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The Impact of Liberalized Concealed Carry Laws on State Homicide Rates

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Abstract: *Liberalized concealed carry laws test how firearm legislation affects crime in the US. This study analyzes the relationship between these laws, total homicide, and firearm homicide using panel data from 1980 to 2018 across all 50 states and the District of Columbia. The analysis uses multivariate regression with state and time-fixed effects and applies a general-to-specific procedure to select control variables. Robustness checks, including a generalized synthetic control model, confirm the findings. The results show no statistically significant relationship between shall-issue or permitless carry laws and homicide rates, even at the 10% level. The findings remain consistent across alternative model specifications. If these effects are truly null, liberalized concealed carry laws may have positive social implications, offering valuable insights for policymakers.*

Keywords: *Gun Control; Constitutional Carry; Homicide; Permitless Carry; Concealed Carry; Right-to-Carry; Liberty*

INTRODUCTION

In 2018, there were 18,830 homicides in the United States, and 13,481 of those were committed with firearms—approximately 71% (CDC 2020). Because of America's elevated rates of homicide compared to other countries, there has been widespread scholarly interest in gun policy and related violence.

Beginning in the mid-1980s, states began to rapidly liberalize their Right-to-Carry (RTC) laws in the form of "shall-issue" laws, which require states to issue a license if a citizen meets the minimum requirements for a permit. Before the 1980s, most states were either "may-issue", which gave discretion to the issuing authority as to whether or not the permit ought to be issued, or "no-issue", which outright banned concealed carry in public. Beginning in the early 2000s, yet another policy, colloquially known as "constitutional carry", which we call permitless carry, has emerged, which allows all law-abiding citizens above the age of 21 to carry a firearm concealed without a license or training. Alaska, in 2003, was one of the first states to implement this policy, though Vermont has had it since the early 20th century due to the wording of its state constitution. As of mid-2022, 25 states had instituted permitless carry laws. Table 1 displays the adoption years of liberalized concealed carry laws by state through 2022.

As can be seen in Table 1, the adoption of permitless carry has been exceedingly rapid. In 2021 alone, five states adopted permitless carry, and several more states are considering adopting the legislation in 2023. The Supreme Court's recent *New York State Rifle & Pistol Association, Inc. v. Bruen* (2022) case further liberalized RTC laws across the United States, holding that the right to carry a firearm outside one's home is constitutional. By voiding New York's requirement that permit applicants must demonstrate "proper cause", the decision

eliminated one of the main ways the remaining may-issue jurisdictions across the United States exercised discretion. Given the exceedingly rapid trend towards permitless carry and shall-issue concealed carry laws imposed by the courts and democratically elected legislators, it is important to test the impact of RTC laws, especially permitless carry laws, on criminological outcomes.

Table 1: Adoption Years of Liberalized Concealed Carry Laws by State (Source: Own depiction)

State	Shall-Issue	Permitless Carry	State	Shall-issue	Permitless Carry
Alabama	1975	2022	Montana	1991	2021
Alaska	1994	2003	Nebraska	2007	
Arizona	1994	2010	Nevada	1995	
Arkansas	1995	2018	New Hampshire	1923	2017
Colorado	2003		New Mexico	2004	
Connecticut	1969		North Carolina	1995	
D.C.	2017		North Dakota	1985	2017
Florida	1987		Ohio	2004	2022
Georgia	1989	2022	Oklahoma	1996	2019
Idaho	1990	2016	Oregon	1990	
Illinois	2013		Pennsylvania	1989	
Indiana	1980	2022	South Carolina	1996	
Iowa	2011	2021	South Dakota	1985	2019
Kansas	2007	2015	Tennessee	1996	2021
Kentucky	1996	2019	Texas	1996	2021
Louisiana	1996		Utah	1995	2021
Maine	1985	2015	Vermont	NA	1903
Michigan	2001		Virginia	1995	
Minnesota	2003		Washington	1935	
Mississippi	1990	2016	West Virginia	1989	2016
Missouri	2004	2017	Wisconsin	2011	
			Wyoming	1994	2011

*Table 1 includes the adoption dates for both shall-issue and permitless carry-up through mid-2022 using Version 4 of the RAND Corporation Firearms Law Database. According to media reports, as of 2024 (after the study period), 29 states have permitless carry laws.[1]

This paper contributes to the literature by methodologically improving from prior studies in multiple ways. First, this study is one of the first papers to analyze permitless carry laws' impact on homicide. Before this point, the data was limited as many states had only recently adopted these laws, and thus, the applicability of previous results was limited (Hamill et al. 2019).

This paper, however, includes 12 states that have passed such ordinances during the period studied. By studying permitless carry, this paper offers a unique test of both the "more guns, less crime" hypothesis. If these laws were to impact homicide either positively or

[1]See: Slider, Gary. 2024. "Permitless Carry States". Available at: https://www.handgunlaw.us/documents/Permitless_Carry_States.pdf (last updated: 9.10.2024)

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negatively, we would expect their effects to be largest in permitless carry states, given that these laws allow *any* non-criminal adult to carry a concealed firearm without any licensure or training.

Second, our paper attempts to reduce the likelihood of endogeneity bias. This paper spans an extended time: 1980-2018 (i.e., 39 years). While some recent studies extended their datasets past the mid-2000s, they often excluded data from the 1980s (Siegel et al. 2017; Zimmerman 2014). This data limitation may have significant empirical consequences since concealed carry laws passed in the 1980s typically have lower fees, training requirements, and minimum ages. For example, the average inflation-adjusted (2013 dollars) fee to obtain a concealed carry license in states that passed their laws in the 1980s was $85, but the average fee for states that passed their laws in the 2000s was $113.82 (Lott 2016). Failing to include data from the 1980s removes a significant amount of data from these early shall-issue adopters with higher rates of public firearm carrying than recent adopters due to their lower training, age, and fee requirements. This difference between the 1980s and 2000s may also explain the different empirical findings between early and more recent studies.

We also attempt to reduce endogeneity problems by including a larger number of control variables than in many prior studies. One of the major criticisms of past firearms research is its failure to include statistically significant control variables in the crime equation. Papers with multiple statistically significant control variables produce radically different results than those with few or no significant control variables (Kleck 2018).

Third, our paper is one of the first to use a general-to-specific modeling procedure suggested by Moody and Marvell (2010) and the first to apply it to permitless carry laws. This procedure eliminates the somewhat arbitrary nature of selecting control variables and prevents over-parameterization that makes explanatory variables insignificant. It helps balance between too few and too many control variables.

Finally, our paper uses a novel version of the synthetic control method developed by Xu (2017) to test the robustness of our panel regression results. This method has many significant advantages over an early version of the synthetic control method used by other researchers in this field, such as the ability to produce uncertainty estimates. It allows us to make a unique methodological contribution to the study of firearms. It also allows us to have more confidence in our results' robustness, especially concerning permitless carry.

LITERATURE REVIEW

Theories and Mechanisms

There has been a heated debate on the potential effects of concealed carry laws, both in the academic literature and political circles. It is understandable that firearms, in particular, may lead to competing theoretical perspectives: fundamentally, firearms are merely tools of power that make it easier for individuals to achieve different goals (Kleck and McElrath 1991).

In the hands of an aggressor, firearms are violence-promoting: they make it easier to commit violence and achieve whatever ends the criminal intends, whether that be the acquisition of money, sexual gratification, or domination. Likewise, in the hands of an individual typically seen as "non-criminal", firearms may facilitate violence by simply making violence easier if that individual happens to stumble into a situation where emotional tensions are high.

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On the other hand, in the same way, firearms make violence easier to commit, they also make it easier to defend oneself, especially if one is at a physical disadvantage. Because of this, guns in the hands of law-abiding citizens may be violence-inhibiting. Kleck (1997) argues that whether or not firearms increase or decrease violence is dependent upon whether the benefits conferred upon potential crime victims by firearm ownership outweigh the costs of gun availability among the criminally inclined. Whether gun availability, or any particular gun law, increases, decreases, or has no impact on crime is therefore ambiguous: gun ownership, gun carrying, and gun availability can theoretically increase or decrease crime. This leaves us with three hypotheses in this paper: first, that liberalized concealed carry laws reduce crime by arming law-abiding citizens; second, that liberalized concealed carry laws increase crime by facilitating violence; and third, that RTC laws have no impact on crime, either because the first two mechanisms cancel each other out or because they do not significantly change criminal or citizen behavior.

Theory #1: The More Guns, Less Crime Hypothesis

Some scholars have argued that these laws primarily serve to deter crime and save lives (Lott and Mustard 1997; Lott 2010). Drawing from economic theory, these scholars maintain that armed civilians may serve to deter crime by increasing the cost of perpetrating crime. As noted by Kleck (1997), firearms in the hands of law-abiding citizens give them a powerful tool of violence when faced with an attacker. This view has made its way into many American colloquialisms, such as "God created man, but Samuel Colt made man equal". Using an economic framework of criminal behavior where it is argued that criminals make cost-benefit analyses before engaging in violence (see, e.g., Becker 1968), the pathway toward deterrence is clear: by making it so any potential victim can successfully resist crime, a criminal may simply forgo engaging in aggression if he or she feels as though the victim may be armed. In fact, in the case of concealed carry, the deterrence effect may be especially strong since criminals do not know who is armed. As a result, public carrying may have positive externalities impacting individuals who are not carrying.

Firearms may also reduce crime even in the absence of deterrence. Kleck (1997) and others believe the primary violence-reducing effect of firearms is less from deterrence but rather from widespread defensive gun use. A large number of surveys have suggested defensive gun use is a widespread phenomenon in the United States (Kleck and Gertz 1995; English 2021; Kleck 2021), and literature further shows that defensive action with a firearm is one of the most effective courses of action for victims who wish to reduce the likelihood the crime against them is completed (Kleck and DeLone 1993; Tark and Kleck 2006; Hart and Miethe 2009). While other scholars argue for significantly lower defensive gun use estimates (Hemenway 1997), and significant uncertainty remains regarding the specific number of defensive gun uses per year (Rand Corp 2018), the salient fact remains: even lower-end estimates suggest thousands of potential defensive gun uses per year. Suppose RTC laws were to increase the rate of defensive gun use by facilitating gun ownership and carrying among law-abiding individuals. In that case, it is possible that these laws may reduce crime.

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Theory #2: The Facilitation Hypothesis

Opponents of liberalized concealed carry laws have argued that these laws lead to increased aggression. Some scholars have called this the facilitation hypothesis since, in this model, the presence of a firearm facilitates violence by enhancing the power of the aggressor (Altheimer 2010; Smith et al. 2021; Cook and Ludwig 2006). In the same way, firearms in the hands of law-abiding citizens give them a powerful tool with which to exact violence on attackers. Firearms give criminals a tool that allows for impersonal and deadly violence with which to achieve their ends. In order to commit violence with a weapon other than a firearm—say, with a knife, a blunt instrument, or one's own body—there is a significant amount of intentionality, and there is also a much higher risk to the attacker. Indeed, criminals typically do not use firearms to maximize harm to their victims but also to reduce their own risk (Zimring 1968). Thus, in the same way, guns may reduce crime by increasing the cost side of the equation (armed victims), guns also have the potential to reduce risk to the attacker (by making it easier to kill and intimidate victims—since victims, too, are aware of the threat of an armed attacker). Overall, the direct pathway through which firearms can increase crime is straightforward: it facilitates violence by making it easier for criminals to do their job.

Liberalized concealed carry laws may also increase crime by making it easier for criminals to acquire handguns via theft (Donahue et al. 2019). Indeed, suppose more people are carrying a firearm in public. In that case, it stands to reason that criminals will have more opportunities to steal firearms from vehicles or other locations as citizens carrying in public go about their daily lives. Since firearms remain illegal in many areas even when carrying laws are loosened—like on Federal property, schools, or private gun-free zones—individuals who carry their firearm may face many situations where they must leave their firearm in a car or an otherwise unsecured location in order to comply with the laws of their state.

In the case of permitless carry, where any adult with a clean criminal record can carry a firearm without training, it seems likely that higher rates of concealed weapons carrying could increase the number of violent encounters as well. One need not be a criminal in order to commit violence: it is easy to envision scenarios where firearms lead to a miniature arms race where tensions are high and what otherwise would have been a nonevent turns into a deadly tragedy (Krishnamurthi and Salib 2022). From this perspective, making it so citizens can legally carry firearms outside of their homes turns what may have been a dispute between a shopkeeper, a customer, or a harmless stranger walking to the same bus stop as you at night turns into a deadly assault. As with permitless carry laws, making it so anyone can be armed without the requisite training could easily multiply the situations where impromptu fights turn deadly (Zimring and Hawkins 1997). As a result, RTC laws may increase crime and reduce public safety.

Theory #3: The No Effect Hypothesis

It is also possible that these laws may have no impact on crime at all. Perhaps both deterrence and facilitation exist simultaneously, leading to a null effect canceling each other out, or perhaps neither criminal deterrence nor aggression is impacted by the liberalization of concealed carry laws. Indeed, some research suggests that the public's perception of the

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number of firearms carriers is not significantly correlated with a state's concealed carry law, so assuming criminals and the general public have the same general knowledge about gun laws, it is possible that criminals may not know enough about a state's gun laws or gun culture to be deterred by changes in concealed carry policies (Fortunato 2015). If this were the case, arguments related to deterrence may be moot. Still, the other mechanism through which firearms may reduce violence—defensive gun use—may still be at play.

It is also possible for the facilitation hypothesis to be on weak ground. Concealed carry holders are extremely law-abiding: very rarely are they convicted of, arrested for, or charged with crimes, violent or otherwise (Lott 2010). Of course, as noted above, one need not be a criminal in order for a firearm to lead to a deadly escalation of force, but cases where concealed carry permit holders committed violence—even if it was a freak incident unlikely to be repeated—would still be counted, and carry permits of the individual(s) involved would be revoked. Given that the vast majority of permit revocations are due to trivial offenses such as accidentally carrying a firearm into a gun-free zone (see Lott 2010), it seems likely that concealed carry permit holders are not part of a wave of facilitated violence. Thus, at least in shall-issue concealed carry regimes, it seems that holding a concealed carry permit and carrying a firearm does not facilitate violence. On the other hand, in a permitless carry state where many individuals will be carrying without a permit or training, facilitation may remain a pressing concern.

Concealed carry laws may also have little impact on actual carrying behavior for either criminals or law-abiding individuals. If that were the case, the effects of these laws on crime would be nil: regardless of whether laws are loose or strict, people are carrying (or not carrying) either way. The existing research shows uncertain effects of liberalized concealed carry laws on gun ownership outcomes (Steidley and Kosla 2018), and unfortunately, research on carrying behavior is nonexistent. As noted above, the public is typically unaware of state carry laws, meaning it is possible that law-abiding citizens are not informed enough to change their carrying behavior even if a state implements permitless carry (Fortunado 2015). Future research is needed to determine if these laws actually change carrying behavior.

There are, therefore, many reasons we may expect liberalized concealed carry laws to have no effect on homicide: perhaps the effects outlined in Theories 1 and 2 simply cancel each other out, or perhaps the mechanisms simply do not apply to the specific case of liberalized carry laws. Most interestingly, perhaps it is a third option: shall-issue and permitless carry laws neither impact criminal nor law-abiding carrying behavior. Criminals who do not want to follow laws in the first place (and who are barred from carrying if they have a criminal record under all carry policy regimes) continue to carry firearms in public no matter what the law says. Law-abiding civilians either do not know enough about the legal status of firearms to change their behavior in response to loosened carry law or, like criminals, were already carrying beforehand either due to ignorance of the law or because they are willing to take a calculated risk in order to defend themselves outside of the home.

Previous Empirical Research

RTC laws present a good test for the three hypotheses above. By making it so law-abiding individuals can carry firearms in public, if guns were to deter crime, we would expect to

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see it as public carry laws are liberalized. On the other hand, loosened RTC—especially permitless carry, which removes training requirements entirely and weakens regulatory oversight apparatuses—serves almost as the perfect test for the idea that guns in the hands of law-abiding citizens would unnecessarily escalate day-to-day confrontations and conflicts into homicidal ones.

Unfortunately, the empirical findings on the effects of concealed carry laws are just as mixed as the theoretical literature. Many early empirical studies suggested that these laws reduced violent crime, including murder (Lott and Mustard 1997; Moody 2001; Plassman and Tideman 2001). Others found null effects (Black and Nagin 1998; Ludwig 1998). The academic debate at that time was between negative effects and null effects, but early literature reviews concluded that the majority of early studies found that liberalized concealed carry laws reduced crime, especially murder (Moody and Marvell 2008).

However, the debate in recent years has shifted. Using data between 1991 and 2016, Siegel et al. (2017) found that shall-issue concealed carry laws were associated with *elevated* homicide rates in support of Theory 2. While not analyzing murder or homicide rates directly, Donahue et al. (2019) found that shall-issue concealed carry laws were associated with elevated levels of overall violent crime, and Doucette et al. (2022) argue that shall-issue laws increase assault. Using a similar dataset, however, different authors have found no effect (Moody and Marvell 2019). Barati (2016) found that shall-issue concealed carry laws reduce crime rates in states that previously had no-issue laws but had no effect on crime when the state transitioned from may-issue to shall-issue, while Gius (2019) found that shall-issue laws elevate state-level murder rates by 4.9% with a fixed effects model, but his synthetic control methods found no impact of shall-issue laws on murder. An earlier paper by Gius found that *restrictive* concealed carry laws increased state-level murder rates (Gius 2013), confirming Theory 1.

While the research on shall-issue concealed carry laws is mixed, the research on permitless carry laws is nearly nonexistent. Only a few studies have studied permitless carry laws' impact on violent crime outcomes. Adams (2022) included permitless carry as a covariate. He found these laws may be correlated with reduced criminogenic outcomes, but the study focused primarily on the effects of stand-your-ground laws, not concealed carry laws. Hamill et al. (2019) generally found no significant shifts in homicide when states liberalized their concealed carry laws, including the adoption of permitless carry; neither did Smith and Petrocelli (2018) find an effect when focusing on handgun-related crime in Tuscon, Arizona. The existing research on permitless carry and criminogenic outcomes is limited and inconclusive.

Given this mixed empirical evidence of prior studies, this paper aims to provide a more robust answer to the question: what are the effects of liberalized concealed carry laws, especially permitless carry laws, on homicide rates? We examine the relationship between shall-issue and permitless concealed carry laws and homicide rates across all 50 US states and D.C. from 1980 to 2018. We focus on homicide because many scholars have argued that the primary effect of firearms is not necessarily to increase total violence but rather to turn what otherwise would have been non-deadly assaults into deadly homicides (Braga et al. 2021). Not only that, but homicides are especially gruesome, well-documented, and socially relevant. Multiple empirical specifications were tested, all of which confirm the robustness of our main finding that these laws have no statistically significant effect on homicide.

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METHODS

Dependent variables

The primary outcome variable in this study is total homicide rates. We also used firearm homicide rates as our secondary outcome variable to further examine the validity of the aggression hypothesis because if liberalized concealed carry laws increased homicide; the effect would be most pronounced in homicides committed with a firearm. These data were acquired from the CDC's WONDER database. They were extracted from the National Center for Health Statistics (NCHS) and provide annual estimates for the number of homicides in all 50 states and D.C.

Independent Variables

Using the data obtained from the Rand Corporation's Firearm Law database (version 3.0), we created dummy variables to indicate whether states had shall-issue or permitless carry laws. Following Lott and Mustard (1997), the implementation years of all laws were lagged by one year to make them consistent across the states—the first full year of the law's implementation. Many prior studies dropped the observations of permitless carry states from their analyses. Although some studies included these states for analyses, the applicability of their findings was limited due to the small number of these states in their study period (Siegel et al. 2017; Hamill et al. 2019). However, our study improves from these prior studies by including 12 states that adopted permitless carry laws during our study period.

The selection of control variables in criminological studies is often arbitrary. It has been demonstrated that the same authors include different control variables in different articles (Moody and Marvell 2010). Even when authors include many control variables, it is common for the variables included to lack statistical significance, and papers with statistically significant control variables obtain different results than papers with few significant control variables (Kleck 2015; Kleck 2019).

While too few significant control variables can cause problems, a critical problem could result from too many control variables: an over-parameterized model causes the standard errors to become too large, falsely rendering some variables insignificant. This paper uses the general-to-specific (GETS) methodology proposed by Moody and Marvell (2010) to resolve this issue.

Our estimates begin with a "full" model including 23 demographic, economic, and law enforcement variables, state linear trends, a lagged dependent variable, and state and year fixed effects. The specific control variables used in the "full" homicide model are execution rates, incarceration rates, police per capita, civilian police employees per capita, percent black, percent white, percent college educated, population density, per capita alcohol consumption, construction employment per capita, military employment per capita, poverty rates, unemployment rates, the Fryer et al. crack-cocaine index, percent of the population aged 15-19, 20-24, 25-29, 30-34, and 65+, and other gun control laws. These variables were taken from the FBI's UCR reports, the Death Penalty Information Center, the Census Bureau, the Crime Research and Prevention Center, the University of Kentucky's Center for Poverty Research, the National Institute on Alcohol and Alcoholism, the RAND Corporation, and the Bureau of Justice Statistics.

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Our model also includes linear state trends to control for slow-moving variables such as the advent of the cellphone or increased 911 coverage over the study period.

After estimating the full model, all empirically irrelevant control variables are repeatedly removed from the model using *t*- and *F*-tests until we obtain the "final parsimonious model" (Moody and Marvell 2010).

Empirical Model

To estimate the effects of liberalized concealed carry laws on homicide rates, we use panel regression analysis with state and year fixed effects and include many important control variables used in the firearms literature. To deal with the issue of heteroskedasticity and serial correlation in the panel data set, standard errors are clustered by state, as Bertrand et al. (2004) suggested. The standard errors include the Huber-White correction for heteroskedasticity. Given that homicide rates are not normally distributed, the dependent variable is logged. Our empirical model for homicide rates is as follows:

$$ln(Y_{it}) = \alpha_0 + \alpha_1 RTC_{it} + \alpha_2 Permless_{it} + \alpha_3 X_{it} + \zeta_i + \gamma_t + \varepsilon_{it}$$

Y_{it} is the homicide rate at state *i* year *t*. ζ_i and γ_t represent state and year-fixed effects, respectively. $\varepsilon_{i,t}$ is the disturbance. RTC_{it} and $Permless_{it}$ represent the shall-issue and permitless carry dummy variables, respectively. X_{it} represents a vector of time-varying state covariates.

As a robustness check for our panel results, we also used a synthetic control model, a method that has become popular in the firearms literature (Donahue et al. 2019; Gius 2019; Moody and Marvell 2019). The use of this method is important to check the robustness of our results on permitless carry because although our dataset has more data on permitless carry laws than prior papers such as Hamill et al. 2018, the data is still limited enough to where one ought to exercise caution when interpreting results from a standard panel analysis. Using the synthetic control method allows us to be more confident in our findings.

The proliferation of the synthetic control method in the firearms literature should not be surprising: the synthetic control method produces elegant, easily interpretable graphical evidence that even a nontechnical audience can easily understand. The synthetic control method runs a matching algorithm to generate a weighted average of the dependent variable on a set of control states. In this study, the dependent variable is homicide and firearm homicide. This generated average serves as our counterfactual: what would have happened if states did not adopt liberalized concealed carry laws? In the pre-treatment period, assuming the method chose appropriate control states, the treatment effect—the difference between states with liberal concealed carry laws and those with restrictive laws—should be close to zero. After a law's adoption, if these laws impact homicide, we expect the treatment effect to differ from zero.

This paper opts to use a novel version of the synthetic control method, allowing us to advance the firearms literature methodologically. We use a more advanced version of the synthetic control method called the Generalized Synthetic Control Method (GSCM), developed by Xu (2017). Although the idea is very similar, the GSCM has a few advantages over the standard synthetic control method. First, as the name implies, it allows us to generalize the results. It provides an *average* treatment effect across all treatment states—the standard

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synthetic control method only looks at each state individually, like a case study. Second, the GSCM produces uncertainty estimates via bootstrapping techniques. One of the most significant drawbacks of the standard synthetic control method is that while it produces easily interpretable graphical evidence, determining statistical significance is challenging. The GSCM overcomes that drawback. Finally, GSCM uses an interactive fixed effects model to model time-varying confounders, which Xu (2017) argues can outperform the other synthetic control methods.

RESULTS

Main Results

Table 2 presents the impact of liberalized concealed carry laws on homicide and firearm homicide using two-way fixed effects regression models. It indicates that shall-issue and permitless carry laws have no effect on homicide and firearm homicide rates in both full and GETS models. For example, the GETS model in column 2 indicates that while shall-issue laws are associated with 0.53%lowerhomicide rates, the relationship is not statistically significant (p = 0.795). The column also indicates that permitless carry laws are associated with 3.48% lower homicide rates, but the result is likewise insignificant (p = 0.589).

Column 4 indicates that the laws are associated with 0.50% higher firearm homicide rates, but the result is insignificant (p = 0.818). It also shows that permitless carry laws are also associated with slightly higher firearm homicide rates (1.4%) than the control states, but we fail to reject the null hypothesis (p = 0.881).

Table 2: Impact of Concealed Carry Laws on Homicide and Firearm Homicide Rates (Source: Own depiction)

VARIABLES	(1)	(2)	(3)	(4)
	Homicide Rates		Firearm Homicide Rates	
	Full Model	GETS Model	Full Model	GETS Model
Shall-Issue	-0.00493	-0.00529	0.0118	0.00503
	(0.0219)	(0.0202)	(0.0234)	(0.0217)
Permitless	-0.0215	-0.0348	0.0327	0.0139
	(0.0640)	(0.0640)	(0.0923)	(0.0930)
Constant	1.499**	0.770**	0.684	0.673***
	(0.615)	(0.344)	(0.981)	(0.166)
Controls	Full controls	GETS controls	Full controls	GETS controls
State FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	1,896	1,905	1,760	1,763
R-squared	0.950	0.950	0.947	0.946
Robust standard errors in parentheses (clustered at the state level)				
*** p<0.01, ** p<0.05, * p<0.1				

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Synthetic Control Method Results

Figure 1 presents our primary GSCM result: the impact of permitless carry on homicide. The results of the GSCM examining the impact of permitless carry laws on homicide are null. Similar to many of our panel regression results, the association between permitless carry laws and homicide are actually negative: shortly after adoption, permitless carry states tend to have lower homicide rates than the control states in the model, as the treatment effect turns negative. However, we did not see a statistically significant deviation from zero, and we could not reject the null hypothesis.

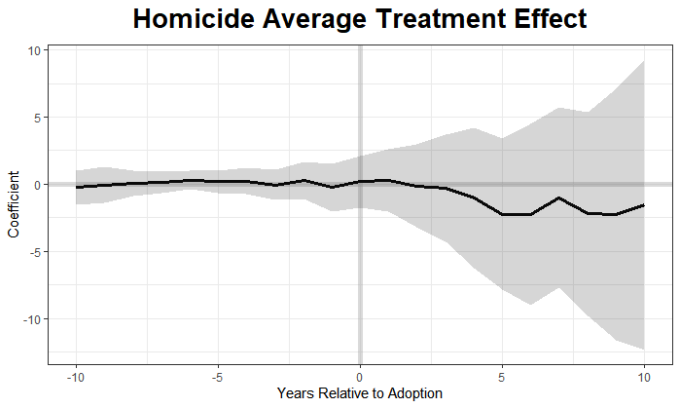


Figure 1: Impact of Concealed Carry Laws on Homicide Rates (GSCM) (Source: Own depiction)

The results for firearm homicide were similar and can be seen in Figure 2. Similar to our results in Figure 1, the results in Figure 2 suggest that the impact of permitless carry laws on firearm homicide is likewise null. While permitless carry states are associated with less firearm homicide on average, the results fail to reach the traditional 5% level of statistical significance. The results from our synthetic control method suggest that permitless carry laws neither significantly increase nor decrease either total or firearm homicide.

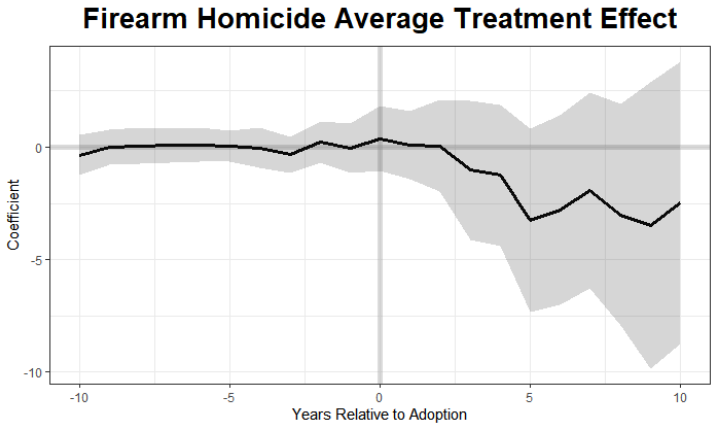


Figure 2: Impact of Concealed Carry Laws on Firearm Homicide Rates (GSCM) (Source: Own depiction)

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Other Robustness Tests

Table 3 shows the regression results of GETS and full models that weight the observations by population. They all confirm that liberalized concealed carry laws do not affect homicide and firearm homicide.

Table 3: Impact of Concealed Carry Laws on Homicide and Firearm Homicide Rates (Population Weighted) (Source: Own depiction)

VARIABLES	(1)	(2)	(3)	(4)
	Homicide Rates		Firearm Homicide Rates	
	Full Weighted Model	GETS Weighted Model	Full Weighted Model	GETS Weighted Model
Shall-Issue	0.00990	0.00571	0.0161	0.00353
	(0.0225)	(0.0231)	(0.0231)	(0.0239)
Permitless	-0.0118	-0.0233	0.0213	0.00862
	(0.0755)	(0.0754)	(0.0853)	(0.0821)
Constant	2.313***	1.625***	1.730**	1.394***
	(0.667)	(0.375)	(0.770)	(0.405)
Controls	Full controls	GETS controls	Full controls	GETS controls
State FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	1,896	1,910	1,760	1,772
R-squared	0.952	0.952	0.958	0.957
Robust standard errors in parentheses (clustered at the state level)				
*** p<0.01, ** p<0.05, * p<0.1				

DISCUSSION

This paper improves upon prior research by including a larger number of control variables and a more extended study period. It also employs the GETS methodology to reduce the arbitrariness of selecting control variables, as suggested by Moody and Marvell (2010). This paper advances the literature empirically by using a form of synthetic control model developed by Xu (2017) not previously employed by researchers in this field and by breaking out permitless carry as a separate variable to study, which has only been done by a handful of researchers prior (e.g., Hamill et al. 2018). Being one of the only papers to test the impact of permitless carry provides a unique test of the impact of liberalized concealed carry laws. The synthetic control method further bolsters our main findings related to more recently adopted permitless carry laws. Our results do not comport with the more guns, less crime hypothesis (Theory 1). On the other hand, the results do not support claims that these laws will increase homicide either (Theory 2). The results presented suggest that liberalized concealed carry laws may not affect homicide or firearm homicide, lending support to Theory 3.

Unfortunately, this paper is unable to determine exactly *why* these laws do not affect homicide. As adumbrated above, RTC laws may not affect crime if facilitation and deterrence

cancel one another out, facilitation or deterrence simply do not apply to carry laws, or if carry laws simply have no significant change in criminal or law-abiding carry behavior. We are inclined to believe the latter theory: the public (and criminals) are simply unaware of the legal status of carrying in their state (Fortunado 2015), and both criminals and generally law-abiding citizens make decisions to carry or not carry irrespective of what the law states. Further, gun ownership does not seem to respond to changes in concealed carry laws (Steidley and Kosla 2018), also suggesting that the changes in behavior by these laws may not be large enough to influence homicide rates. Liberalized concealed carry laws not having a major impact on behavior over and above may-issue laws may explain Barati's (2016) result: that shall-issue laws reduce crime when transitioning from no issue but have no effect when a state moves from may-issue to shall-issue.

Conceptually, Barati's (2016) finding makes sense. A conservative state with a may-issue law in place that transitioned into a shall-issue state, while technically discretionary prior to the adoption of shall-issue, may not have exercised discretion in reality: most local sheriffs would lean conservative and be lenient in permit issuance. Rural areas in most may-issue states, even liberal ones, may have also behaved similarly to shall-issue jurisdictions in practice, issuing the permit to most law-abiding applicants. More progressive states that moved from may-issue to shall-issue, like Illinois, found other ways to restrict permits—like exorbitantly high training requirements and permit fees (Lott 2016). Going from categorically *no*-issue to may-issue, under this view, is a significant policy change, but moving from may-issue to shall-issue is minor.

It is unknown if moving from shall-issue to permitless carry constitutes a major change in actual behavior, but this paper suggests it may not be.

One counterargument to the claim that liberalized shall-issue and may-issue RTC laws may not change behavior enough to elicit changes in criminogenic outcomes may be the wide differences in the percentage of the population licensed to carry concealed handguns across states (Lott and Wang 2020). However, widespread permitting may not be direct evidence of high carry rates. Even if, as Lott and Wang (2020) find, huge percentages of the population in some states are licensed to carry a firearm (as high as 28% in states like Alabama), an unknown number of those individuals are actually carrying in their day-to-day lives. In the same way, holding a passport does not mean one is internationally traveling. It so is being licensed to carry a firearm, which does not mean one is actually carrying a firearm in their day-to-day lives. While it is unclear what percentage of the population would need to carry in order for it to impact homicide rates regularly, it is very possible that liberalized RTC laws do not move the needle enough to tip the scales one way or another.

Rowhani-Rahbar et al. (2022) present survey evidence between 2015-2019 contrary to our preferred hypothesis, suggesting carrying rates are higher in states with less discretion in issuing permits than in states with more discretion. Even if this turned out to be true for shall-issue versus may-issue, it may or may not be the case with permitless carry. A completely unanswered question going forward is whether permitless carry changes behavior over and above shall-issue concealed carry since all permitless carry states were shall-issue immediately before changing the law. The high carrying rates alleged by Lott and Wang (2020) suggest the answer may be no: if nearly a third of the population is already licensed to carry in some states, the remaining unlicensed-but-wanting-to-carry population is likely relatively small. Further, cross-sectional surveys may not be adequate tools to answer the question of if liberalized RTC

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laws change carrying behavior: formerly may-issue states where individuals are more likely to carry are also probably the states most likely to change their laws to accommodate that sort of preexisting behavior. Thus, even with Rowhani-Rahbar et al. (2022) survey, it is unclear how much discretionary impact carrying rates over and above shall-issue policies.

Overall, we speculate that the type of concealed carry law a state has simply may not change law-abiding carrying behavior enough to impact crime—and more research is needed to answer that question quantitatively. Our view is speculatory, however, and another explanation for these null findings may be discovered in future research. Regardless, our null findings speak for themselves: whatever effect these laws have on homicide, they are relatively small, and more research on the theoretical mechanisms between RTC laws and crime is needed.

The null findings of this paper do have important policy implications. If the effects of RTC laws are truly net-neutral on homicide, the social benefits of these laws might be positive. For example, liberalized carry laws may have a positive social impact by eliminating the arbitrary nature of issuing permits under a may-issue regime and thus reduce the risk of unjust bias against racial, gender, or socio-economic groups in permit approval rates. RTC laws that allow government discretion have also been accused of corruption; for example, a Santa Clara County Sheriff was recently accused of selling permits to campaign donors. The permit approval rate in the county as a whole was 14%, but it was 90% for individuals who donated to the sheriff's campaign (Salonga 2022).

Even in a liberalized RTC context, shall-issue laws have many of the same issues regarding bias against different marginalized groups, even if discretion is removed. Costly licensing and training requirements, which are common in many shall-issue jurisdictions, may be more burdensome for some groups than others, such as women and poor African Americans (see, e.g., Lott 2016). Testing the effects of permitting regulations on the carrying behaviors of marginalized groups is certainly a topic for further research. In states like Illinois, where obtaining a concealed carry permit can cost hundreds of dollars, it would be surprising if these requirements did not affect different populations.

As noted in the literature review, firearms have also been shown to be an effective means of self-defense, which may mean that permit holders may lose less property or suffer less injury than they otherwise would in the event they are attacked, even if they fail to prevent the event from occurring in the first place via criminal deterrence (Kleck 1997). Thus, even if RTC laws do not deter homicide, they may reduce the severity of property loss during a robbery, the severity of the assault, or the likelihood of a sexual assault completion—more research on the effects of RTC laws, especially permitless carry, on other forms of crime ought to be conducted. Potential benefits for other types of crime and the permitting requirements provide clear, tangible, socially beneficial effects of liberalized RTC laws like permitless carry.

The social benefits (and costs) of RTC laws should not be limited to tangible or measurable outcomes as they often are in social science academic circles. A philosophical benefit of permitless carry laws is that they increase human freedom by eliminating government restrictions on individual freedom. In the Western liberal tradition, a human license is typically seen as a good thing: "Over himself, over his own body and mind, the individual is sovereign", philosopher John Stewart Mill wrote in "On Liberty". Human action should only be restricted if an action violates the harm principle—that is, if one's liberty harms another. Suppose RTC laws are not associated with deteriorating criminogenic outcomes and do not violate the harm

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principle. In that case, there is a strong case to be made for the *intangible* social benefits of allowing human freedom and liberty to carry around with them a piece of their personal property—a firearm—for whatever reason they deem that course of action appropriate. Contemporary philosophers have continued to make non-consequentialist arguments about firearms, which ought to be considered when null findings pertaining to criminogenic outcomes are found in the gun control literature (e.g., Hsiao and Bernstein 2015).

This does not mean future research will not identify significant drawbacks to permitless carry. As we noted, RTC laws may reduce forms of crime not studied here but can also increase forms of crime not studied here, such as assault. This study focuses on homicide because homicide is the crime most likely to be elevated by ubiquitous firearm access (see Braga et al. 2021), and it is the most heinous, but other scholars have argued that shall-issue concealed carry laws may increase total violent crime (see, e.g., Donahue et al. 2019) or assault (Doucette et al. 2022). This could also be true for permitless carry; if it is, it renders the social impact negative.

Overall, we assess that if RTC laws do not increase homicide, the crime most likely to be increased by public firearm carrying, a strong case can be made that liberalized concealed carry laws have net-positive social effects by reducing burdens faced by marginalized groups who seek permits and simply by increasing human freedom in a situation where social consequences do not necessitate the need to restrict them. Our empirical findings confirm the limited previous published literature on permitless concealed carry which finds no detrimental outcomes in terms of homicide (Hamill et al. 2019; Adams 2022; Smith and Petrocelli 2018), and our null shall-issue finding is also well supported in the literature, and our results fit in well with the much larger the shall-issue literature (Moody and Marvell 2019; Moody and Marvell 2008; Black and Nagin 1998; Ludwig 1998).

Despite the strengths of this paper, this study is not free from limitations that can be addressed in future research. First, the empirical models in this paper assume an immediate increase in the number of permit holders in a state when a shall-issue law is passed, but the rate of increase in permit holders varies between shall-issue states (Lott 2010). Likewise, changes in carrying behavior, even in permitless carry states, may not occur overnight—if it happens at all. Second, while we include more permitless carry law states than prior studies and analyze the impact of these laws more rigorously than past research, many of these states have only had these laws for a few years. Future research will need to be done on the impact of permitless carry laws on homicide, especially as a bevy of states have adopted these laws after the study period. Third, state-level data can introduce problems related to aggregation. Despite the potential issues with county-level crime data reporting, aggregation issues may be addressed through the use of county-level or city-level data in future studies (Maltz and Targonski 2002; Lott and Whitley 2003). Fourth, even if permitless carry has no impact on homicide, it may potentially impact assault, rape, robbery, or suicide—both in a positive direction due to aggression and increased gun access or in a negative direction due to deterrence. Future research can answer these questions. Finally, it is exceedingly difficult to *prove* null findings; thus, future research is needed to continue to dig into the criminological effects of permitless carry laws.

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CONCLUSION

The findings of this study indicate that there is no strong evidence to support a significant association between Right-to-Carry (RTC) laws and homicide rates. Both shall-issue and permitless carry laws are associated with statistically insignificant and consistently negative effects on total homicide rates. These results contribute to the ongoing debate surrounding gun policy and public safety by suggesting that the implementation of RTC laws does not appear to elevate risks to public health or exacerbate criminological outcomes, specifically regarding homicides.

As the discourse on gun violence continues among public health scholars, social scientists, and policymakers, these findings underscore the importance of evidence-based approaches to policymaking. While further research is necessary to explore the broader implications of RTC laws on other aspects of gun violence, this study provides valuable insights that question assumptions about their potential harm to public safety.

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CONTRIBUTOR

The author contributed solely to the intellectual discourse that forms the foundation of this article, as well as its writing and editing, and assumes full responsibility for its content and interpretation.

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