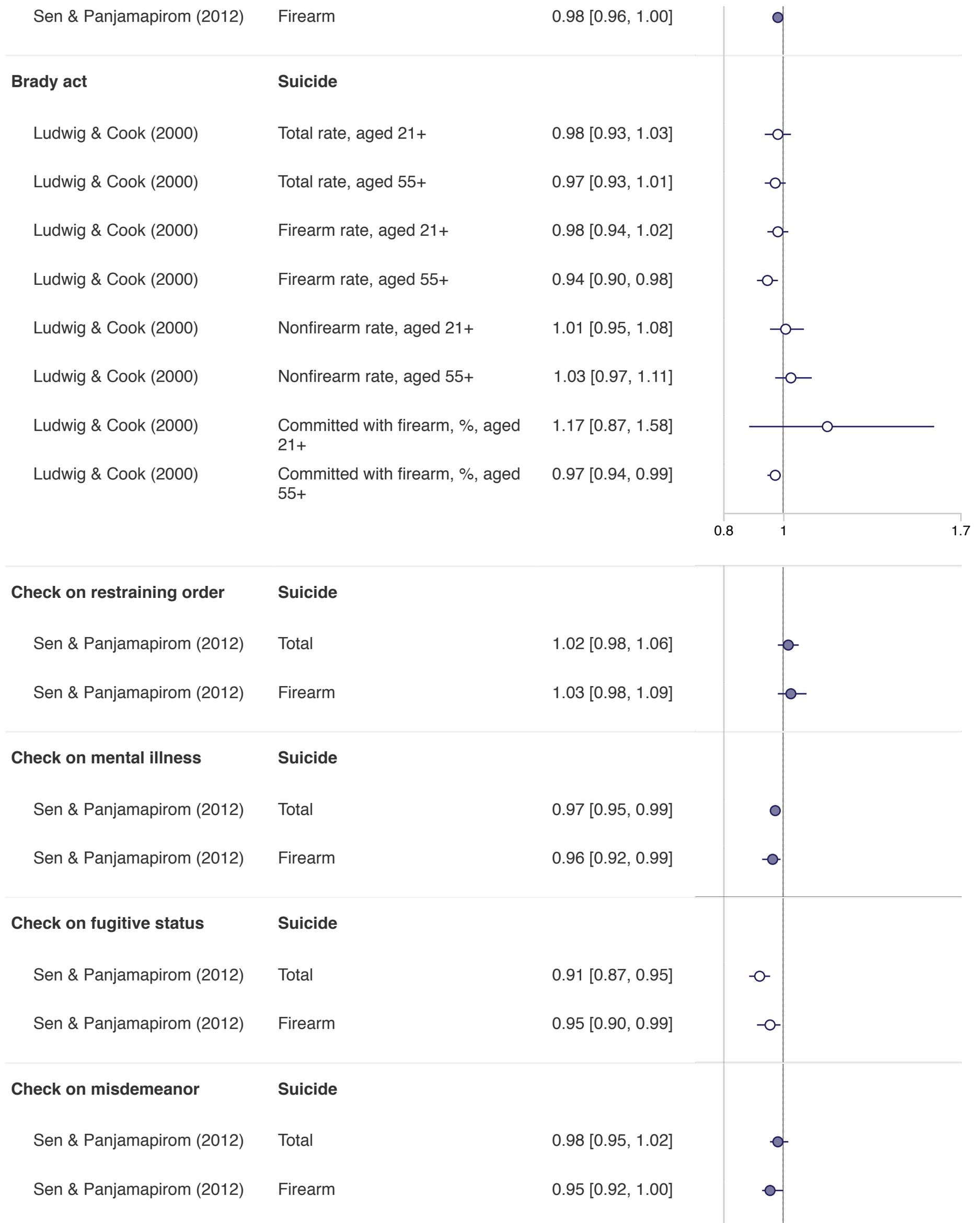
The figure below displays the IRRs and CIs associated with the background check policies examined in these studies. Because Swanson et al. (2013) and Swanson et al. (2016) did not provide effect estimates or test statistics for their findings, we do not include effect sizes for these studies in the figure. Duggan, Hjalmarsson, and Jacob (2011) did not test the effect of interest here and did provide enough information for us to calculate effect estimates or test

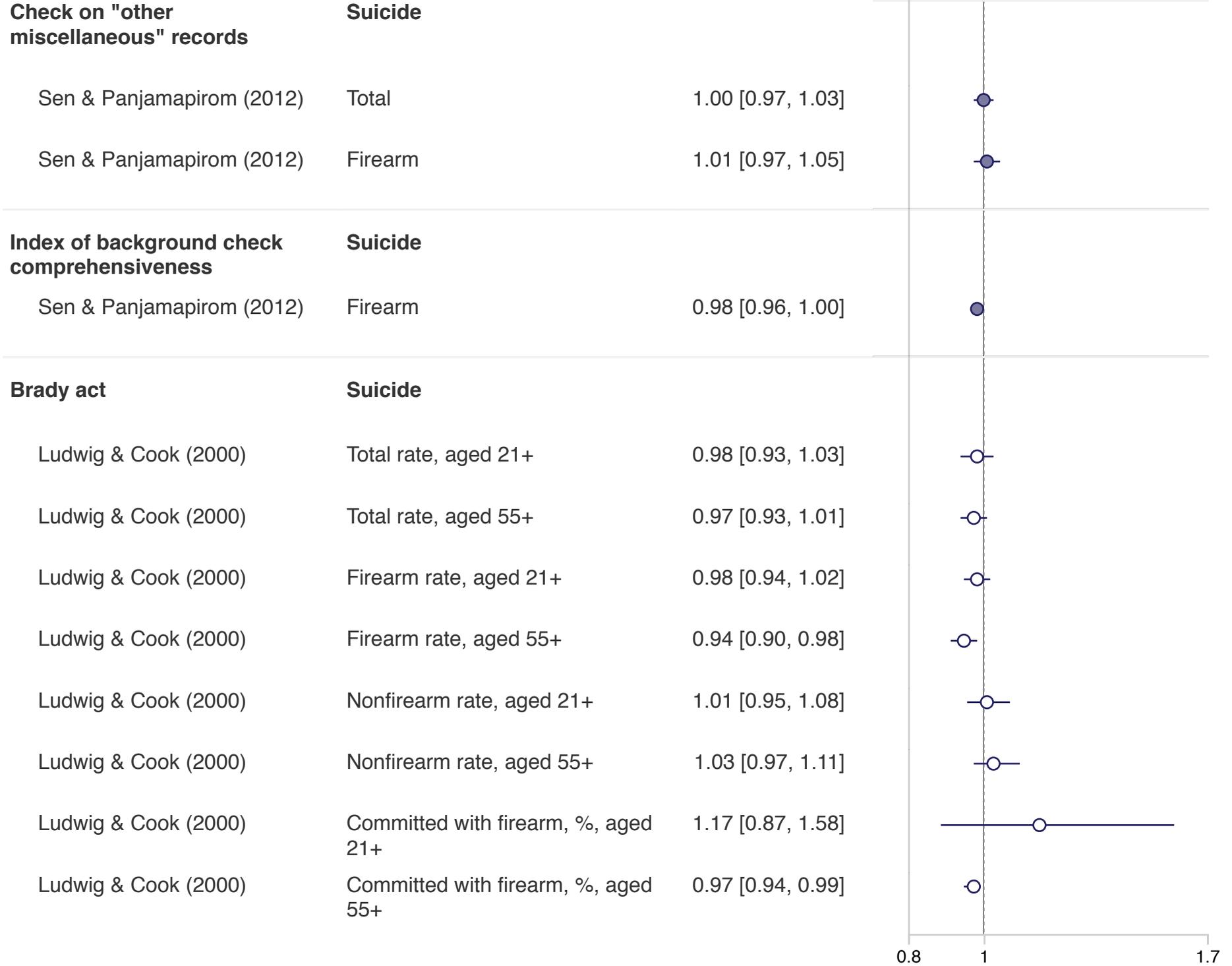
statistics, so they too are omitted from the figure.

Incidence Rate Ratios Associated with the Effect of Background Checks on Suicide

HOW TO READ THIS CHART 







NOTE: IRR values marked with empty circles indicate that we identified concerns with the study's methodology, and these concerns are described in the text above. Filled circles indicate that we identified no significant methodological concerns.

Conclusions

Total suicides. We identified two qualifying studies that evaluated the effects of background checks on the total number of suicides using largely independent data sets (one examined state suicide rates from 1990 to 1997, and the other examined state rates from 1996 to 2015). The first concluded that dealer background checks have an uncertain effect on total suicide rates among those aged 21 or older (Ludwig and Cook, 2000). In a secondary analysis, the study found a significant effect that background checks might reduce total suicides in the subgroup of adults aged 55 or older. All of these effects were partially confounded with possible effects of waiting periods that were simultaneously introduced in many states when the Brady Act was implemented. The second study, Sen and Panjamapirom (2012), examined components of background checks, finding significant effects indicating that checks on mental illness and

checks on fugitive status reduce total suicide rates. Three other components of background checks (checks on restraining orders, checks on misdemeanor records, and other miscellaneous checks) had only uncertain effects on total suicide rates.

Considering the relative strengths of these studies, we conclude that available research provides *limited evidence that background checks may reduce total suicides*.

Firearm suicides. We identified three qualifying studies that evaluated the effects of background checks on firearm suicide rates, including the two studies that examined total suicides. These studies provided two analyses of the total effect of background checks on firearm suicides. Ludwig and Cook (2000) found an uncertain effect of dealer background checks on this outcome among those aged 21 or older, although they reported a statistically significant decrease in firearm suicides associated with background checks for those aged 55 or older. Sen and Panjamapirom (2012) found a statistically significant association between their background check comprehensiveness index and reduced firearm suicides. Across five other reported component analyses, checks on mental illness, fugitive status, and misdemeanors were associated with significant reduction in firearm suicides, whereas checks on restraining orders and other miscellaneous checks had only uncertain effects. Duggan, Hjalmarsson, and Jacob (2011), examining private-seller background checks at gun shows, found that these had uncertain effects.

With largely consistent evidence across three studies, and considering the relative strengths of these studies, we conclude that the available studies provide *moderate evidence that background checks reduce firearm suicides*.

BACKGROUND CHECKS

SUICIDE

Notes

1. Ludwig and Cook (2000) also tested the effects of background checks specifically (separate from waiting periods, also imposed by the Brady Act) by comparing five of 32 states that were required to implement background checks but that did not experience a change in their waiting periods (either because they already had a waiting period of five days or more when the Brady Act required this nationally or they implemented an instantaneous background check). These analyses had a ratio of estimated parameters to observations of less than five to one, which did not meet our inclusion criteria. ↩

References

Duggan, Mark, Randi Hjalmarsson, and Brian A. Jacob, “The Short-Term and Localized Effect of Gun Shows: Evidence from California and Texas,” *Review of Economics and Statistics*, Vol. 93, No. 3, 2011, pp. 786–799.

Hahn, Robert A., Oleg Bilukha, Alex Crosby, Mindy T. Fullilove, Akiva Liberman, Eve Moscicki, Susan Snyder, Farris Tuma, and Peter A. Briss, “Firearms Laws and the Reduction of Violence: A Systematic Review,” *American Journal of Preventive Medicine*, Vol. 28, No. 2, 2005, pp. 40–71.

Ludwig, J., and P. J. Cook, “Homicide and Suicide Rates Associated with Implementation of the Brady Handgun Violence Prevention Act,” *JAMA*, Vol. 284, No. 5, 2000, pp. 585–591.

National Research Council, *Firearms and Violence: A Critical Review*, Washington, D.C.: National Academies Press, 2004.

NRC—See National Research Council.

Sen, B., and A. Panjamapirom, “State Background Checks for Gun Purchase and Firearm Deaths: An Exploratory Study,” *Preventive Medicine*, Vol. 55, No. 4, 2012, pp. 346–350.

Swanson, Jeffrey W., Michele M. Easter, Allison G. Robertson, Marvin S. Swartz, Kelly Alanis-Hirsch, Daniel Moseley, Charles Dion, and John Petrila, “Gun Violence, Mental Illness, and Laws That Prohibit Gun Possession: Evidence from Two Florida Counties,” *Health Affairs*, Vol. 35, No. 6, 2016, pp. 1067–1075.

Swanson, J. W., A. G. Robertson, L. K. Frisman, M. A. Norko, H. Lin, M. S. Swartz, and P. J. Cook, “Preventing Gun Violence Involving People with Serious Mental Illness,” in D. W. Webster and J. S. Vernick, eds., *Reducing Gun Violence in America: Informing Policy with Evidence and Analysis*, Baltimore, Md.: Johns Hopkins University Press, 2013, pp. 33–51.

Wintemute, G. J., D. Hemenway, D. Webster, G. Pierce, and A. A. Braga, “Gun Shows and Gun Violence: Fatally Flawed Study Yields Misleading Results,” *American Journal of Public Health*, Vol. 100, No. 10, 2010, pp. 1856–1860.

[View the full project bibliography](#)

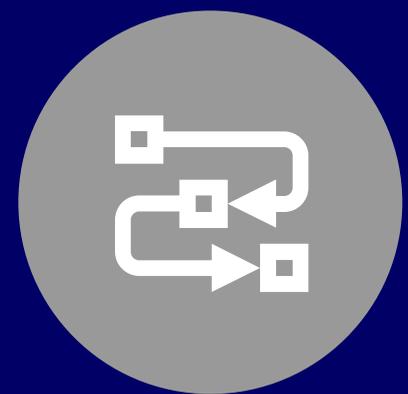
EXPLORE THE DATA



**Interactive: Seeking
Common Ground in Gun
Policy Debates**



**In-Depth Analysis of
Current Gun Policy
Research**



**Methodology: Gun Policy
Research Review**

ABOUT

The RAND Corporation is a research organization that develops solutions to public policy challenges to help make communities throughout the world safer and more secure, healthier and more prosperous. RAND is nonprofit, nonpartisan, and committed to the public interest.

[Vision](#)

[Leadership](#)

[Quality Standards](#)

[Career Opportunities](#)



CONNECT

Contact Us

I am interested in

- [Jobs at RAND](#)
- [Media Resources](#)
- [Congressional Resources](#)
- [Doing Business with RAND](#)
- [Supporting RAND](#)
- [Educational Opportunities](#)
- [Alumni Association](#)

STAY INFORMED

Subscribe to the weekly Policy Currents newsletter to receive updates on the issues that matter most.

[SUBSCRIBE](#)

[View all email newsletters](#) ▶

RESOURCES

- [Multimedia](#)
- [Latest Reports](#)
- [Browse by Author](#)
- [RAND Classics](#)
- [Databases and Tools](#)

Site Information

- [Site Map](#)
- [PRIVACY POLICY](#)
- [Support Policy](#)
- [Feedback](#)
- [Help](#)

Follow



