

THE EFFECTS OF RED FLAG LAWS ON
FIREARM SUICIDES AND HOMICIDES

by

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ABSTRACT

Risk-based firearm removal laws, commonly known as Red Flag laws have become increasingly popular among lawmakers attempting to reduce gun violence in America. Despite widespread public support, these laws have yet to be studied in economics. Using mortality data from the National Vital Statistics System, I find that Red Flag laws have a significant negative effect on firearm suicides and firearm homicides. Upon further analysis, I find that there is evidence of a pre-existing downward trend in both firearm suicides and firearm homicides. Red Flag laws do not cause changes in these mortality outcomes, rather there is an unobserved shock that decreases firearm suicides and homicides, while simultaneously affecting a state's propensity to adopt a Red Flag law. These results contradict existing non-economic literature, which suggests that Red Flag laws cause a large decrease in firearm suicides.

CHAPTER ONE

INTRODUCTION

Gun violence has plagued lawmakers for years as they try to create legal and ethical policy that effectively reduces deaths. Firearms are the leading cause of both homicides and suicides in the United States. Over half of all suicides and over 75 percent of all homicides are carried out with a firearm (CDC Wonder, 2021). Due to their decisive nature, firearms are by far the most lethal method of suicide, with a 90 percent fatality rate (Elnour and Harrison, 2008). The decision to use a firearm in a suicide attempt is partly based on its perceived ease and quickness, making the outcome more likely to be effective and instantaneous (Briggs and Tabarrok, 2014). The use of a firearm in a homicide however, is largely dependent on the motive of the offender. Homicides that are motivated by drug, gang, and robbery activity are much more likely to involve a firearm than domestic homicides (Pizarro, 2008).

Perhaps an even more profound symptom of America's gun violence problem is the increasing occurrence of mass shootings. In 2017, 117 people died in mass shootings, the most on record, and the peak of an upward trend that began in the 1980s (MotherJones 2020).¹ Although their death toll is relatively small, mass shootings make their mark on the gun violence discourse by motivating gun policy. Using a sample of 30,000 gun deaths where less than 100 occurred in mass shootings, Luca et al. (2020)

¹ Mother Jones defines mass shootings as "indiscriminate rampages in public places resulting in four or more victims killed by the attacker." This metric excludes shootings with motivations such as armed robbery and gang violence.

find that mass shooting deaths have a much larger effect on gun law implementation than ordinary gun homicides. One scenario that highlighted these findings was a 2018 shooting in Parkland, Florida, where a gunman opened fire at a high school, leaving 17 people dead. After the incident, it became apparent that the gunman had shown warning signs that he may commit a large-scale attack (Rose and Booker, 2018). Although the shooter had been the subject of many 911 calls, there was no way to prevent him from committing violence with a firearm.² The events in Parkland prompted many states to consider gun control policy that removes firearms from potentially dangerous individuals before they commit an act of violence.

Risk-based firearm removal laws are one type of policy that states have adopted to address America's complicated gun violence issue. Commonly referred to as Red Flag laws, these policies allow family members, law enforcement, and household members to petition for the temporary removal of firearms from a person who is at risk of harming themselves or others. These temporary removals may be extended or terminated barring the result of a court hearing. If an order is terminated, the respondent gets their firearms returned to them, and no criminal sanctions are imposed. In some states, firearm removals are paired with mental health treatment. Thus far, research on the effects of Red Flag laws has been scant in economics.³ This study expands on the small literature

² In 54 percent of mass shootings, the perpetrator showed warning signs prior to going through with the attack (Everytown Research and Policy, 2021).

³ Lott and Moody (2019) examine the effects of Connecticut and Indiana's Red Flag laws on suicides and homicides. To my knowledge, this working paper is the only research in economics regarding the effects of these laws.

on Red Flag laws by exploiting new variation in the adoption of these laws to examine their effects on firearm suicides and firearm homicides.

Red Flag laws, which are now in place in 19 states and Washington DC, intend to satiate a public outcry for gun control while preserving the approval of gun rights advocates. By banning firearms only temporarily for those who pose an imminent threat to public safety, Red Flag laws employ a minimally invasive approach to gun control. However, they do not have universal appeal. The National Rifle Association strongly opposes Red Flag laws, stating that they violate due process, and unjustly deprive individuals of their Second Amendment rights (NRA-ILA, 2019). With the help of the NRA, some municipalities have labelled themselves *Second Amendment Sanctuaries*, refusing to enforce Red Flag laws (Penzenstadler, 2019). Opposition to Red Flag laws is not limited to gun rights organizations. The ACLU of Rhode Island expressed qualms regarding their state's law and its implications for civil freedoms (ACLU Rhode Island, n.d.). Despite notable opposition, public opinion of Red Flag laws is largely favorable. In fact, 77 percent of Americans support some form of Red Flag laws (Paterson, 2019). Many gun owners also support Red Flag laws, 62 percent according to a 2018 study (Montanaro, 2019).

Using mortality data from the National Vital Statistics System (NVSS), this paper will look at the effect of Red Flag laws on firearm and non-firearm related suicides and homicides. To causally identify the effects of Red Flag laws, I use a fixed effects difference-in-differences model by exploiting the spatial and temporal variation in their adoption. A limitation of this method is that most states adopted Red Flag laws in the last

two years of my sample period, which limits the amount of post-treatment data available. In order to exploit additional variation, I conduct my analysis at the monthly level.⁴ This is made possible by the specificity of the detailed mortality data from NVSS, which includes the date, location, and cause of death.

Preliminary estimates from my difference-in-differences analysis suggest that Red Flag laws decrease firearm homicides with little to no change in firearm suicides. However, further analysis shows that these results are driven by pre-existing downward trends in firearm suicides and firearm homicides, suggesting endogeneity in the adoption of Red Flag laws. Heterogeneity analyses suggests that Red Flag laws decrease firearm homicides among middle-aged individuals by 11 percent relative to the pre-treatment mean. This is the only result is not driven by a pre-existing trend.

The rest of the paper is as follows. Part II provides background information on Red Flag laws including arguments for and against them, as well as a review of the literature on these laws. Part III describes the data I use. Part IV discusses methodology. Part V presents results. Part VI concludes with a summary of my findings and the shortcomings of this paper.

⁴ This follows McClellan and Tekin (2017).

CHAPTER TWO

BACKGROUND

Federal Gun Policy

Amidst America's ubiquitous gun violence issue, policy makers face the challenge of creating effective firearm legislation that protects the rights of citizens. Currently, federal law prohibits firearm possession for several groups of people, including most notably, convicted felons, fugitives from justice, and people subject to a restraining order for harassing, stalking, or threatening (Bureau of Alcohol, Tobacco, Firearms, and Explosives, 2020).⁵ Gun control advocates claim that these restrictions do not do enough to keep guns out of the hands of dangerous individuals for three main reasons. First, these restrictions are mostly reactionary, meaning someone must commit another crime, or harm someone else before their firearm access is restricted. Second, there is no formal process ensuring that these individuals will relinquish their firearms. Background checks may prevent them from purchasing firearms in the future, but there is no system to remove firearms that these individuals already possess. Third, these restrictions do not classify all individuals who pose a public safety risk by possessing a

⁵ Other individuals who are prohibited from owning or purchasing a firearm include those convicted of non-misdemeanor state crimes punishable by imprisonment for more than one year, those convicted of misdemeanor state crimes punishable by more than two years imprisonment, underage individuals, individuals who have been hospitalized or admitted to a mental health facility by a legal authority, individuals unlawfully in the United States, those who have been dishonorably discharged from the US armed forces, individuals who have renounced their US citizenship, those who have been found by a legal authority to lack the mental capacity to manage their own affairs and individuals who have been convicted of a misdemeanor domestic violence offense (Bureau of Alcohol, Tobacco, Firearms, and Explosives, 2020).

firearm (Gifford's Law Center to Prevent Gun Violence, 2020). Moreover, federal firearm laws designed to keep guns out of the hands of dangerous individuals are characteristically unenforceable, and therefore ineffective (Braga, 2001).

Red Flag laws are designed to fill this gap in gun control legislation. In many mass shooting and suicide cases, family members and friends claim they noticed warning signs from the perpetrator before they went through with their attack. Federal law does allow firearms to be seized from individuals with mental illness through civil commitment; however, there has been no legal method to intervene if the individual is not subject to gun prohibitions set by federal or state government (Everytown Research and Policy, 2020). Red Flag laws allow for legal, evidence-based firearm restrictions that do not impose criminal sanctions and avoid infringing on the rights of legal gun owners (Swanson, 2020). This individualized approach to firearm restrictions is the first of its kind and may be a useful tool for gun violence prevention in the United States.

Red Flag Laws

Anecdotal evidence suggests Red Flag laws have been adopted in the wake of mass shootings and other events that induce changes to the public's preferences for firearms. Connecticut adopted the nation's first Red Flag law in 1999 in response to a mass shooting at the state lottery headquarters that killed five people including the gunman (Lyons and Radelat, 2019). Since then, more mass shootings have led to public demand for gun control, and many states have answered by adopting Red Flag laws. Indiana, the second state to pass a Red Flag law in 2005, did so after a man with mental illness killed his mother and a police officer. California, Oregon, and Washington adopted their

legislation in response to a 2014 mass shooting in Isla Vista, California. The 2018 Parkland, Florida shooting prompted 14 other states and Washington DC to implement Red Flag laws. In all of these shootings, the shooter had previously shown warning signs that they may commit an attack, but they had not violated any laws that would result in seizure of their firearms (Kohrman and Stephens, 2020). Red Flag laws provide a way to disarm these types of individuals prior to such attacks. For a complete list of states with Red Flag laws along with their effective dates, see Table 1.⁶

Although specifics vary by state, most Red Flag laws follow the same procedure to remove firearms from dangerous individuals. Typically, if an individual is showing signs that they are at risk to harm themselves or others, then law enforcement, family members, and educators, among others, depending on the state, may petition an order for the seizure of the individual's firearms. A complete list of who may petition for an order in each Red Flag state can be found in Table 2. If a judge grants the petition, law enforcement

⁶This table includes all states that adopted a Red Flag law prior to January 1, 2021 although the sample period in this study is 1999-2019.

Table 1. Effective Dates of Red Flag Laws

State	Effective Date
Connecticut	10/1/1999
Indiana	7/1/2005
California	1/1/2016
Washington	2/6/2017
Oregon	1/1/2018
Vermont	4/11/2018
Rhode Island	6/1/2018
Florida	7/1/2018
Massachusetts	7/3/2018
Maryland	10/1/2018
Delaware	12/27/2018
Illinois	1/1/2019
Washington DC	6/19/2019
New Jersey	9/1/2019
New York	8/24/2019
Colorado*	1/1/2020
Hawaii*	1/1/2020
Nevada*	1/1/2020
New Mexico*	5/20/2020
Virginia*	7/1/2020

*State does not have a Red Flag law in the sample period of this study

obtains a warrant to seize all firearms and ammunition from the respondent's possession.

The law then requires a court hearing to be held shortly thereafter, typically within 14 days. If a judge decides there is enough evidence to believe the respondent poses a public safety risk, the order may be extended, during which time the respondent may not possess or purchase firearms or ammunition.

There are two types of gun removal orders that may be filed through Red Flag laws. Ex parte orders occur without notice to the respondent and are designed to be an emergency firearm removal tool in cases where public safety is at imminent risk. These

orders are temporary and require that a court hearing be held within a short period to ensure the respondent’s due process rights are protected. After notifying the respondent and holding a court hearing, a judge may issue a final gun removal order. These orders are longer in duration and their issuance typically requires a higher standard of proof than ex parte orders. A full list of the lengths of orders and standards of proof required for their issuance can be found in Table 3.

Table 2. Who May Petition for a Red Flag Order

State	Law Enforcement	Family/Household Members	Employers	Coworkers	School Personnel	Medical/Mental Health Professionals	Dating Partners (Non-Residing)
Connecticut	X						
Indiana	X						
California	X	X	X	X	X		
Washington	X	X					X
Oregon	X	X					X
Vermont	X						
Rhode Island	X						
Florida	X						
Massachusetts	X	X					X
Maryland	X	X			X	X	X
Delaware	X	X *					X
Illinois	X	X					X
Washington DC	X	X				X	X
New Jersey	X	X					X
New York	X	X					X
Colorado	X	X					X
Hawaii	X	X		X	X	X	X
Nevada	X	X					X
New Mexico	X						
Virginia	X						

* In Delaware, only law enforcement may petition for ex parte orders, but family and household members may petition for final orders

Table 3. Duration and Standard of Proof of Red Flag Orders

State	Ex Parte Orders		Final Orders	
	Duration of Order	Standard of Proof	Duration of Order	Standard of Proof
Connecticut	14 Days	Probable Cause	1 Year	Clear and Convincing Evidence
Indiana	14 Days	Probable Cause	1 Year	Clear and Convincing Evidence
California	21 Days	Probable Cause/Substantial Likelihood**†	1 to 5 years	Clear and Convincing Evidence
Washington	14 Days	Probable Cause†	1 Year	Preponderance of the Evidence
Oregon	21 Days	Clear and Convincing Evidence***†	1 Year	Clear and Convincing Evidence
Vermont	14 Days	Preponderance of the Evidence†	6 Months	Clear and Convincing Evidence
Rhode Island	14 Days	Probable Cause†	1 Year	Clear and Convincing Evidence
Florida	14 Days	Probable Cause†	1 Year	Clear and Convincing Evidence
Massachusetts	10 Days	Probable Cause	1 Year	Preponderance of the Evidence
Maryland	1-2 Days	Probable Cause†	1 Year	Clear and Convincing Evidence
Delaware	15 Days	Preponderance of the Evidence†	1 Year	Clear and Convincing Evidence
Illinois	14 Days	Probable Cause†	6 Months	Clear and Convincing Evidence
Washington DC	14 Days	Probable Cause	1 Year	Preponderance of the Evidence
New Jersey	10 Days	Probable Cause†	Indefinite*	Preponderance of the Evidence
New York	6 Days	Probable Cause	1 Year	Clear and Convincing Evidence
Colorado	14 Days	Preponderance of the Evidence†	1 Year	Clear and Convincing Evidence
Hawaii	14 Days	Probable Cause†	1 Year	Preponderance of the Evidence
Nevada	7 Days	Preponderance of the Evidence†	1 Year	Clear and Convincing Evidence
New Mexico	10 Days	Probable Cause†	1 Year	Preponderance of the Evidence
Virginia	14 Days	Probable Cause†	6 Months	Clear and Convincing Evidence

*Orders filed by law enforcement require probable cause, orders filed by family members require substantial likelihood

**Oregon's ex parte orders become final automatically if they are unchallenged by the respondent. This is why ex parte orders require clear and convincing evidence, an unusually high standard for ex parte orders normally.

†Indicates that the alleged danger must be imminent

Notes: Durations of ex parte orders represents the time period by which a court hearing must be held where the respondent may challenge the order. Durations of final orders represents the time period that the respondent's firearms are seized before the order may be renewed or allowed to expire. When the duration of the final order elapses, the petitioner may request a new hearing and prove that the respondent remains a public safety risk, or the respondent may request a hearing to prove that they no longer pose a risk of harm. Standards of proof are ranked from lowest to highest: probable cause, preponderance of the evidence, and clear and convincing evidence. Data on Red Flag laws come from Gifford's Law Center to Prevent Gun Violence (2020).

Lawmakers who support Red Flag laws often tout them as an effective policy tool that provides a mechanism for the removal of firearms from someone in crisis (Jarmanning, 2020). Other proponents claim that they can help prevent suicides and mass shootings without infringing on people's rights (Moms Demand Action, 2020). Unlike most proposed gun legislation, Red Flag laws have seen bipartisan support politically. Seventy percent of Republicans and 85 percent of Democrats support Red Flag laws, while members of both parties in Congress supported a federal Red Flag bill (APM Gun Survey, 2019; Daly, 2019). Many gun rights activists oppose Red Flag laws, citing violations of the Second Amendment, due process rights, and freedom of speech (Zick, 2019). However, courts in Connecticut, Florida, and Indiana have upheld the constitutionality of Red Flag laws (Moomaw, 2020). Regardless of legality, opponents of Red Flag laws claim that they could lead to other adverse effects including unfair gun seizures and increases in violence resulting from interactions with law enforcement during firearm seizures (Militimore, 2019). Economist John Lott argues that Red Flag laws are unnecessary since there are already civil commitment laws in place that allow firearms to be removed from individuals with mental illness and that individuals can lose their ability to defend themselves when they have their firearm removed (Malcolm, 2019). Opposition to Red Flag laws has made its way into politics as well. Oklahoma enacted an "Anti-Red Flag law" that took effect in May 2020 (Oklahoma Senate, 2020).⁷

⁷ Oklahoma's Anti-Red Flag Act is a preemptive piece of legislation that nullifies any federal or state legislation that relates to Red Flag laws. Cities, towns, and counties in Oklahoma are also prohibited from creating local orders. Citing violations of the right to due process, the right to keep and bear arms, and the right to free speech, this act creates a felony charge for any individual who attempts to enforce a Red Flag law (Oklahoma Senate, 2020)

The salience of Red Flag laws also proves to be a point of uncertainty regarding Red Flag laws. State laws differ vastly in how often they are used and how quickly they take hold following their adoption. Officials in Florida employed the law 2,227 times in the first 13 months that it was in effect (Olmeda, 2020). Compare that to Washington D.C. where the law was only used once in the first eight months that it was in effect (Lambert, 2019). Additionally, states vary in how often their Red Flag petitions are granted. In the first two months of Maryland's Red Flag law, judges granted only half of the 890 orders that were applied for. Other states, such as Oregon and Massachusetts have much higher rates of granted petitions (Levinson, 2020; Jarmanning, 2020). Table A1 provides anecdotes of the use of Red Flag laws in each state that has one in effect.

Public Health and Psychology Literature

Many public health and psychology researchers have explored the trends and institutional details of Red Flag laws. Frattaroli et al. (2020) examine the effectiveness and salience of Red Flag laws in King County, WA for the period 2017 to 2018. During that time, judges granted 75 temporary orders from 75 petitions. In 95 percent of these cases, the reasoning for issuing the order included current violence or wielding of a firearm. Of these orders, 65 resulted in a one-year extension. Pallin et al. (2020) characterize the first three years of California's Red Flag law. They find that of the 1076 respondents from 2016 to 2019, most were white males. In almost 97 percent of cases, law enforcement was responsible for petitioning for the removal of firearms. California

saw an exponential increase in the number of respondents from 2016 to 2019.⁸ These studies suggest that Red Flag laws are salient and may become more widely employed over time.

Some states allow health care providers to petition for the removal of firearms from an individual through Red Flag laws.⁹ This raises issues of patient confidentiality and provider liability. In states that do not allow health care professionals to petition, physicians may have a clinical liability to inform an eligible petitioner of the potential harm that their patient may cause (Frizzell and Chien, 2019). To examine the salience of Red Flag laws among healthcare professionals, Frattaroli et al. (2019) surveyed 353 physicians in Maryland regarding their knowledge of the firearm seizure process.¹⁰ Of the 92 physicians who responded, only one had filed a petition while 66 reported that they were not at all familiar with the law. Of the responding physicians, 85 indicated that they encounter patients whom they would consider eligible for an order.

Legal scholars have examined Red Flag laws in an attempt to determine their Constitutionality. Blocher and Charles (2020) conclude that Red Flag laws do not violate the Second Amendment of the United States Constitution. However, they question the laws' abidance of due process¹¹ rights since they regulate according to future risk of harm. This becomes challenging when deciding what level of perceived future risk is

⁸ Total respondents increased from 70 in 2016, to 225 in 2018, to 700 in 2019.

⁹ Currently, Maryland, Hawaii, and Washington DC allow health care providers to petition for firearm removal.

¹⁰ Maryland's Red Flag law took effect on October 1, 2018 and was the first Red Flag law to authorize clinicians to petition for the removal of firearms from an at-risk individual.

¹¹ The requirements of due process are notice and the opportunity to be heard (Blocher and Charles, 2020)

enough to justify seizing someone's firearms. The relevant legal question for Red Flag laws becomes, what must a petitioner show to prove that there is evidence of future harm? Calvert and Hampton (2020) agree that Red Flag laws do not violate the Second Amendment, instead arguing that they could violate the First Amendment if speech is used as evidence when an individual petitions for firearm removal. They caution against courts using speech and writings guarded by the First Amendment as evidence of future harm. Despite these legal concerns, no court has yet deemed any state's Red Flag law unconstitutional.

Other State-Level Gun Laws

Although the body of literature on Red Flag laws is limited, many economists have studied the effects other state-level gun policies that help motivate this paper. These policies, all of which intend to reduce gun violence, can be separated into two distinct categories: policies that limit firearm access such as mandatory waiting period laws, child access prevention (CAP) laws, and juvenile gun bans, and policies that expand firearm access such as right-to-carry laws and stand-your-ground (SYG) laws.

Literature in behavioral economics and psychology suggest that impulses and strong emotions are typically related to violence, but are visceral and often temporary (Krakowski, 2003; Loewenstein, 1996). These findings help motivate mandatory waiting period laws which require a delay between payment and acquisition of a firearm.

Edwards et al. (2018) examine the effect of state-level mandatory waiting period laws on firearm suicides and firearm homicides. They find that laws delaying the purchase of

firearms by several days reduce the firearm-related suicide rate by between 2 and 5 percent. Waiting periods have no effect on homicide rates.

Federal law prohibits the possession of handguns by individuals under the age of 18, but there is no restriction on possession of long guns¹² by minors (Gifford's Law Center to Prevent Gun Violence, 2020). One policy that limits youth firearm exposure is CAP laws. These policies impose criminal liability for adults who improperly store firearms. Using data from the Supplementary Homicide Reports for the period 1985-2013, Anderson et al. (forthcoming) find that CAP laws lead to a reduction of 17 percent in the expected number of firearm-related homicides committed by juveniles. CAP laws also have a negative effect on reports of high school students carrying firearms as well as absences due to feeling unsafe (Anderson and Sabia, 2018).

One policy that expands firearm access, SYG laws, have gained traction in many states in recent years. SYG laws allow individuals to use lethal force in self-defense when there is reasonable belief that they are in danger. Using data from the NVSS, McClellan and Tekin (2017) find that SYG laws are associated with an increase in both justifiable and non-justifiable homicides among white males.

Concealed-carry laws are another state-level gun policy that expands firearm access. Evidence on the effects of concealed-carry laws remains ambiguous. Seminal research on these laws suggests that they decrease rates of homicide, rape, robbery, and aggravated assault (Lott and Mustard, 1997). However, these results were found to be unreliable and sensitive to model specification (Black and Nagin, 1998). Other studies

¹² Long guns include rifles and shotguns (Mizokami, 2020)

have found that concealed carry laws have an ambiguous effect on most crime outcomes (Ludwig, 1998; Manski and Pepper; 2018).¹³

These studies provide a well-vetted framework for evaluating the effects of state-level gun policies. My research will employ a similar difference-in-differences strategy that exploits variation in Red Flag law adoption across states and time. Findings from this study will contribute to this broad literature on the effects of state-level gun policies.

Red Flag Literature

This study will build off three previous papers looking at the effects of Red Flag laws. This section will discuss their findings and limitations. Although their research provides only descriptive evidence, Swanson et al. (2017) is the most widely cited research regarding Red Flag laws. This psychiatry study looks at the population of individuals subjected to a Red Flag firearm removal in Connecticut from 1999-2013. They find that of the 762 respondents, 21 committed suicide after firearm removal, six of which committed suicide with a firearm. All six individuals who committed firearm suicides did so after they were again eligible to possess firearms. The authors use these data on the 21 successful suicides, along with the known case fatality rates for different methods of suicide to determine the total number of suicide attempts represented by these suicide deaths.¹⁴ They use this counterfactual to estimate the number of lives saved due

¹³ Much work has been done looking at the effects of state-level policies on gun deaths, but the inverse relationship is less understood. Using concealed-carry application data from North Carolina, Depew and Swensen (2018) find that the occurrence of a homicide increases local concealed-carry applications, suggesting that the perceived risk of crime has a large impact on legal gun use.

¹⁴ For example, if of the 21 successful suicides, one was the result of asphyxiation, Swanson and colleagues would use the case fatality rate of suicide attempts by asphyxiation (say one out of every six suicide

to Red Flag seizures. The authors find that Connecticut's Red Flag law prevented 72 suicides in its first 13 years. This equates to 10 to 20 firearm seizures per prevented suicide.

These estimates, although useful as a descriptive guide, do not represent a causal relationship. There are two main reasons for this. First, the authors do not consider any confounding factors that may also affect suicide rates, which may significantly bias results. Second, they examine the population of individuals who had their firearms removed and case fatality rates representative of the entire Connecticut population. It is a liberal assumption that these case fatality rates are representative of individuals who were subject to firearm seizures. This study provides insight into how these laws may affect individuals even though these estimates are likely to be biased.

In another study in the psychiatry literature, Kivisto and Phalen (2018) examine the effects of Red Flag laws on suicide and homicide rates in Connecticut and Indiana. Using synthetic control methods, they find that the implementation of a Red Flag law caused a decrease in the firearm suicide rate of 7.5 percent in Indiana and 1.6 percent in Connecticut.

The authors also examine the effects of increased enforcement of Connecticut's Red Flag law following a mass shooting at Virginia Tech University in 2007. They find

attempts by asphyxiation are successful) and extrapolate that for that one successful suicide, five other asphyxiation attempts occurred. They do this for each of the 21 suicides. Then, using that pool of potential suicide attempts, they use the distribution of suicide methods in Connecticut to determine how many attempts would have been made using each method, in the absence of the Red Flag seizures. Then, using the case fatality rates of each method of suicide, they determine how many suicide deaths would have occurred in the absence of the Red Flag seizures.

that this increase in enforcement caused a decrease in the firearm suicide rate of 13.7 percent and that a replacement effect caused the non-firearm suicide rate to increase, enough to more than offset the decrease in firearm suicides.

Although no research on Red Flag laws has been published in the economics literature, Lott and Moody (2019) examine the effects of Red Flag laws in Connecticut and Indiana in a working paper. Initial synthetic control estimates show that Connecticut's Red Flag law significantly reduced both firearm homicide and firearm suicide rates, with no effect on overall homicide or suicide rates. A null result on overall homicide and suicide rates suggest that Connecticut's Red Flag law led to a substitution to non-firearm homicides and suicides of a comparable magnitude.

Results from synthetic control analyses of Indiana suggest that Red Flag laws had no effect on firearm homicide rates and significantly decreased firearm suicide rates, although this effect was partially offset by an increase in non-firearm suicide rates. The authors find that the effects on firearm suicides and non-firearm suicides completely offset, resulting in no effect on overall suicides.¹⁵

The validity of these findings is tested using difference-in-differences estimation. The authors find that Red Flag laws have no effect on any type of suicide or homicide. However, there are only two states that experience policy variation in the sample period, which can lead to inconsistent standard errors under difference-in-differences estimation. To mitigate this issue, the authors calculate the precision of their estimates using p-values

¹⁵ Although the authors claim that there is no effect on overall suicides, aggregating the most conservative estimates within the 95% confidence intervals on firearm and non-firearm related suicides shows a decrease in overall suicides.

derived from estimation of placebo laws.¹⁶ These p-values are inconsistent with t-statistics derived from their difference-in-differences estimation.

The synthetic control method may have been the only viable option to estimate the effects of Red Flag laws given the limited policy variation during the sample periods studied by Lott and Moody (2019), and Kivisto and Phalen (2018). However, the synthetic control method has its drawbacks in this context. First and most importantly, synthetic control does not control for unobserved heterogeneity between the treatment and control states and between periods. Second, unwarranted states in the donor pool may lead to a biased estimate if they adopt a policy similar to the policy of interest. Neither Kivisto and Phalen (2018) nor Lott and Moody (2019) omit from the donor pool states that adopt similar gun legislation during the treatment period. This could lead to biased estimates. Finally, neither study conducts analyses to test the model's robustness to the sequential omission of states from the counterfactual, or robustness to the inclusion of different predictors for choosing the counterfactual group (Abadie, forthcoming).¹⁷ Generally, synthetic control does not control for omitted variables bias and runs the risk of making inappropriate comparisons that could lead to erroneous conclusions that reflect disparities in state characteristics rather than the true effect of Red Flag laws (Abadie et al., 2014).

¹⁶ The authors replace the treated states with the control states, and then re-estimate the regression for 1000 iterations to create a sampling distribution of t-statistics. They then count the number of t-statistics that are greater (in absolute value) than the t-statistic from the original regression. Finally, they divide by 1000 to yield the corrected p-value for the original estimate.

¹⁷ Minard and Waddell (2019) show that synthetic control estimates can be sensitive to the inclusion of different parameters used to match control units. They propose a procedure that uses plots of treatment effects to inform decisions about stability influencing parameters. Such a robustness check is absent in Kivisto and Phalen (2018) and Lott and Moody (2019).

My study improves on Kivisto and Phalen (2018) and Lott and Moody (2019) in three notable ways. First, I use restricted-use data from the NVSS, making analysis at the monthly level possible, which allows me to not only leverage additional policy variation, but also observe the effect of Red Flag laws over a much more precise time horizon. Second, I am able to observe variation in 15 states, opposed to only two in the prior literature. This provides sufficient policy variation to employ a difference-in-differences fixed effects model that can control for omitted variables bias as well as avoid the issues discussed above. Finally, I consider several sources of heterogeneity, allowing me to observe potential differential effects of Red Flag laws between groups based on sex, race, marital status, and age.

CHAPTER THREE

DATA

This analysis focuses on the effects of Red Flag laws on firearm suicides and firearm homicides. State-level mortality data for these outcomes come from the National Vital Statistics System (NVSS). NVSS compiles data from death certificates received at the local level from funeral homes and medical examiners. To protect the confidentiality of the deceased, the NVSS suppresses low mortality counts so that individuals cannot be identified from the publicly available data. To obtain a complete dataset with no suppressed observations, I applied for a restricted-use dataset that includes each individual death record from 1999-2019. For the purposes of this study, I aggregate the individual records to the state and month in which they occur.¹⁸ Each death certificate contains important information that pertains to this analysis including when and where the death occurred, the cause of death, and demographics of the deceased. NVSS classifies causes of death using International Classification of Diseases, Tenth Revision (ICD-10) codes.¹⁹ To express my outcome variable as a rate of deaths per 100,000 population, I use population data from the Surveillance, Epidemiology, and End Results (SEER) Program. I aggregate these data at the state level. To observe differential effects of Red Flag laws, I aggregate mortality outcomes by sex, race, age, and marital status.²⁰

¹⁸ The NVSS records both the location where the death occurred and the location where the individual resided. I choose to use the location of occurrence for this analysis.

¹⁹ Table A2 presents the ICD-10 codes used to classify deaths into the two primary outcomes used in this study.

²⁰ Male and female separate sex. Non-white and white separate race. Married and non-married separate marital status. Age is divided into young, middle-aged, and old. Young is defined as individuals under 25

Data from NVSS have been used by other economists when analyzing the effects of firearms and firearm legislation (McClellan and Tekin, 2017; Cook and Ludwig, 2006) and are considered the gold standard of mortality data in the United States (Harris et al. 2002). Regardless, mortality rate estimates from NVSS and other sources such as the FBI's Supplementary Homicide Reports are nearly identical in counties with large populations (Wierseman et al., 2000).

My independent variable of interest is a binary variable that takes on the value of one if a Red Flag law is in effect in state s during month m . For laws that went into effect partway through a month, I code this variable as a fraction of the number of days in the month that the law was in effect. Data on Red Flag laws come from Rand Corporation's State Firearm Law Database for the period 1999-2019.²¹ Supplemental data on states' specific Red Flag laws come from Gifford's Law Center to Prevent Gun Violence.²² Adoption of Red Flag laws from 1999 to the early 2010s was slow. The mid to late 2010s saw a rapid increase in Red Flag law adoption following high profile mass shootings such as the Marjory Stoneman Douglas High School shooting in 2018. Figure 1 shows the rapid increase in the adoption of Red Flag laws in the late 2010s.

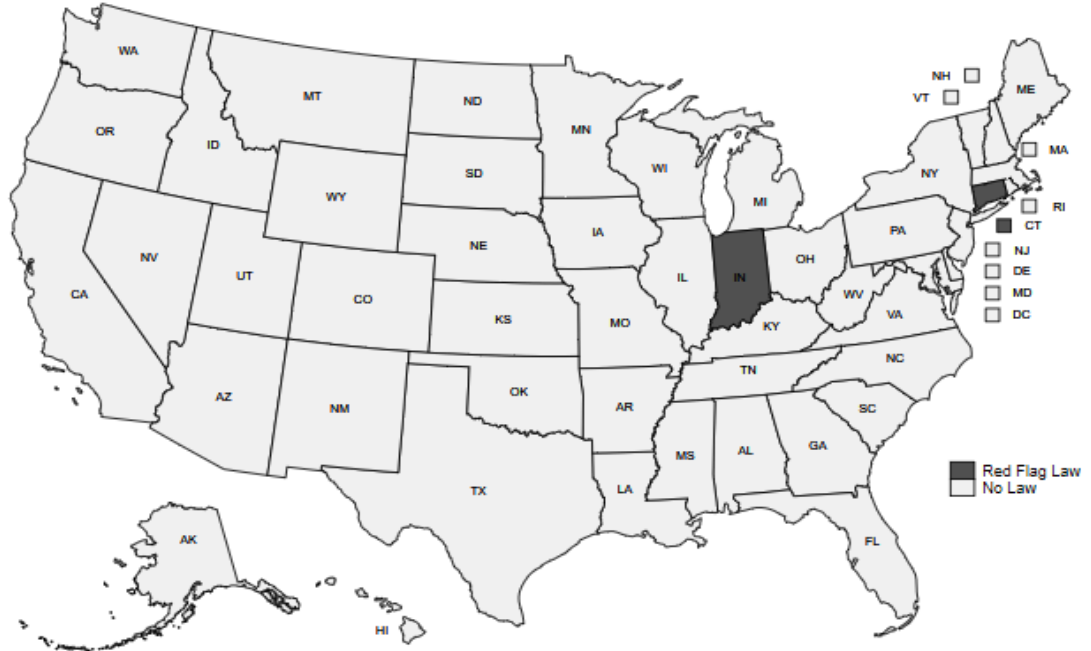
years old, middle-aged includes individuals 25 to 54 years old. Old includes all individuals over the age of 55. Motivation for these groups comes from observed disparities in suicide rates by age (American Foundation for Suicide Prevention, 2020).

²¹ <https://www.rand.org/pubs/tools/TLA243-2.html>

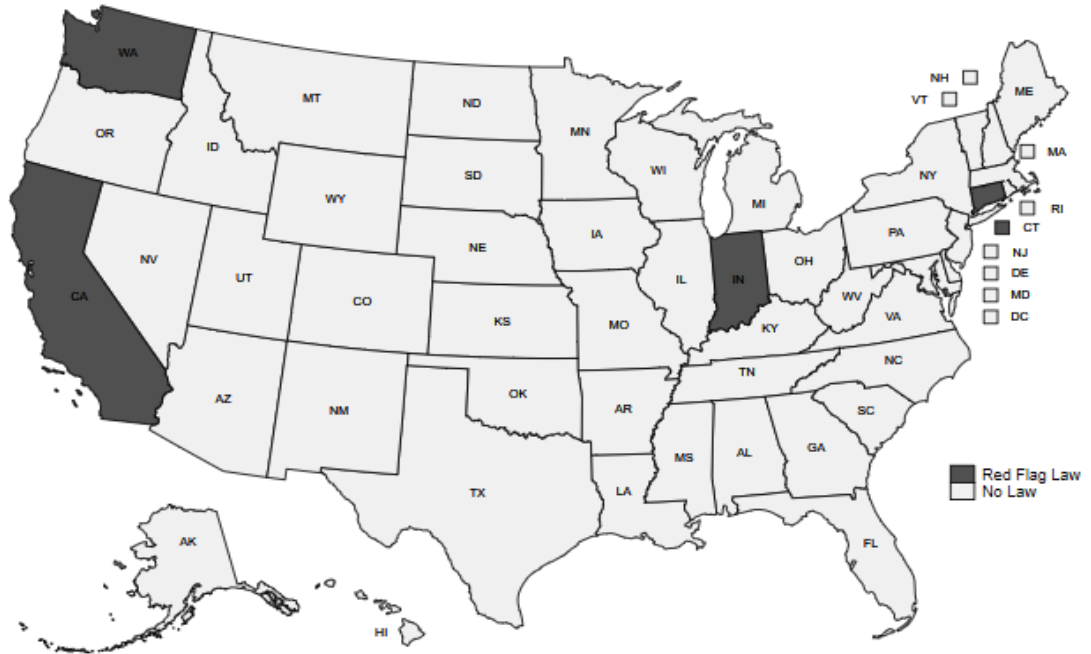
²² <https://giffords.org/lawcenter/gun-laws/policy-areas/who-can-have-a-gun/extreme-risk-protection-orders/#removal-laws>

Figure 1. Red Flag Laws over Time

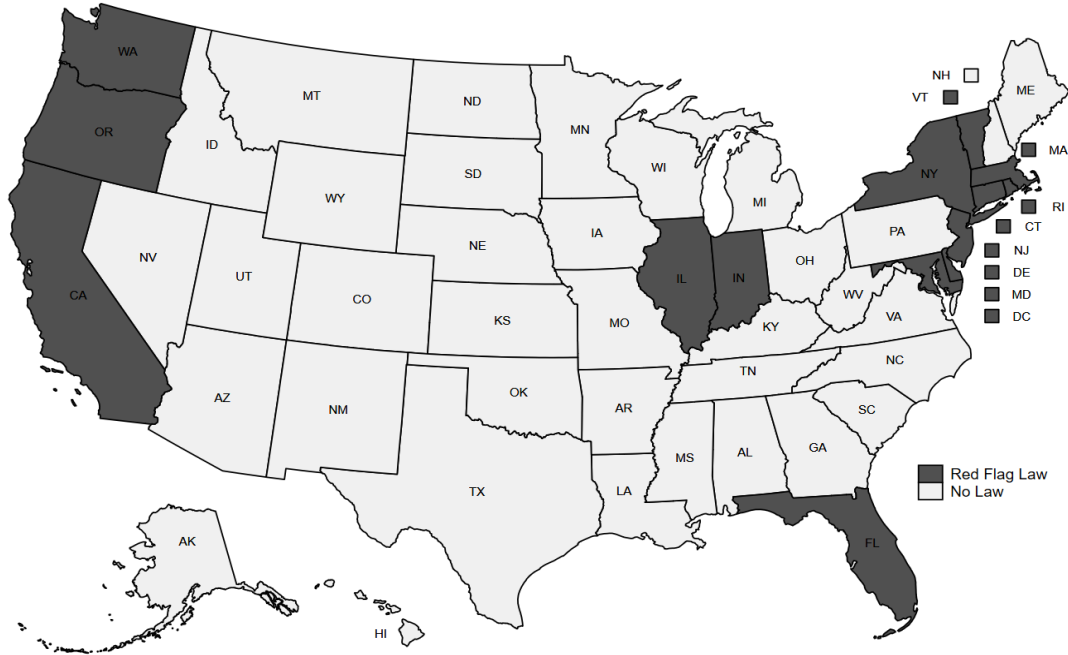
States with Red Flag Laws by 2005



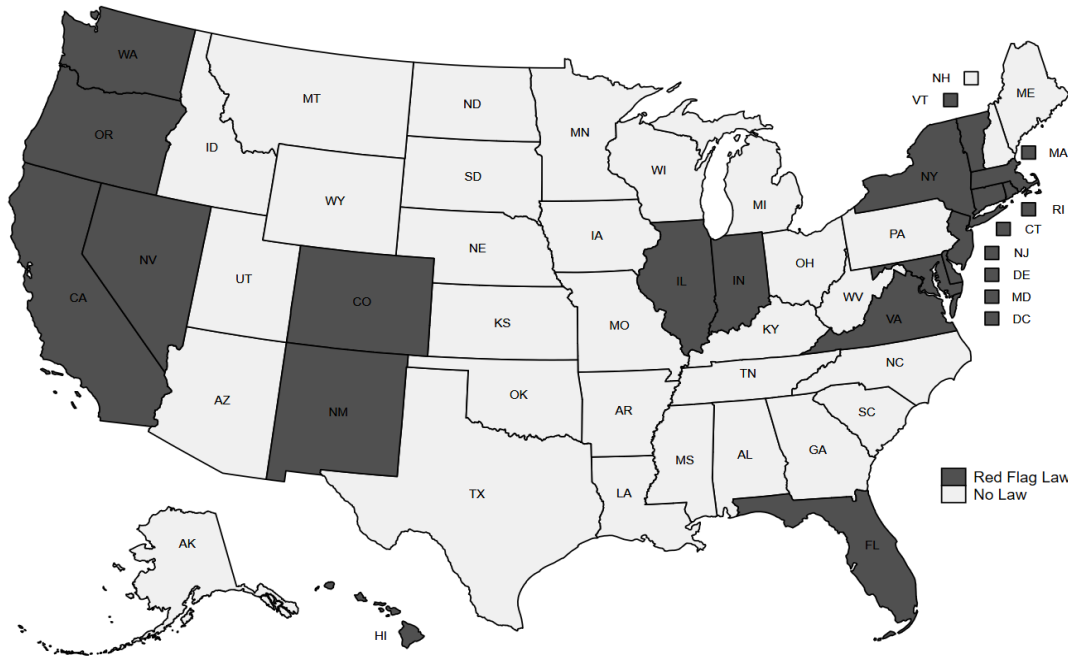
States with Red Flag Laws by 2017



States with Red Flag Laws by 2019



States with Red Flag Laws by 2020



One key limitation of this study is a significant lack of policy variation. Although the relevant sample period is 1999-2019, eleven of the fifteen treated states adopted their policy within the last two years of the sample, severely limiting post-treatment observations. To employ additional variation, I conduct my analysis at the monthly level, following McClellan and Tekin (2017). This approach will help identify whether there is an immediate effect of these laws on suicides and homicides whereas aggregating results to the annual level could dilute a relevant result. This highlights another benefit of the NVSS data: their accuracy at the monthly level. Other mortality datasets, such as the FBI's Uniform Crime Reports, suffer from incomplete reporting issues at the monthly level. These data, which come from local jurisdictions, are often reported as an annual aggregate in a single month (McClellan and Tekin, 2017).

I control for several state-level economic and demographic characteristics in my analysis including unemployment rate, income per capita, mean age, percent of the population that is non-white and percent of the population that is female. I also control for several state-level political characteristics including the state beer tax²³, mental health parity laws²⁴, and the political party of the state governor.²⁵ Finally, I control for other state-level gun policies including universal background checks, mandatory wait periods,

²³ Evidence suggests that state-level excise tax on beer predicts aggregate alcohol consumption and is negatively related to both suicides and homicides (Tessler et al., 2019; Xuan et al., 2016).

²⁴ Mental health parity laws, which require insurance companies to provide mental health benefits at parity with physical health benefits, have a negative effect on suicide rates (Lang, 2013).

²⁵ Page et al., (2002) find that there is a strong association between political conservatism and suicide.

concealed carry laws, SYG laws, and domestic violence gun laws.²⁶ See Table A3 for a list of data sources.

Summary statistics can be found in Table 4. The mean firearm suicide rate for the entire sample is 0.532 per month per 100,000 population while the mean firearm homicide rate is 0.334 per month per 100,000 population. Red Flag states have lower rates of suicides, firearm suicides, firearm homicides, non-firearm homicides, and accidental shootings. These means are statistically different between Red Flag and non-Red Flag states at the 5 percent level. Summary statistics also show that the means of nearly every covariate are statistically different between Red Flag and non-Red Flag states.

²⁶ A valid concern when estimating the effects of state-level gun policies is that an estimated effect is driven by a different gun policy that was passed at a similar time. By controlling for these five gun laws that saw significant policy variation in my sample period, I reduce the likelihood that my estimated effect includes the effect of a different gun law.

Table 4. Descriptive Statistics for Gun Violence and Red Flag Law Analysis (1999-2019)

	<i>Red Flag Law = 1*</i>	<i>Red Flag Law = 0</i>	<i>Total Sample</i>	<i>Label</i>
Dependant Variables				
<i>Suicide Rate</i> [^]	0.895 (0.278)	1.133 (0.295)	1.031 (0.311)	Suicides per 100,000 individuals
<i>Homicide Rate</i>	0.440 (0.206)	0.488 (0.224)	0.467 (0.218)	Homicides per 100,000 individuals
<i>Firearm Suicide Rate</i> [^]	0.379 (0.197)	0.646 (0.201)	0.532 (0.239)	Firearm-related suicides per 100,000 individuals
<i>Firearm Homicide Rate</i> [^]	0.309 (0.170)	0.352 (0.189)	0.334 (0.182)	Firearm-related homicides per 100,000 individuals
<i>Non-Firearm Suicide Rate</i>	0.516 (0.130)	0.487 (0.173)	0.499 (0.157)	Non-firearm suicides per 100,000 individuals
<i>Non-Firearm Homicide Rate</i> [^]	0.131 (0.059)	0.136 (0.070)	0.134 (0.066)	Non-firearm homicides per 100,000 individuals
<i>Accidental Shooting Rate</i> [^]	0.009 (0.012)	0.022 (0.028)	0.017 (0.024)	Accidental shooting deaths per 100,000 individuals
Independent Variables				
<i>Unemployment Rate</i> [^]	6.130 (2.209)	5.590 (1.967)	5.821 (2.091)	State unemployment rate
<i>Income Per Capita</i> [^]	38.877 (13.209)	32.527 (10.455)	35.245 (12.127)	State real income per capita (thousands of dollars)
<i>Mean Age</i> [^]	36.948 (1.954)	35.880 (1.956)	36.337 (2.025)	State mean age
<i>Population</i> [^]	18.500 (12.200)	9.051 (6.991)	13.100 (10.600)	State population (in millions)
<i>Percent Non-white</i> [^]	0.219 (0.065)	0.190 (0.097)	0.202 (0.086)	Percent of the state population that is nonwhite
<i>Percent Female</i>	0.509 (0.006)	0.507 (0.006)	0.508 (0.006)	Percent of the state population that is female
<i>Beer Tax</i> [^]	5.496 (3.466)	6.739 (5.507)	6.207 (4.781)	State beer taxes (2018) dollars
<i>Democrat</i> [^]	0.500 (0.499)	0.372 (0.482)	0.427 (0.493)	= 1 if state has a democratic governor, = 0 otherwise
<i>Mental Health Parity Law</i> [^]	0.725 (0.443)	0.600 (0.489)	0.654 (0.474)	= 1 if state has a mental health parity law, = 0 otherwise
<i>Wait Period</i> [^]	0.649 (0.477)	0.138 (0.345)	0.357 (0.479)	= 1 if state has a mandatory wait period for firearm purchases, = 0 if otherwise
<i>Carry Law</i> [^]	0.305 (0.460)	0.882 (0.323)	0.635 (0.481)	= 1 if state has a shall-issue concealed carry gun law, = 0 if otherwise
<i>Stand Your Ground Law</i> [^]	0.219 (0.414)	0.596 (0.491)	0.435 (0.496)	= 1 if state has a stand-your-ground gun law, = 0 if otherwise
<i>Universal Background Checks</i> [^]	0.645 (0.478)	0.106 (0.309)	0.337 (0.472)	= 1 if state requires background checks for private sales on firearms, = 0 if otherwise
<i>Domestic Violence Gun Law</i> [^]	0.799 (0.400)	0.530 (0.499)	0.645 (0.478)	= 1 if state prevents individuals from possessing firearms due to domestic abuse, = 0 if otherwise
N	3,780	9,072	12,850	

* If a state adopted a Red Flag law before 12/31/2019, all observations of that state are included in this column

[^] Statistically different between Red Flag and non-Red Flag states at 5% level

Notes: Weighted means are presented with standard deviations in parentheses

CHAPTER FOUR

EMPIRICAL METHODS

To examine the effects of Red Flag laws on firearm suicides and firearm homicides, I use a difference-in differences fixed effects model that exploits plausibly exogenous variation in the adoption of Red Flag laws over time and between states. Many economists have used this method when attempting to determine the effects of other state-level gun policies (Luca et al. 2017; Duggan et al., 2011; Anderson and Sabia, 2018). My estimating equation is as follows:

$$(1) Y_{sym} = \beta_0 + \beta_1 RF_{sym} + \beta_2 X_{sym} + \mu_s + \Phi_{ym} + \varepsilon_{sym},$$

where s indexes state, y indexes year, and m indexes month. The outcome Y_{sym} represents one of two dependent variables of interest in this study, firearm suicide rate and firearm homicide rate. The key independent variable RF_{sym} is a binary variable that takes on the value of one if a state has a Red Flag law in effect during month m in year y , and takes on the value of zero otherwise.^{27,28} X_{sym} contains state-level demographic, political, economic, and gun law controls.²⁹ The vector μ_s represents state fixed effects, which control for factors that may affect firearm suicides and firearm homicides that vary by

²⁷ In cases where Red Flag laws are not in place for an entire month, RF takes on a value equal to the proportion of days that the policy was in effect.

²⁸ There is likely to be large differences in how local police departments enforce Red Flag laws, resulting in systematic variation in the effects of these laws based on police expenditures and police force size. The exclusion of a metric of police enforcement from my model may be a source of omitted variables bias.

²⁹ Data for income per capita, population, mean age, percent non-white, and percent female are only available at the annual level. Because this analysis is conducted at the monthly level, I linearly impute data values for the 11 months of unavailable data in order to avoid discontinuous jumps in values for these covariates.

state but not over time. The vector Φ_{ym} represents month-year fixed effects that control for factors that vary between time periods but not between states.³⁰

To ensure that a difference-in-differences model utilizes a valid counterfactual, the parallel pre-trends assumption must hold. To test this assumption, I estimate leads of the relationship between Red Flag laws and firearm suicide and homicide rates.

Additionally, I conduct a test examining the effect that mass shootings have on the adoption of Red Flag laws. Finally, I provide a falsification test on accidental shootings, an outcome that should conceivably be unaffected by Red Flag laws.

In some specifications, I include state-specific linear trends that control for unobserved factors that change linearly over time within a state such as preferences for firearms. However, controlling for state-specific linear trends may also use up potentially exogenous variation in the adoption of Red Flag laws that would be crucial in identifying their causal effect. Including state-specific linear trends may be of particular concern when there is limited policy variation available in the sample period (Wolfers, 2006). I include specifications with and without state-specific linear trends and discuss the limitations of each.

³⁰ It is common for economists who study state-level gun policies at the monthly level to include state*year fixed effects to control for seasonal trends along with changes in gun deaths that apply to all states (McClellan and Tekin, 2017). Because many states adopted their Red Flag laws within a very small time period, the inclusion of state*year fixed effects may use up potentially exogenous variation in the adoption of Red Flag laws. In other words, including state*year fixed effects may control for additional omitted variables bias but it may also control for useful information in the variable of interest, crucial in identifying the true effect of Red Flag laws (Angrist and Pischke, 2009).

CHAPTER FIVE

RESULTS

Baseline Estimates

Preliminary results for the analysis of the effect of Red Flag laws on firearm suicides can be found in Table 5. Column (1) presents a baseline estimate from a specification that controls only for state and month fixed effects. These results suggest that Red Flag laws are associated with a statistically significant reduction in the monthly firearm suicide rate of 0.061. This equates to an 11 percent decrease relative to the pre-treatment mean. Column (2) presents results from a specification that controls for state

Table 5. Firearm Suicides and Red Flag Laws

	(1)	(2)	(3)	(4)
	<i>Firearm Suicides</i>	<i>Firearm Suicides</i>	<i>Firearm Suicides</i>	<i>Firearm Suicides</i>
Red Flag Law	-0.061** (0.029)	-0.033* (0.018)	-0.040** (0.017)	-0.009 (0.011)
Mean	0.538	0.538	0.538	0.538
N	12,852	12,852	12,852	12,852
Demographic, economic, and political controls	No	Yes	Yes	Yes
Other gun law controls	No	No	Yes	Yes
State-specific linear trends	No	No	No	Yes

* Statistically significant at 10% level; ** at 5% level; *** at 1% level.

Notes: Each column includes results from a separate OLS regression using mortality data from the *National Vital Statistics System* and population data from the *National Cancer Institute's SEER Program*. The sample includes all 50 states and Washington D.C. for the years 1999-2019. Coefficient estimates represent the effect of Red Flag laws on the number of firearm-related suicides per 100,000 population for state s in year y and month m . Standard errors, which are corrected for clustering at the state level, are in parentheses. Pre-treatment population weighted means are also presented. Columns (3), (4), and (5) control for all variables listed in Table 2. All results control for state fixed effects and month fixed effects. All coefficient estimates are weighted by state population.

and month fixed effects as well as demographic, economic, and political factors.

Including these covariates causes the effect size to decrease to -0.033.

The specification in column (3) controls for five different gun policies that vary substantially during the sample period, in order to avoid β_1 being biased due to spillover from another gun policy. This specification yields a statistically significant estimate of -0.040, 7 percent of the pre-treatment mean.

In column (4), state-specific linear trends are added to the specification in column (3). This controls for state-level variation that changes linearly over time. This causes the coefficient estimate to fall to -0.009. This estimate is precisely concentrated around 0, with a 95% confidence interval of [-0.031, 0.013].

Table 6 presents preliminary results for the analysis of the effect of Red Flag laws on firearm homicides. Results from the specification with only state and year fixed effects suggest that Red Flag laws reduce the firearm homicide rate by 0.074.

Controlling for demographic, political, economic, and gun law controls decreases the coefficient on Red Flag laws to -0.058, roughly 17 percent of the pre-treatment mean.

This result is significant at the 1 percent level. In column (4) after controlling for state-specific linear trends, the coefficient on Red Flag laws decreases to -0.045. This is approximately 13 percent of the pre-treatment mean and is significant at the 1 percent level.³¹

³¹ I also include preliminary results using the county as the unit of observation in Tables B1 and B2. County-level effect sizes are comparable to those at the state level, but standard errors are smaller. Although county-level estimates may provide a more precise picture of the effects of Red Flag laws, state-level estimates are relevant for this study. Not only are state-level estimates more conservative, but

Table 6. Firearm Homicides and Red Flag Laws

	(1) <i>Firearm Homicides</i>	(2) <i>Firearm Homicides</i>	(3) <i>Firearm Homicides</i>	(4) <i>Firearm Homicides</i>
Red Flag Law	-0.074** (0.033)	-0.047** (0.021)	-0.058*** (0.021)	-0.045*** (0.011)
Mean	0.337	0.337	0.337	0.337
N	12,852	12,852	12,852	12,852
Demographic, economic, and political controls	No	Yes	Yes	Yes
Other gun law controls	No	No	Yes	Yes
State-specific linear trends	No	No	No	Yes

* Statistically significant at 10% level; ** at 5% level; *** at 1% level.

Notes: Each column includes results from a separate OLS regression using mortality data from the *National Vital Statistics System* and population data from the *National Cancer Institute's SEER Program*. The sample includes all 50 states and Washington D.C. for the years 1999-2019. Coefficient estimates represent the effect of Red Flag laws on the number of firearm-related homicides per 100,000 population for states in year y and month m . Standard errors, which are corrected for clustering at the state level, are in parentheses. Pre-treatment, population weighted means are also presented. Columns (3), (4), and (5) control for all variables listed in Table 2. All results control for state fixed effects and month fixed effects. All coefficient estimates are weighted by state population.

There is ambiguity regarding whether the specification in column (3) or column (4) is more appropriate for this analysis. As mentioned in the previous section, controlling for state-specific time trends could be problematic due to the possibility that they could use up plausibly exogenous variation in the adoption of Red Flag laws. Controlling for panel-specific trends results in a more restrictive specification and is the method preferred by other economists studying the effects of other state-level gun policies (McClellan and Tekin, 2017; Edwards et al., 2018). In this paper, including linear trends in the analysis of firearm homicides has a small impact on the size of the

because Red Flag laws have only been implemented at the state level, their aggregate effect on states as a whole is the relevant metric for policy makers.

coefficient and standard error, a sign that the specifications in column (3) and (4) are consistent. However, in the analysis of firearm suicides, results change more drastically between the two specifications. The estimate in column (3) is relatively small but statistically significant, while the specification in column (4) yields a precise zero estimate. Since both of these specifications have notable drawbacks, neither is favored. The inclusion of state-specific time trends could control for unobserved factors that vary smoothly over time within a state, or it could control for key variation in the adoption of Red Flag laws, resulting in a biased estimate. It is not clear by the results of this model, which phenomenon is transpiring.

Analysis of Substitution Effects

The relevant metric when examining the effects of gun policies is not the effect on firearm suicides and homicides; rather it is the effect on overall suicides and homicides. It is conceivable that a gun policy could cause individuals to substitute away from suicide and homicide by firearm and into suicide and homicide by other methods. Ignoring the relationship between gun policies and non-firearm suicides and homicides would be to ignore the relevant effect of the policy. The effect of gun policy on non-firearm suicides and homicides is ambiguous. Some economists find that different gun policies have no effect on non-firearm deaths (Donohue et al., 2019; Marvell, 2001) while others find a positive relationship (Lott and Moody, 2019; Ludwig and Cook, 2001).

Table 7 presents results for the effect of Red Flag laws on non-firearm suicides. Estimates from column (3) and column (4) are both small and statistically insignificant. Table 8 presents results from the same specification where the outcome is now non-

firearm homicides. Once again, there is no evidence of a significant effect. These results suggest that Red Flag laws do not result in any sort of substitution from suicide and homicide by firearm, to suicide and homicide by other methods.

Table 7. Non-Firearm Suicides and Red Flag Laws

	(1) <i>Non-Firearm Suicides</i>	(2) <i>Non-Firearm Suicides</i>	(3) <i>Non-Firearm Suicides</i>	(4) <i>Non-Firearm Suicides</i>
Red Flag Law	-0.002 (0.007)	-0.002 (0.007)	-0.000 (0.008)	-0.001 (0.008)
Mean	0.493	0.493	0.493	0.493
N	12,852	12,852	12,852	12,852
Demographic, economic, and political controls	No	Yes	Yes	Yes
Other gun law controls	No	No	Yes	Yes
State-specific linear trends	No	No	No	Yes

* Statistically significant at 10% level; ** at 5% level; *** at 1% level.

Notes: Each column includes results from a separate OLS regression using mortality data from the *National Vital Statistics System* and population data from the *National Cancer Institute's SEER Program*. The sample includes all 50 states and Washington D.C. for the years 1999-2019. Coefficient estimates represent the effect of Red Flag laws on the number of non firearm-related suicides per 100,000 population for state s in year y and month m . Standard errors, which are corrected for clustering at the state level, are in parentheses. Pre-treatment, population weighted means are also presented. Columns (3), (4), and (5) control for all variables listed in Table 2. All results control for state fixed effects and month fixed effects. All coefficient estimates are weighted by state population.

Table 8. Non-Firearm Homicides and Red Flag Laws

	(1) <i>Non-Firearm Homicides</i>	(2) <i>Non-Firearm Homicides</i>	(3) <i>Non-Firearm Homicides</i>	(4) <i>Non-Firearm Homicides</i>
Red Flag Law	0.005 (0.004)	0.003 (0.004)	0.002 (0.004)	-0.006 (0.005)
Mean	0.136	0.136	0.136	0.136
N	12,852	12,852	12,852	12,852
Demographic, economic, and political controls	No	Yes	Yes	Yes
Other gun law controls	No	No	Yes	Yes
State-specific linear trends	No	No	No	Yes

* Statistically significant at 10% level; ** at 5% level; *** at 1% level.

Notes: Each column includes results from a separate OLS regression using mortality data from the *National Vital Statistics System* and population data from the *National Cancer Institute's SEER Program*. The sample includes all 50 states and Washington D.C. for the years 1999-2019. Coefficient estimates represent the effect of Red Flag laws on the number of non firearm-related homicides per 100,000 population for state s in year y and month m . Standard errors, which are corrected for clustering at the state level, are in parentheses. Pre-treatment, population weighted means are also presented. Columns (3), (4), and (5) control for all variables listed in Table 2. All results control for state fixed effects and month fixed effects. All coefficient estimates are weighted by state population.

Falsification Test

Table 9 presents results from a falsification test that examines the effects of Red Flag laws on accidental shootings. Because Red Flag laws target individuals displaying warning signs that they are a public safety risk, they should have no effect on accidental shootings. Red Flag laws should not be salient in these types of deaths since a potential Red Flag petitioner should not have foreseen a shooting that is truly accidental. All estimates in Table 9 are small and statistically insignificant, suggesting that the results in Table 5 and Table 6 are not driven by systematic changes in overall gun violence.

Despite reassuring results from this falsification test, there are reasons to further challenge the validity of the estimates in Table 5 and Table 6. First, anecdotal evidence suggests that Red Flag laws are most commonly used in cases where individuals are suicidal (Schuppe, 2019; Kaste, 2018). There is little evidence of the widespread use of Red Flag laws to prevent individuals from committing a homicide. Given these anecdotes, there is an expectation that the magnitude of the effect of Red Flag laws should be largest among suicides. The estimates in this study suggest a large negative effect on firearm homicides, and no effect on firearm suicides. These results are hard to reconcile, considering the lack of evidence of the salience of Red Flag laws among individuals at risk of committing a homicide. Additionally, the estimates on firearm homicides in this study are implausibly large when compared to other research in economics (Edwards et al., 2018; Luca et al., 2017). For these reasons, a more thorough examination of the validity of this research design is needed.

Table 9. Accidental Shootings and Red Flag Laws

	(1)	(2)	(3)	(4)
	<i>Accidental Shootings</i>	<i>Accidental Shootings</i>	<i>Accidental Shootings</i>	<i>Accidental Shootings</i>
Red Flag Law	0.009 (0.001)	0.000 (0.001)	-0.001 (0.001)	0.001 (0.001)
Mean	0.017	0.017	0.017	0.017
N	12,852	12,852	12,852	12,852
Demographic, economic, and political controls	No	Yes	Yes	Yes
Other gun law controls	No	No	Yes	Yes
State-specific linear trends	No	No	No	Yes

* Statistically significant at 10% level; ** at 5% level; *** at 1% level.

Notes: Each column includes results from a separate OLS regression using mortality data from the *National Vital Statistics System* and population data from the *National Cancer Institute's SEER Program*. The sample includes all 50 states and Washington D.C. for the years 1999-2019. Coefficient estimates represent the effect of Red Flag laws on the number of accidental shooting deaths per 100,000 population for state s in year y and month m . Standard errors, which are corrected for clustering at the state level, are in parentheses. Pre-treatment, population weighted means are also presented. Columns (3), (4), and (5) control for all variables listed in Table 2. All results control for state fixed effects and month fixed effects. All coefficient estimates are weighted by state population.

Test of Parallel Pre-Trends Assumption

Table 10 presents results from a test of the parallel pre-trends assumption for firearm suicides. Columns (1) and (2) present results from separate regressions, which add a lead on RF , equal to 1 if a Red Flag law was passed in months $t+1$ through $t+12$. In columns (3) through (8), a series of three additional leads are added to the model.³² Table 11 presents results from a test of the parallel pre-trends assumption for firearm homicides. Statistically significant coefficients on leads of RF suggest that there is a

³² Although this analysis is conducted at the monthly level, I include leads going back to 48 months prior to the policy implementation. This is unconventional for the test of the parallel pre-trends assumption. However, because it takes several years to propose, pass, and implement a policy, the effects of an unobserved phenomenon may not be realized in the first few periods following.

substantial violation of the parallel pre-trends assumption. These results provide evidence that firearm suicides were trending in a systematic way in the years leading up to states' adoption of Red Flag laws. Pre-trend issues persist in the four years leading up to the adoption of Red Flag laws for firearm suicides, compared to firearm homicides, where issues only seem to be present in the one year leading up to Red Flag adoption.

Table 10. Leads of Red Flag Laws on Firearm Suicides

	(1) <i>Firearm Suicides</i>	(2) <i>Firearm Suicides</i>	(3) <i>Firearm Suicides</i>	(4) <i>Firearm Suicides</i>	(5) <i>Firearm Suicides</i>	(6) <i>Firearm Suicides</i>	(7) <i>Firearm Suicides</i>	(8) <i>Firearm Suicides</i>
48 Months Prior to Red Flag Law	...	...	...	...	...	...	-0.036*** (0.011)	-0.014* (0.007)
36 Months Prior to Red Flag Law	...	...	...	...	-0.056*** (0.012)	-0.030*** (0.008)	-0.062*** (0.013)	-0.034*** (0.008)
24 Months Prior to Red Flag Law	...	...	-0.054*** (0.016)	-0.019* (0.010)	-0.062*** (0.017)	-0.028** (0.011)	-0.068*** (0.017)	-0.032*** (0.012)
12 Months Prior to Red Flag Law	-0.056*** (0.014)	-0.020*** (0.005)	-0.064*** (0.016)	-0.025*** (0.007)	-0.073*** (0.016)	-0.035*** (0.008)	-0.079*** (0.016)	-0.040*** (0.009)
Red Flag Law	-0.051*** (0.018)	-0.016 (0.011)	-0.061*** (0.018)	-0.023** (0.011)	-0.071*** (0.019)	-0.035*** (0.011)	-0.077*** (0.020)	-0.040*** (0.013)
Mean	0.538	0.538	0.538	0.538	0.538	0.538	0.538	0.538
N	12,852	12,852	12,852	12,852	12,852	12,852	12,852	12,852
State-Specific Time- Trends	No	Yes	No	Yes	No	Yes	No	Yes

* Statistically significant at 10% level; ** at 5% level; *** at 1% level.

Notes: Each column includes results from a separate OLS regression using mortality data from the *National Vital Statistics System* and population data from the *National Cancer Institute's SEER Program*. The sample includes all 50 states and Washington D.C. for the years 1999-2019. The dependent variable is equal to the number of deaths per 100,000 population for state s in year y and month m for firearm suicides and firearm homicides. All models control for covariates listed in Table 2, state fixed effects, and month fixed effects. Standard errors, which are corrected for clustering at the state level, are in parentheses. Pre-treatment, population weighted means are also presented. All coefficient estimates are weighted by state population.

Table 11. Leads of Red Flag Laws on Firearm Homicides

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	<i>Firearm Homicides</i>	<i>Firearm Homicides</i>	<i>Firearm Homicides</i>	<i>Firearm Homicides</i>	<i>Firearm Homicides</i>	<i>Firearm Homicides</i>	<i>Firearm Homicides</i>	<i>Firearm Homicides</i>
48 Months								
Prior to Red Flag Law	...	...	...	...	...	...	-0.003	-0.021
							(0.011)	(0.014)
36 Months								
Prior to Red Flag Law	...	...	...	...	-0.006	-0.016	-0.007	-0.023
					(0.021)	(0.022)	(0.022)	(0.025)
24 Months								
Prior to Red Flag Law	...	...	-0.025	-0.028	-0.026	-0.033	-0.027	-0.040
			(0.018)	(0.018)	(0.021)	(0.024)	(0.022)	(0.028)
12 Months								
Prior to Red Flag Law	-0.040***	-0.038***	-0.044***	-0.046***	-0.045**	-0.051	-0.046**	-0.059**
	(0.014)	(0.010)	(0.016)	(0.015)	(0.019)	(0.020)	(0.020)	(0.024)
Red Flag Law	-0.066***	-0.058***N8	-0.070***	-0.069***	-0.072	-0.075	-0.073**	-0.084***
	(0.023)	(0.012)	(0.025)	(0.016)	(0.027)	(0.022)	(0.028)	(0.027)
Mean	0.337	0.337	0.337	0.337	0.337	0.337	0.337	0.337
N	12,852	12,852	12,852	12,852	12,852	12,852	12,852	12,852
State-Specific Time-Trends	No	Yes	No	Yes	No	Yes	No	Yes

* Statistically significant at 10% level; ** at 5% level; *** at 1% level.

Notes: Each column includes results from a separate OLS regression using mortality data from the *National Vital Statistics System* and population data from the *National Cancer Institute's SEER Program*. The sample includes all 50 states and Washington D.C. for the years 1999-2019. The dependent variable is equal to the number of deaths per 100,000 population for state *s* in year *y* and month *m* for firearm suicides and firearm homicides. All models control for covariates listed in Table 2, state fixed effects, and month fixed effects. Standard errors, which are corrected for clustering at the state level, are in parentheses. Pre-treatment, population weighted means are also presented. All coefficient estimates are weighted by state population.

These findings have important implications for this analysis. Most importantly, these systematic trends suggest that any significant result in Table 5 or Table 6 is not an effect of Red Flag laws, but rather a continuation of a pre-existing trend. These results also suggest that a state's decision to adopt a Red Flag law is plausibly endogenous. It is possible that states systematically adopt Red Flag laws following another phenomenon that decreases firearm suicides and firearm homicides through a mechanism other than the law. For example, unobservable cultural factors may influence individual propensity to commit a homicide or suicide with a firearm. Simultaneously, the same cultural

factors may result in public outcry for gun control, leading states to adopt gun legislation such as Red Flag laws.

Mass Shooting Analysis

One factor that may simultaneously affect the adoption of Red Flag laws and rates of firearm suicide and firearm homicide is the occurrence of a mass shooting. Anecdotes suggest that states often adopt Red Flag laws in response to mass shootings (Dunn, 2020). Due to the correlation between mass shootings and the outcomes of interest in this study, it is not practical to control for them in the model. However, to test whether the occurrence of a mass shooting affects the relationship of Red Flag laws and firearm suicides and firearm homicides, I evaluate the effect of mass shootings on Red Flag laws in Table 12. Column (1) shows that a mass shooting event has a significant effect on Red Flag law adoption in the following four years. This effect goes away after the inclusion of state-specific linear trends in the model. This suggests that controlling for state-specific linear trends in subsequent analyses may account for the effects of mass shootings on firearm suicides and firearm homicides. Columns (3) and (4) show the effect of mass shooting death toll lags on Red Flag law implementation. Significant effects for the 25-36 month and 37-48 month lags come as a surprise, considering that the effects of a mass shooting are more pronounced in earlier leads. However, these results may be explained by some particularly salient mass shootings three to four years prior to Red Flag adoption that happened to have a low death toll. Overall, these results suggest that mass shootings may be a confounding factor in the analysis of Red Flag laws. It is important to note that significant effects on mass shooting lags go away after controlling

for state-specific linear trends. This does not ameliorate the violation of the parallel pre-trends assumption, but it does suggest that the inclusion of state-specific linear trends may control for bias resulting from the cultural and political effects of mass shootings.³³

Table 12. Effects of Mass Shootings on the Adoption of Red Flag Laws

	(1)	(2)		(3)	(4)
Panel I	<i>Red Flag Law</i>	<i>Red Flag Law</i>	Panel II	<i>Red Flag Law</i>	<i>Red Flag Law</i>
<i>Mass Shooting</i>	0.057*** (0.021)	0.014 (0.015)	<i>Mass Shooting Death Toll</i>	-0.001 (0.001)	-0.002* (0.001)
<i>Mass Shooting (1-12 month lag)</i>	0.069*** (0.023)	0.029 (0.026)	<i>Mass Shooting Death Toll (1-12 month lag)</i>	0.002 (0.002)	0.000 (0.001)
<i>Mass Shooting (13-24 month lag)</i>	0.042* (0.021)	0.011 (0.031)	<i>Mass Shooting Death Toll (13-24 month lag)</i>	0.000 (0.001)	0.000 (0.001)
<i>Mass Shooting (25-36 month lag)</i>	0.076** (0.030)	0.045 (0.028)	<i>Mass Shooting Death Toll (25-36 month lag)</i>	0.014*** (0.002)	0.011*** (0.004)
<i>Mass Shooting (37-48 month lag)</i>	0.057 (0.036)	0.025 (0.020)	<i>Mass Shooting Death Toll (37-48 month lag)</i>	0.011*** (0.003)	0.001*** (0.003)
Mean	0.067	0.067		0.067	0.067
N	12,852	12,852		12,852	12,852
State-specific linear trends	No	Yes		No	Yes

* Statistically significant at 10% level; ** at 5% level; *** at 1% level.

Notes: Each column includes results from a separate OLS regression using mass shooting data from *Mother Jones* and Red Flag law data from *RAND Corporation*. The sample includes all 50 states and Washington D.C. for the years 1999-2019. Coefficient estimates represent the effect of mass shootings on Red Flag laws in state *s* in year *y* and month *m*. Standard errors, which are corrected for clustering at the state level, are in parentheses. Population weighted means are also presented. All columns represent results after controlling for all variables listed in Table 2, state fixed effects, and year fixed effects. All coefficient estimates are weighted by state population.

³³ There is a small body of literature finding that school shootings have significant impacts on the mental health and gun usage of youth immediately following the shooting incident (Rossin-Slater et al., 2020; Levine and McKnight, 2017). If similar effects exist following a mass shooting, there could be omitted variables bias issues if mass shootings are not controlled for in the model.

Heterogeneous Effects

The results of heterogeneity analyses are presented in Tables C1 through C8. These tests evaluate differential effects by sex, race, marital status, and age to ensure that pre-trends issues are not concentrated around certain demographic groups. The issue of non-parallel pre-trends persists throughout all sources of heterogeneity for specifications with and without state-specific linear trends. The one notable exception to this is firearm homicides among middle-aged individuals. Column (5) and (6) of Appendix Table 13 show that Red Flag laws cause a decrease in the middle-aged firearm homicide rate of 0.052 by the most conservative estimate. This equates to a decrease of 11 percent relative to the mean. This result indicates that actual trends in middle-age homicides did not induce the adoption of Red Flag laws, but rather Red Flag laws led to a significant reduction in firearm homicides among middle-aged individuals.

Alternative Counterfactual Groups

The existence of systematic pre-trends issues and imprecise results in this analysis does not come completely unexpected, especially when considering stark differences between states that have and have not implemented Red Flag laws. Referring again to Figure 1, there are clear spatial differences between Red Flag and non-Red Flag states. Furthermore, there are demographic and political differences in states that adopt these laws. Red Flag law states are more likely to have a democratic ideology on aggregate as well as have a higher population density. As a result, using a group of systematically

different states as a counterfactual raises the concern that an observed effect reflects differences between treated and control groups rather than the true effect of the policy.

To address this issue, I once again conduct an analysis of leads on Red Flag laws, this time omitting states from the control group that are inherently different from the treated states. I create five new counterfactual groups based on a states' population density, spatial location, political leanings, proximity to a Red Flag state, and observed propensity to adopt a Red Flag law. Lists of the states included in each of these groups can be found in Tables D1 through D5.

Results from the pre-trends analysis of these alternative counterfactual groups can be found in Tables D6 through D10. The pre-trends issue goes away for firearm homicides in the samples that use democratic states and future Red Flag law states as a counterfactual. The most conservative estimates suggest that Red Flag laws decrease the firearm homicide rate by 0.028 in the sample of democratic states, and decrease the firearm homicide rate by 0.037 in the sample of future Red Flag law states. These results can be found in Tables D11 and D12.

These results, although suggestive that the nationally representative counterfactual may not be conducive to causal identification, do not hold enough weight to neglect the pre-trends issues seen in all other samples.

CHAPTER SIX

CONCLUSION

America has seen growing appeal for implementing gun control on an as-needed basis only for individuals who have shown warning signs of being a public safety risk. Risk-based firearm removal laws, commonly referred to as Red Flag laws, have seen an increase in state-level implementation in recent years. In the United States, these laws have garnered a large following as the public sees the value of individualized gun control following tragic mass shootings in Parkland, FL; Isla Vista, CA; Dayton, OH; and El Paso, TX, among others. Despite many states adopting and considering these laws, there is only descriptive and preliminary research regarding their effects on suicides and homicides.

This paper employs a difference-in-differences approach by exploiting spatial and temporal variation in the adoption of Red Flag laws. Although the implementation of these laws is clustered among the final two years of the sample period, I am able to employ additional variation by analyzing the effects of these laws at the monthly level, made possible by using restricted-use mortality data from NVSS.

Preliminary results from this analysis suggest that these laws have a strong negative effect on firearm homicides and no effect on firearm suicides. However, further analysis indicates that these results are driven by pre-existing negative trends in firearm suicides and firearm homicides. These systematic pre-trends go away when tested against counterfactual groups that include other Red Flag states, and democratic states. However, those findings are not cause to overlook the systematic pre-trends issue in the

full sample. These laws are likely a symptom rather than the cause of decreased rates of firearm suicide and firearm homicide.

I conduct heterogeneity analysis and find that all demographics experienced similar significant pre-trends. The one exception to this finding was that firearm homicides among middle-aged individuals were not trending prior to the adoption of a Red Flag law. Results indicate that Red Flag laws cause middle-aged firearm homicides to decrease by 0.022 deaths per month per 100,000 population.

These findings contradict the small body of literature on the effects of Red Flag laws. Previous studies, including Kivisto and Phalen (2018) and Swanson et al. (2017) suggest that Red Flag laws have a large negative effect on firearm suicides. Lott and Moody (2019) find that Red Flag laws decreased firearm suicide rates and firearm homicide rates; this effect was negated by a comparable increase in non-firearm suicide rates and non-firearm homicide rates. However, none of these studies explore the possibility of pre-existing trends driving their results. Furthermore, this paper exploits more policy variation than any previous study, providing a better landscape for causal inference and a more complete picture of the true effects of Red Flag laws. Policy makers should tread lightly when making decisions based on results from previous studies, as estimates may not reflect the true effect of Red Flag laws.

Although it points out a key oversight in previous literature, this paper has many shortcomings. Many of the treated states only received treatment in the final two years of the sample period, a severe lack of policy variation. Given what is known about the observed salience of Red Flag laws, significant utilization does not typically occur in the

policy's infancy (Pallin et al., 2020; Frattaroli et al., 2020). The lack of post-treatment observations makes this a less than ideal environment for a difference-in-differences analysis. Another shortcoming is the lack of data availability regarding the number of firearm seizures resulting from Red Flag laws. Ideally, I would obtain data on firearm seizures before and after implementation of Red Flag laws.³⁴ These data would control for the salience of Red Flag laws and would derive much more accurate effect sizes. As more data become available, and more states implement Red Flag laws, additional research should be conducted to verify the existence of systematic pre-existing trends prior to the adoption of the laws.

³⁴ Other than Red Flag laws, firearms may be removed via federal provisions. Reasons for firearm seizure include conviction of certain crimes, subjection to an order related to domestic violence, and subjection to an order related to a serious mental condition (Gifford's Law Center to Prevent Gun Violence, 2020)

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APPENDICES

APPENDIX A

BACKGROUND

Table A1. Anecdotes of the Use of Red Flag Laws

State	Notes	Source
California	Use of the Red Flag law was slow at first, but has increased in recent years.	https://www.sfchronicle.com/politics/article/California-starts-slow-on-seizing-unstable-12906043.php
Colorado	In 2020, 112 petitions were filed, while only 46 of those resulted in a firearm seizure.	https://www.canoncitydailyrecord.com/2021/01/10/red-flag-law-colorado-first-year-2020-stats/
Connecticut	From 1999 to 2019, over 1,890 respondents were subject to firearm seizures, 260 in 2018.	https://www.middletownpress.com/middletown/article/CT-s-red-flag-gun-law-increasingly-used-life-14294288.php
Delaware	In the first 8 months, 36 petitions were filed.	https://www.delawarepublic.org/post/delawares-red-flag-laws-being-used-remove-guns-people-crisis
Florida	The Red Flag law was used 2,227 times in the first 18 months although use has varied greatly between counties.	https://www.sun-sentinel.com/news/crime/fl-ne-red-flag-law-review-20190921-ygedayoybacmpzrsy7kssdu-story.html
Hawaii	No anecdotes of any gun seizures.	
Illinois	In the first 9 months, the law had been used 41 times.	https://will.illinois.edu/news/story/as-congress-looks-to-red-flag-laws-illinois-tries-to-enforce-its-own
Indiana	In Indianapolis, the law has been used over 700 times in the first 14 years.	https://www.cbs58.com/news/exploring-indianas-red-flag-law
Maryland	There were 36 granted petitions in the first month that the law was in effect.	https://baltimore.cbslocal.com/2019/08/05/maryland-red-flag-law-gun-control-mass-shootings-president-trump/
Massachusetts	The first year that the law was in effect, 19 petitions were granted.	https://www.wbur.org/cognoscenti/2019/08/21/massachusetts-extreme-risk-protection-order-red-flag-gun-law-david-rosmarin
Nevada	There is no evidence that the law has been used. Some counties have refused to employ it.	https://thenevadaindependent.com/article/still-largely-untested-nevadas-new-red-flag-law-and-expanded-background-checks-rankle-gun-show-attendees
New Jersey	Nearly 200 petitions were granted in the first 6 months that the law was in effect.	https://www.nj.com/news/2020/01/nearly-200-people-have-had-their-guns-seized-in-nj-under-new-red-flag-law.html
New Mexico	The first 9 months of the law yielded 4 petitions.	https://www.usnews.com/news/best-states/new-mexico/articles/2021-02-09/new-mexico-red-flag-gun-law-seldom-used-to-withdraw-firearms
New York	Six orders were issued in New York City in the first year of the law.	https://www.law.com/newyorklawjournal/2020/09/25/new-york-legislation-aims-to-expand-use-of-red-flag-gun-law/
Oregon	In the first 22 months, 122 petitions were granted, mostly for suicides.	https://www.opb.org/news/article/oregon-red-flag-law-two-year-firearms-protection-order/
Rhode Island	The law was used 21 times in the first year.	https://www.wpri.com/target-12/ri-police-used-red-flag-gun-law-21-times-in-first-year/
Vermont	In the first 16 months, the law was used 30 times	https://www.npr.org/2019/08/22/753062116/in-vermont-a-case-of-one-man-whose-gun-was-seized-under-red-flag-law
Virginia	The first two months of the law's existence yielded 21 petitions, nearly half of which were from pro-gun counties.	https://www.virginiamercury.com/2020/10/06/some-virginia-communities-that-took-pro-gun-rights-stances-are-already-using-the-states-new-red-flag-law/
Washington	A total of 28 petitions were granted in Seattle in the law's first year.	https://www.seattletimes.com/seattle-news/crime/extreme-risk-seattle-police-have-seized-43-guns-from-people-deemed-to-be-a-danger-under-year-old-law/
Washington DC	The law was employed for the first time 9 months after it took effect.	https://www.fox5dc.com/news/dc-red-flag-law-used-for-the-first-time-to-take-away-guns

Table A2. ICD-10 Codes

Mortality Metric	ICD-10 Codes
Firearm Suicides	X72, X73, X74
Non-Firearm Suicides	X60, X61, X62, X63, X64, X65, X66, X67, X68, X69, X70, X71
Firearm Homicides	X93, X94, X95
Non-Firearm Homicides	X85, X86, X87, X88, X89, X90, X91, X92, X96, X97, X98, X99, Y01, Y02, Y03, Y04, Y05, Y06, Y07, Y08, Y09
Accidental Shootings	W32, W33, W34

*Codes come from the International Classification of Diseases, 1992 Revision, Volume 1.

Table A3. Data Sources for Covariates

<i>Variable</i>	<i>Data Source</i>	<i>Link</i>
<i>Unemployment Rate</i>	Bureau of Labor Statistics	https://www.bls.gov/lau/#entyaa
<i>Income Per Capita</i>	Bureau of Economic Analysis	https://apps.bea.gov/itable/iTable.cfm?ReqID=70&step=1
<i>Population</i>	National Cancer Institute's SEER population data	https://seer.cancer.gov/popdata/
<i>Mean Age</i>	National Cancer Institute's SEER population data	https://seer.cancer.gov/popdata/
<i>% Non-white</i>	National Cancer Institute's SEER population data	https://seer.cancer.gov/popdata/
<i>% Female</i>	National Cancer Institute's SEER population data	https://seer.cancer.gov/popdata/
<i>Beer Tax</i>	The Beer Institute's <i>Brewer's Almanac</i>	https://www.beerstitute.org/member-portal/2020-brewers-almanac/
<i>Democrat</i>	The Council of State Governments	http://knowledgecenter.csg.org/kc/content/state-data
<i>Mental Health Parity Law</i>	Parity Track	https://www.paritytrack.org/
<i>Background Checks</i>	FBI's National Instant Criminal Background Check System	https://www.fbi.gov/file-repository/nics_firearm_checks_-_month_year_by_state.pdf/view
<i>Wait Period</i>	RAND State Firearm Law Database	https://www.rand.org/pubs/tools/TLA243-2.html
<i>Concealed Carry Law</i>	RAND State Firearm Law Database	https://www.rand.org/pubs/tools/TLA243-2.html
<i>Stand Your Ground Law</i>	RAND State Firearm Law Database	https://www.rand.org/pubs/tools/TLA243-2.html
<i>Universal Background Checks</i>	RAND State Firearm Law Database	https://www.rand.org/pubs/tools/TLA243-2.html
<i>Domestic Violence Gun Law</i>	RAND State Firearm Law Database	https://www.rand.org/pubs/tools/TLA243-2.html

APPENDIX B

COUNTY-LEVEL RESULTS

Table B1. Firearm Suicides and Red Flag Laws

	(1)	(2)	(3)	(4)
	<i>Firearm Suicides</i>	<i>Firearm Suicides</i>	<i>Firearm Suicides</i>	<i>Firearm Suicides</i>
Red Flag Law	-0.077** (0.029)	-0.018 (0.056)	-0.021 (0.050)	-0.010 (0.013)
Mean	0.826	0.826	0.826	0.826
N	766,648	766,648	766,648	766,648
County FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Demographic, economic, and political controls	No	Yes	Yes	Yes
Other gun law controls	No	No	Yes	Yes
County-specific linear trends	No	No	No	Yes

* Statistically significant at * 10% level; ** at 5% level; *** at 1% level.

Notes: Each column includes results from a separate OLS regression using mortality data from the *National Vital Statistics System* and population data from the *National Cancer Institute's SEER Program*. The sample includes all 50 states and Washington D.C. for the years 1999-2019. Coefficient estimates represent the effect of Red Flag laws on the number of firearm-related suicides per 100,000 population for state s in year y and month m . Standard errors, which are corrected for clustering at the county level, are in parentheses. Population weighted means are also presented. Column (3) represents results after controlling for all variables listed in Table 2. All coefficient estimates are weighted by county population.

Table B2. Firearm Homicides and Red Flag Laws

	(1)	(2)	(3)	(4)
	<i>Firearm Homicides</i>	<i>Firearm Homicides</i>	<i>Firearm Homicides</i>	<i>Firearm Homicides</i>
Red Flag Law	-0.093*** (0.033)	-0.016 (0.076)	-0.016 (0.064)	-0.052*** (0.013)
Mean	0.224	0.224	0.224	0.224
N	766,648	766,648	766,648	766,648
County FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Demographic, economic, and political controls	No	Yes	Yes	Yes
Other gun law controls	No	No	Yes	Yes
County-specific linear trends	No	No	No	Yes

* Statistically significant at * 10% level; ** at 5% level; *** at 1% level.

Notes: Each column includes results from a separate OLS regression using mortality data from the *National Vital Statistics System* and population data from the *National Cancer Institute's SEER Program*. The sample includes all 50 states and Washington D.C. for the years 1999-2019. Coefficient estimates represent the effect of Red Flag laws on the number of firearm-related homicides per 100,000 population for state s in year y and month m . Standard errors, which are corrected for clustering at the county level, are in parentheses. Population weighted means are also presented. Column (3) represents results after controlling for all variables listed in Table 2. All coefficient estimates are weighted by county population.

APPENDIX C

HETEROGENEITY

Table C1. Red Flag Laws and Firearm Suicides by Sex

	(1) Male Firearm Suicides	(2) Male Firearm Suicides	(3) Male Firearm Suicides	(4) Male Firearm Suicides	(5) Female Firearm Suicides	(6) Female Firearm Suicides	(7) Female Firearm Suicides	(8) Female Firearm Suicides
48 Months Prior to Red Flag Law	...	...	-0.057*** (0.020)	-0.025* (0.014)	...	...	-0.015*** (0.005)	0.003 (0.005)
36 Months Prior to Red Flag Law	...	...	-0.096***	-0.056***	...	...	-0.028***	-0.013**
24 Months Prior to Red Flag Law	...	...	(0.022)	(0.014)	...	...	(0.006)	(0.006)
12 Months Prior to Red Flag Law	...	...	-0.110*** (0.030)	-0.060*** (0.022)	...	...	-0.026*** (0.007)	-0.006 (0.005)
Red Flag Law	-0.061** (0.030)	-0.014 (0.021)	-0.121*** (0.034)	-0.070*** (0.026)	-0.019*** (0.007)	-0.003 (0.004)	-0.035*** (0.008)	-0.012** (0.006)
Mean	0.948	0.948	0.948	0.948	0.140	0.140	0.140	0.140
N	12,852	12,852	12,852	12,852	12,852	12,852	12,852	12,852
State-Specific Linear Trends	No	Yes	No	Yes	No	Yes	No	Yes

* Statistically significant at 10% level; ** at 5% level; *** at 1% level.

Notes: Each column includes results from a separate OLS regression using mortality data from the *National Vital Statistics System* and population data from the *National Cancer Institute's SEER Program*. The sample includes all 50 states and Washington D.C. for the years 1999-2019. The dependent variable is equal to the number of firearm-related suicides per 100,000 population for state s in year y and month m for males and females. All models control for covariates listed in Table 2, state fixed effects, and month fixed effects. Standard errors, which are corrected for clustering at the state level, are in parentheses. Pre-treatment, population weighted means are also presented. All coefficient estimates are weighted by state population.

Table C2. Red Flag Laws and Firearm Homicides by Sex

	(1) Male Firearm Homicides	(2) Male Firearm Homicides	(3) Male Firearm Homicides	(4) Male Firearm Homicides	(5) Female Firearm Homicides	(6) Female Firearm Homicides	(7) Female Firearm Homicides	(8) Female Firearm Homicides
48 Months Prior to Red Flag Law	...	...	0.007 (0.022)	-0.028 (0.026)	...	...	-0.007 (0.004)	-0.014** (0.006)
36 Months Prior to Red Flag Law	...	...	-0.012 (0.043)	-0.036 (0.048)	...	...	-0.003 (0.004)	-0.010* (0.005)
24 Months Prior to Red Flag Law	...	...	-0.049 (0.041)	-0.065 (0.051)	...	...	-0.006 (0.006)	-0.014** (0.007)
12 Months Prior to Red Flag Law	...	...	-0.079**	-0.097**	...	...	-0.013**	-0.022***
Red Flag Law	-0.101*** (0.040)	-0.078*** (0.021)	-0.127** (0.053)	-0.141*** (0.050)	-0.015*** (0.005)	-0.012*** (0.003)	-0.019*** (0.006)	-0.028*** (0.007)
Mean	0.579	0.579	0.579	0.579	0.104	0.104	0.104	0.104
N	12,852	12,852	12,852	12,852	12,852	12,852	12,852	12,852
State-Specific Linear Trends	No	Yes	No	Yes	No	Yes	No	Yes

* Statistically significant at 10% level; ** at 5% level; *** at 1% level.

Notes: Each column includes results from a separate OLS regression using mortality data from the *National Vital Statistics System* and population data from the *National Cancer Institute's SEER Program*. The sample includes all 50 states and Washington D.C. for the years 1999-2019. The dependent variable is equal to the number of firearm-related homicides per 100,000 population for state s in year y and month m for males and females. All models control for covariates listed in Table 2, state fixed effects, and month fixed effects. Standard errors, which are corrected for clustering at the state level, are in parentheses. Pre-treatment, population weighted means are also presented. All coefficient estimates are weighted by state population.

Table C3. Red Flag Laws and Firearm Suicides by Race

	(1) Non-white Firearm Suicides	(2) Non-white Firearm Suicides	(3) Non-white Firearm Suicides	(4) Non-white Firearm Suicides	(5) White Firearm Suicides	(6) White Firearm Suicides	(7) White Firearm Suicides	(8) White Firearm Suicides
48 Months Prior to Red Flag Law	...	...	0.005 (0.008)	-0.019*** (0.007)	...	...	0.043*** (0.014)	-0.015 (0.009)
36 Months Prior to Red Flag Law	...	...	-0.015** (0.007)	-0.043*** (0.006)	...	...	-0.071*** (0.015)	-0.037*** (0.010)
24 Months Prior to Red Flag Law	...	...	-0.012 (0.011)	-0.051*** (0.009)	...	...	-0.074*** (0.019)	-0.029** (0.013)
12 Months Prior to Red Flag Law	...	...	-0.020* (0.011)	-0.063*** (0.009)	...	...	-0.085*** (0.019)	-0.037*** (0.010)
Red Flag Law	-0.022** (0.010)	-0.029*** (0.008)	-0.029** (0.014)	-0.076*** (0.012)	-0.044** (0.019)	-0.005 (0.013)	0.086*** (0.023)	-0.036** (0.015)
Mean	0.097	0.097	0.097	0.097	.620	.620	.620	.620
N	12,852	12,852	12,852	12,852	12,852	12,852	12,852	12,852
State-Specific Linear Trends	No	Yes	No	Yes	No	Yes	No	Yes

* Statistically significant at 10% level; ** at 5% level; *** at 1% level.

Notes: Each column includes results from a separate OLS regression using mortality data from the *National Vital Statistics System* and population data from the *National Cancer Institute's SEER Program*. The sample includes all 50 states and Washington D.C. for the years 1999-2019. The dependent variable is equal to the number of firearm-related suicides per 100,000 population for states in year y and month m for non-white and white individuals. All models control for covariates listed in Table 2, state fixed effects, and month fixed effects. Standard errors, which are corrected for clustering at the state level, are in parentheses. Pre-treatment, population weighted means are also presented. All coefficient estimates are weighted by state population.

Table C4. Red Flag Laws and Firearm Homicides by Race

	(1) Non-white Firearm Homicides	(2) Non-white Firearm Homicides	(3) Non-white Firearm Homicides	(4) Non-white Firearm Homicides	(5) White Firearm Homicides	(6) White Firearm Homicides	(7) White Firearm Homicides	(8) White Firearm Homicides
48 Months Prior to Red Flag Law	...	...	0.018 (0.113)	-0.066** (0.030)	...	...	-0.00* (0.006)	-0.018*** (0.005)
36 Months Prior to Red Flag Law	...	...	-0.048 (0.037)	-0.150** (0.060)	...	...	0.011 (0.009)	-0.023*** (0.009)
24 Months Prior to Red Flag Law	...	...	-0.090 (0.061)	-0.209** (0.090)	...	...	-0.021** (0.009)	-0.033*** (0.010)
12 Months Prior to Red Flag Law	...	...	-0.108 (0.067)	-0.236** (0.097)	...	...	-0.018** (0.009)	-0.031*** (0.007)
Red Flag Law	-0.164* (0.091)	-0.124** (0.053)	-0.205* (0.113)	-0.302*** (0.111)	-0.021*** (0.008)	-0.019*** (0.005)	-0.031** (0.012)	-0.046*** (0.009)
Mean	0.230	0.230	0.230	0.230	0.176	0.176	0.176	0.176
N	12,852	12,852	12,852	12,852	12,852	12,852	12,852	12,852
State-Specific Linear Trends	No	Yes	No	Yes	No	Yes	No	Yes

* Statistically significant at 10% level; ** at 5% level; *** at 1% level.

Notes: Each column includes results from a separate OLS regression using mortality data from the *National Vital Statistics System* and population data from the *National Cancer Institute's SEER Program*. The sample includes all 50 states and Washington D.C. for the years 1999-2019. The dependent variable is equal to the number of firearm-related homicides per 100,000 population for state s in year y and month m for non-white and white individuals. All models control for covariates listed in Table 2, state fixed effects, and month fixed effects. Standard errors, which are corrected for clustering at the state level, are in parentheses. Pre-treatment, population weighted means are also presented. All coefficient estimates are weighted by state population.

Table C5. Red Flag Laws and Firearm Suicides by Marital Status

	(1) Single Firearm Suicides	(2) Single Firearm Suicides	(3) Single Firearm Suicides	(4) Single Firearm Suicides	(5) Married Firearm Suicides	(6) Married Firearm Suicides	(7) Married Firearm Suicides	(8) Married Firearm Suicides
48 Months Prior to Red Flag Law	...	...	-0.026*** (0.008)	-0.011* (0.006)	...	...	-0.010** (0.007)	-0.003 (0.004)
36 Months Prior to Red Flag Law	...	...	-0.043*** (0.010)	-0.024*** (0.007)	...	...	-0.019*** (0.005)	-0.010** (0.005)
24 Months Prior to Red Flag Law	...	...	-0.049*** (0.013)	-0.024*** (0.009)	...	...	-0.020*** (0.006)	-0.008 (0.005)
12 Months Prior to Red Flag Law	...	...	-0.055*** (0.012)	-0.029*** (0.007)	...	...	-0.025*** (0.006)	-0.011* (0.006)
Red Flag Law	-0.031** (0.012)	-0.011 (0.008)	-0.058*** (0.014)	-0.034*** (0.010)	-0.008 (0.006)	0.002 (0.004)	-0.019*** (0.007)	-0.007 (0.007)
Mean	0.320	0.320	0.320	0.320	0.218	0.218	0.218	0.218
N	12,852	12,852	12,852	12,852	12,852	12,852	12,852	12,852
State-Specific Linear Trends	No	Yes	No	Yes	No	Yes	No	Yes

* Statistically significant at 10% level; ** at 5% level; *** at 1% level.

Notes: Each column includes results from a separate OLS regression using mortality data from the *National Vital Statistics System* and population data from the *National Cancer Institute's SEER Program*. The sample includes all 50 states and Washington D.C. for the years 1999-2019. The dependent variable is equal to the number of firearm-related suicides per 100,000 population for state *s* in year *y* and month *m* for single and married individuals. All models control for covariates listed in Table 2, state fixed effects, and month fixed effects. Standard errors, which are corrected for clustering at the state level, are in parentheses. Pre-treatment, population weighted means are also presented. All coefficient estimates are weighted by state population.

Table C6. Red Flag Laws and Firearm Homicides by Marital Status

	(1) Single Firearm Homicides	(2) Single Firearm Homicides	(3) Single Firearm Homicides	(4) Single Firearm Homicides	(5) Married Firearm Homicides	(6) Married Firearm Homicides	(7) Married Firearm Homicides	(8) Married Firearm Homicides
48 Months Prior to Red Flag Law	...	...	-0.006 (0.010)	-0.015 (0.013)	...	...	-0.001 (0.002)	-0.007 (0.002)
36 Months Prior to Red Flag Law	...	...	-0.007 (0.021)	-0.016 (0.023)	...	...	-0.001 (0.003)	-0.006* (0.003)
24 Months Prior to Red Flag Law	...	...	-0.027 (0.020)	-0.034 (0.025)	...	...	0.000 (0.004)	0.007 (0.004)
12 Months Prior to Red Flag Law	...	...	-0.038** (0.018)	-0.046** (0.021)	...	...	-0.007** (0.003)	-0.014*** (0.004)
Red Flag Law	-0.053*** (0.018)	-0.040*** (0.010)	-0.066*** (0.025)	-0.071*** (0.025)	-0.005 (0.003)	-0.005** (0.002)	-0.006 (0.005)	-0.013*** (0.003)
Mean	0.269	0.269	0.269	0.269	0.068	0.068	0.068	0.068
N	12,852	12,852	12,852	12,852	12,852	12,852	12,852	12,852
State-Specific Linear Trends	No	Yes	No	Yes	No	Yes	No	Yes

* Statistically significant at 10% level; ** at 5% level; *** at 1% level.

Notes: Each column includes results from a separate OLS regression using mortality data from the *National Vital Statistics System* and population data from the *National Cancer Institute's SEER Program*. The sample includes all 50 states and Washington D.C. for the years 1999-2019. The dependent variable is equal to the number of firearm-related homicides per 100,000 population for state s in year y and month m for single and married individuals. All models control for covariates listed in Table 2, state fixed effects, and month fixed effects. Standard errors, which are corrected for clustering at the state level, are in parentheses. Pre-treatment, population weighted means are also presented. All coefficient estimates are weighted by state population.

Table C8. Red Flag Laws and Firearm Homicides by Age

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Young Firearm Homicides	Young Firearm Homicides	Young Firearm Homicides	Young Firearm Homicides	Middle-Aged Firearm Homicides	Middle-Aged Firearm Homicides	Middle-Aged Firearm Homicides	Middle-Aged Firearm Homicides	Old Firearm Homicides	Old Firearm Homicides	Old Firearm Homicides	Old Firearm Homicides
48 Months Prior to Red Flag Law	...	...	-0.022 (0.017)	-0.036** (0.018)	...	...	0.006 (0.017)	-0.017 (0.022)	...	...	-0.003* (0.003)	-0.008** (0.004)
36 Months Prior to Red Flag Law	...	...	-0.004 (0.034)	-0.020 (0.035)	...	...	-0.006 (0.030)	-0.032 (0.035)	...	...	-0.002 (0.004)	-0.008* (0.004)
24 Months Prior to Red Flag Law	...	...	-0.051 (0.034)	-0.058 (0.037)	...	...	-0.016 (0.032)	-0.041 (0.041)	...	...	0.005 (0.006)	-0.013** (0.006)
12 Months Prior to Red Flag Law	...	...	-0.076** (0.030)	-0.084*** (0.026)	...	...	-0.036 (0.032)	-0.063 (0.041)	...	...	-0.014** (0.005)	-0.023*** (0.005)
Red Flag Law	-0.098*** (0.028)	-0.070*** (0.017)	-0.124*** (0.040)	-0.124*** (0.036)	-0.060** (0.029)	-0.052*** (0.015)	-0.070* (0.037)	-0.094** (0.040)	0.001 (0.005)	0.006 (0.005)	-0.005 (0.006)	-0.020*** (0.007)
Mean	0.362	0.362	0.362	0.362	0.460	0.460	0.460	0.460	0.105	0.105	0.105	0.105
N	12,240	12,240	12,240	12,240	12,240	12,240	12,240	12,240	12,240	12,240	12,240	12,240
State-Specific Linear Trends	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

* Statistically significant at 10% level; ** at 5% level; *** at 1% level.

Notes: Each column includes results from a separate OLS regression using mortality data from the National Vital Statistics System and population data from the National Cancer Institute's SEER Program. The sample includes all 50 states and Washington D.C. for the years 1999-2019. The dependent variable is equal to the number of firearm-related homicides per 100,000 population for state s in year y and month m for young, middle-aged, and old individuals. All models control for covariates listed in Table 2, state fixed effects, and month fixed effects. Standard errors, which are corrected for clustering at the state level, are in parentheses. Pre-treatment, population weighted means are also presented. All coefficient estimates are weighted by state population.

APPENDIX D

ALTERNATIVE SAMPLES

Table D1. Border State Sample

State	Has RF Law	Included in Counterfactual
Alabama		X
Alaska		
Arizona		X
Arkansas		
California	X	
Colorado		
Connecticut	X	
DC	X	
Delaware	X	
Florida	X	
Georgia		X
Hawaii		
Idaho		X
Illinois	X	
Indiana	X	
Iowa		X
Kansas		
Kentucky		X
Louisiana		
Maine*		X
Maryland	X	
Massachusetts	X	
Michigan		X
Minnesota		
Mississippi		
Missouri		X
Montana		
Nebraska		
Nevada		X
New Hampshire		X
New Jersey	X	
New Mexico		
New York	X	
North Carolina		
North Dakota		
Ohio		X
Oklahoma		
Oregon	X	
Pennsylvania		X
Rhode Island	X	
South Carolina		
South Dakota		
Tennessee		
Texas		
Utah		
Vermont	X	
Virginia		X
Washington	X	
West Virginia		X
Wisconsin		X
Wyoming		

Notes: States included in the control group directly border a state that adopted a Red Flag law.

*Does not directly border a Red Flag state but is less than 20 miles from Massachusetts, a Red Flag state since 2018.

Tables D2. Blue State Sample

State	Has RF Law	Included in Counterfactual
Alabama		
Alaska		
Arizona		
Arkansas		
California	X	
Colorado		X
Connecticut	X	
DC	X	
Delaware	X	
Florida	X	
Georgia		
Hawaii		X
Idaho		
Illinois	X	
Indiana	X	
Iowa		
Kansas		
Kentucky		
Louisiana		
Maine		X
Maryland	X	
Massachusetts	X	
Michigan		X
Minnesota		X
Mississippi		
Missouri		
Montana		
Nebraska		
Nevada		X
New Hampshire		X
New Jersey	X	
New Mexico		X
New York	X	
North Carolina		
North Dakota		
Ohio		
Oklahoma		
Oregon	X	
Pennsylvania		X
Rhode Island	X	
South Carolina		
South Dakota		
Tennessee		
Texas		
Utah		
Vermont	X	
Virginia		X
Washington	X	
West Virginia		
Wisconsin		X
Wyoming		

Notes: States included in the control group voted for a democratic president in at least four of the last six presidential elections.

Table D3. Regional Sample

State	Has RF Law	Included in Counterfactual
Alabama		X
Alaska		
Arizona		
Arkansas		
California	X	
Colorado		
Connecticut	X	
DC	X	
Delaware	X	
Florida	X	
Georgia		X
Hawaii		
Idaho		
Illinois	X	
Indiana	X	
Iowa		
Kansas		
Kentucky		
Louisiana		X
Maine		X
Maryland	X	
Massachusetts	X	
Michigan		
Minnesota		X
Mississippi		X
Missouri		
Montana		
Nebraska		
Nevada		
New Hampshire		X
New Jersey	X	
New Mexico		
New York	X	
North Carolina		X
North Dakota		
Ohio		X
Oklahoma		
Oregon	X	
Pennsylvania		X
Rhode Island	X	
South Carolina		X
South Dakota		
Tennessee		
Texas		X
Utah		
Vermont	X	
Virginia		X
Washington	X	
West Virginia		
Wisconsin		X
Wyoming		

Notes: States included in the control group are in the contiguous US and border an ocean or one of the Great Lakes

Table D4. Population Density Sample

State	Has RF Law	Included in Counterfactual
Alabama		X
Alaska		
Arizona		
Arkansas		
California	X	
Colorado		
Connecticut	X	
DC	X	
Delaware	X	
Florida	X	
Georgia		X
Hawaii		
Idaho		
Illinois	X	
Indiana	X	
Iowa		
Kansas		
Kentucky		X
Louisiana		X
Maine		
Maryland	X	
Massachusetts	X	
Michigan		X
Minnesota		
Mississippi		
Missouri		X
Montana		
Nebraska		
Nevada		
New Hampshire		X
New Jersey	X	
New Mexico		
New York	X	
North Carolina		X
North Dakota		
Ohio		X
Oklahoma		
Oregon	X	
Pennsylvania		X
Rhode Island	X	
South Carolina		X
South Dakota		
Tennessee		X
Texas		X
Utah		
Vermont	X	
Virginia		
Washington	X	
West Virginia		X
Wisconsin		X
Wyoming		

Notes: Non-Red Flag states in the top 30 most densely populated US states are included in the control group. These states are also within one standard deviation of the mean population density of Red Flag states, excluding Washington, DC.

Table D5. Future Red Flag State Sample

State	Has RF Law	Included in Counterfactual	Notes
Alabama			
Alaska			
Arizona		X	Currently introduced as a bill
Arkansas			
California	X		
Colorado		X	Adopted in 2020
Connecticut	X		
DC	X		
Delaware	X		
Florida	X		
Georgia			
Hawaii		X	Adopted in 2020
Idaho			
Illinois	X		
Indiana	X		
Iowa			
Kansas			
Kentucky		X	Proposed but not passed
Louisiana			
Maine		X	"Yellow Flag" Law went into effect July 1, 2020.
Maryland	X		
Massachusetts	X		
Michigan		X	Proposed but not passed
Minnesota			
Mississippi			
Missouri			
Montana			
Nebraska		X	Proposed but not passed
Nevada		X	Adopted in 2020
New Hampshire		X	Passed in legislature but vetoed by governor
New Jersey	X		
New Mexico		X	Adopted in 2020
New York	X		
North Carolina		X	Shut down in legislature
North Dakota			
Ohio		X	Governor called for and retracted RF proposal
Oklahoma			
Oregon	X		
Pennsylvania		X	Proposed but not passed
Rhode Island	X		
South Carolina			
South Dakota			
Tennessee		X	Introduced in legislature but declined by state Republicans
Texas			
Utah			
Vermont	X		
Virginia		X	Adopted in 2020
Washington	X		
West Virginia			
Wisconsin			
Wyoming			

Table D6. Leads of Red Flag Laws

	(1)	(2)	(3)	(4)
	<i>Firearm Suicides</i>	<i>Firearm Suicides</i>	<i>Firearm Homicides</i>	<i>Firearm Homicides</i>
48 Months Prior to Red Flag Law	-0.026** (0.011)	-0.013* (0.008)	-0.002 (0.014)	-0.018 (0.014)
36 Months Prior to Red Flag Law	-0.052*** (0.013)	-0.035*** (0.010)	0.004 (0.025)	-0.018 (0.026)
24 Months Prior to Red Flag Law	-0.057*** (0.017)	-0.032** (0.012)	-0.010 (0.026)	-0.032 (0.028)
12 Months Prior to Red Flag Law	-0.067*** (0.017)	-0.041*** (0.011)	-0.026 (0.025)	-0.050* (0.026)
Red Flag Law	-0.067*** (0.021)	-0.040*** (0.013)	-0.053 (0.028)	-0.069** (0.029)
Mean	0.490	0.490	0.331	0.331
N	12,852	12,852	12,852	12,852
State-specific linear trends	No	Yes	No	Yes

* Statistically significant at 10% level; ** at 5% level; *** at 1% level.

Notes: Each column includes results from a separate OLS regression using mortality data from the *National Vital Statistics System* and population data from the *National Cancer Institute's SEER Program*. The sample includes all states included in Appendix Table 13 for the years 1999-2019. The dependent variable is equal to the number of deaths per 100,000 population for state *s* in year *y* and month *m* for firearm suicides and firearm homicides. All models control for covariates listed in Table 2, state fixed effects, and month fixed effects. Standard errors, which are corrected for clustering at the state level, are in parentheses. Pre-treatment, population weighted means are also presented. All coefficient estimates are weighted by state population.

Table D7. Leads of Red Flag Laws

	(1)	(2)	(3)	(4)
	<i>Firearm Suicides</i>	<i>Firearm Suicides</i>	<i>Firearm Homicides</i>	<i>Firearm Homicides</i>
48 Months Prior to Red Flag Law	-0.022*	-0.009	-0.006	-0.013
	(0.011)	(0.007)	(0.013)	(0.012)
36 Months Prior to Red Flag Law	-0.043***	-0.027***	0.002	-0.008
	(0.014)	(0.008)	(0.024)	(0.024)
24 Months Prior to Red Flag Law	-0.046**	-0.022*	-0.009	-0.015
	(0.018)	(0.011)	(0.024)	(0.026)
12 Months Prior to Red Flag Law	-0.052***	-0.027***	-0.025	-0.033
	(0.017)	(0.010)	(0.022)	(0.024)
Red Flag Law	-0.050***	-0.027**	-0.047*	-0.049
	(0.017)	(0.013)	(0.027)	(0.029)
Mean	0.437	0.437	0.302	0.302
N	12,852	12,852	12,852	12,852
State-specific linear trends	No	Yes	No	Yes

* Statistically significant at 10% level; ** at 5% level; *** at 1% level.

Notes: Each column includes results from a separate OLS regression using mortality data from the *National Vital Statistics System* and population data from the *National Cancer Institute's SEER Program*. The sample includes all states included in Appendix Table 14 for the years 1999-2019. The dependent variable is equal to the number of deaths per 100,000 population for state *s* in year *y* and month *m* for firearm suicides and firearm homicides. All models control for covariates listed in Table 2, state fixed effects, and month fixed effects. Standard errors, which are corrected for clustering at the state level, are in parentheses. Pre-treatment, population weighted means are also presented. All coefficient estimates are weighted by state population.

Table D8. Leads of Red Flag Laws

	(1)	(2)	(3)	(4)
	<i>Firearm Suicides</i>	<i>Firearm Suicides</i>	<i>Firearm Homicides</i>	<i>Firearm Homicides</i>
48 Months Prior to Red Flag Law	-0.026** (0.010)	-0.010 (0.007)	-0.004 (0.013)	-0.018 (0.014)
36 Months Prior to Red Flag Law	-0.052*** (0.012)	-0.030*** (0.009)	-0.004 (0.022)	-0.019 (0.024)
24 Months Prior to Red Flag Law	-0.057*** (0.016)	-0.026** (0.012)	-0.023 (0.022)	-0.033 (0.026)
12 Months Prior to Red Flag Law	-0.066*** (0.016)	-0.033*** (0.009)	-0.039* (0.021)	-0.051** (0.023)
Red Flag Law	-0.065*** (0.022)	-0.030** (0.013)	-0.065** (0.026)	-0.074*** (0.026)
Mean	0.479	0.479	0.344	0.344
N	12,852	12,852	12,852	12,852
State-specific linear trends	No	Yes	No	Yes

* Statistically significant at 10% level; ** at 5% level; *** at 1% level.

Notes: Each column includes results from a separate OLS regression using mortality data from the *National Vital Statistics System* and population data from the *National Cancer Institute's SEER Program*. The sample includes all states included in Appendix Table 15 for the years 1999-2019. The dependent variable is equal to the number of deaths per 100,000 population for state *s* in year *y* and month *m* for firearm suicides and firearm homicides. All models control for covariates listed in Table 2, state fixed effects, and month fixed effects. Standard errors, which are corrected for clustering at the state level, are in parentheses. Pre-treatment, population weighted means are also presented. All coefficient estimates are weighted by state population.

Table D9. Leads of Red Flag Laws

	(1)	(2)	(3)	(4)
	<i>Firearm Suicides</i>	<i>Firearm Suicides</i>	<i>Firearm Homicides</i>	<i>Firearm Homicides</i>
48 Months Prior to Red Flag Law	-0.030*** (0.010)	-0.013* (0.007)	-0.008 (0.012)	-0.017 (0.015)
36 Months Prior to Red Flag Law	-0.055*** (0.012)	-0.033*** (0.009)	-0.007 (0.023)	-0.017 (0.026)
24 Months Prior to Red Flag Law	-0.059*** (0.016)	-0.029*** (0.011)	-0.026 (0.023)	-0.032 (0.028)
12 Months Prior to Red Flag Law	-0.069*** (0.016)	-0.036*** (0.009)	-0.043* (0.023)	-0.050* (0.026)
Red Flag Law	-0.068*** (0.023)	-0.033** (0.013)	-0.072** (0.029)	-0.073** (0.029)
Mean	0.499	0.499	0.357	0.357
N	12,852	12,852	12,852	12,852
State-specific linear trends	No	Yes	No	Yes

* Statistically significant at 10% level; ** at 5% level; *** at 1% level.

Notes: Each column includes results from a separate OLS regression using mortality data from the *National Vital Statistics System* and population data from the *National Cancer Institute's SEER Program*. The sample includes all states included in Appendix Table 16 for the years 1999-2019. The dependent variable is equal to the number of deaths per 100,000 population for state *s* in year *y* and month *m* for firearm suicides and firearm homicides. All models control for covariates listed in Table 2, state fixed effects, and month fixed effects. Standard errors, which are corrected for clustering at the state level, are in parentheses. Pre-treatment, population weighted means are also presented. All coefficient estimates are weighted by state population.

Table D10. Leads of Red Flag Laws

	(1)	(2)	(3)	(4)
	<i>Firearm Suicides</i>	<i>Firearm Suicides</i>	<i>Firearm Homicides</i>	<i>Firearm Homicides</i>
48 Months Prior to Red Flag Law	-0.023*	-0.009	-0.002	-0.013
	(0.012)	(0.007)	(0.014)	(0.013)
36 Months Prior to Red Flag Law	-0.043***	-0.026***	0.001	-0.013
	(0.014)	(0.008)	(0.024)	(0.025)
24 Months Prior to Red Flag Law	-0.049**	-0.023**	-0.010	-0.024
	(0.018)	(0.011)	(0.024)	(0.027)
12 Months Prior to Red Flag Law	-0.058***	-0.032***	-0.026	-0.042
	(0.019)	(0.011)	(0.022)	(0.025)
Red Flag Law	-0.052**	-0.031**	-0.050*	-0.064**
	(0.020)	(0.013)	(0.025)	(0.028)
Mean	0.483	0.483	0.324	0.324
N	12,852	12,852	12,852	12,852
State-specific linear trends	No	Yes	No	Yes

* Statistically significant at 10% level; ** at 5% level; *** at 1% level.

Notes: Each column includes results from a separate OLS regression using mortality data from the *National Vital Statistics System* and population data from the *National Cancer Institute's SEER Program*. The sample includes all states included in Appendix Table 17 for the years 1999-2019. The dependent variable is equal to the number of deaths per 100,000 population for state *s* in year *y* and month *m* for firearm suicides and firearm homicides. All models control for covariates listed in Table 2, state fixed effects, and month fixed effects. Standard errors, which are corrected for clustering at the state level, are in parentheses. Pre-treatment, population weighted means are also presented. All coefficient estimates are weighted by state population.

Table D11. Firearm Homicides and Red Flag Laws

	(1)	(2)	(3)	(4)
	<i>Firearm Homicides</i>	<i>Firearm Homicides</i>	<i>Firearm Homicides</i>	<i>Firearm Homicides</i>
Red Flag Law	-0.041 (0.030)	-0.029* (0.016)	-0.037** (0.015)	-0.028* (0.015)
Mean	0.302	0.302	0.302	0.302
N	12,852	12,852	12,852	12,852
Demographic, economic, and political controls	No	Yes	Yes	Yes
Other gun law controls	No	No	Yes	Yes
State-specific linear trends	No	No	No	Yes

* Statistically significant at 10% level; ** at 5% level; *** at 1% level.

Notes: Each column includes results from a separate OLS regression using mortality data from the *National Vital Statistics System* and population data from the *National Cancer Institute's SEER Program*. The sample includes all states included in Appendix Table 14 for the years 1999-2019. Coefficient estimates represent the effect of Red Flag laws on the number of firearm-related homicides per 100,000 population for state s in year y and month m . Standard errors, which are corrected for clustering at the state level, are in parentheses. Pre-treatment, population weighted means are also presented. Columns (3), (4), and (5) control for all variables listed in Table 2. All results control for state fixed effects and month fixed effects. All coefficient estimates are weighted by state population.

Table D12. Firearm Homicides and Red Flag Laws

	(1)	(2)	(3)	(4)
	<i>Firearm Homicides</i>	<i>Firearm Homicides</i>	<i>Firearm Homicides</i>	<i>Firearm Homicides</i>
Red Flag Law	-0.051 (0.033)	-0.029 (0.019)	-0.041** (0.017)	-0.037*** (0.013)
Mean	0.324	0.324	0.324	0.324
N	12,852	12,852	12,852	12,852
Demographic, economic, and political controls	No	Yes	Yes	Yes
Other gun law controls	No	No	Yes	Yes
State-specific linear trends	No	No	No	Yes

* Statistically significant at 10% level; ** at 5% level; *** at 1% level.

Notes: Each column includes results from a separate OLS regression using mortality data from the *National Vital Statistics System* and population data from the *National Cancer Institute's SEER Program*. The sample includes all states included in Appendix Table 17 for the years 1999-2019. Coefficient estimates represent the effect of Red Flag laws on the number of firearm-related homicides per 100,000 population for state s in year y and month m . Standard errors, which are corrected for clustering at the state level, are in parentheses. Pre-treatment, population weighted means are also presented. Columns (3), (4), and (5) control for all variables listed in Table 2. All results control for state fixed effects and month fixed effects. All coefficient estimates are weighted by state population.