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STATES' RIGHT TO CARRY LAWS AND CRIMES AGAINST WOMEN

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Prior research is much divided on the effect that right to carry laws have on crime rates. The existing literature has not given the laws enacted in the early 1990s enough time to show the laws impact. By analyzing all state firearm laws and specific aspects of right to carry laws, over a longer time series it is evident that shall issue right to carry laws help to protect citizens.

This paper addresses the shortcomings of prior literature by proposing an empirical model that looks at the effects of right to carry laws. The model pays special attention to crimes against women, due to the disparity in rape victimization between genders. The empirical results indicate that less restrictive state gun laws bring a decrease in rape and murder. Also, results indicate an increase in robbery. Finally, less restrictive laws have no significant impact on violent crime.

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I. Introduction

The right to self-defense has been recognized for centuries. It appears throughout the Bible, in the writings of Cicero, and the Bill of Rights. It is not a new subject, but it is a hotly debated one. “Right to carry” is a phrase commonly used to describe state laws that provide concealed carry permits on a shall issue basis which are less restrictive than may issue laws. In a shall issue environment “Issuing authorities are required to issue a permit to an applicant that fulfills objective statutory criteria if no statutory reason for denial exists” according to the Government Accountability Office. Criminal history is a “statutory reason for denial.” In May Issue environments the “state applies discretion in granting permits to carry concealed handguns.”

The purpose of this paper is to determine the effect that right to carry laws have on crimes against females, specifically rape. Prior researchers have looked at gun prevalence, which is the number of legal and illegal firearms in an area, and their effects on crime. By looking at right to carry laws, I attempt to determine if firearms in the hands of law abiding citizens can deter crimes. Using data collected from the United States Census, Bureau of Labor and Statistics, and the Department of Justice’s “Uniform Crime Reporting Tool,” I attempt to determine whether right to carry laws are effective in helping citizens protect themselves better and if these laws are of an even greater importance to women. The gun debate for years has been fueled by personal biases. Opinions have been known to cloud the research on this subject. Due to the biases of many researchers in prior studies, it is difficult to conduct and analyze work objectively. However, through a consideration of existing data, analysis of prior literature, and a reevaluation of underlying assumptions, I attempt to offer an unbiased analysis.

“God made man, Sam Colt made them equal” was a popular 19th century aphorism that was meant to acknowledge the power an individual possessed when wielding a Colt Paterson. It was different from other firearms at the time because it could be fired repeatedly without reloading. The firearm gave the individual carrying it a clear advantage in a confrontation. In this study, I attempt to see if the aphorism holds true today. The March 2013 Special Report by the Department of Justice showed a significant disparity between male and female rape victimization. There is reason to believe that right to carry laws could lessen this disparity. The goal of right to carry laws is to help law abiding citizens protect themselves from individuals who intend to inflict harm upon them. Women are, of course, generally physically weaker than their male counterparts. Do guns help protect women against physically stronger attackers? In other words, is the handgun still the great equalizer it was in the 19th century? In this study, I will attempt to answer this question by looking at how right to carry laws have affected crimes against women, specifically rape, in the United States.

To some the right to “bear arms” is an unalienable right to self-protection. To others, the Second Amendment was never related to private gun ownership. But in the end the entire Bill of Rights protects individuals from government encroachment. The Second Amendment, like the other nine Amendments in the Bill of Rights, was indeed to be an individual right. The debate regarding the Second Amendment and individual rights was the pivotal question in 2008, when the Supreme Court considered *District of Columbia v. Heller* 128 S. Ct. 2783 (2008). The Supreme Court ruled 5-4 in favor of Heller and the individual’s right to own handguns. Justice Antonin Scalia determined that the Second Amendment protects an individual’s right to possess a firearm, unconnected with service in a militia. To understand this issue, it is important to look at how gun control has evolved throughout history.

Gun control legislation started in the 1920s and 1930s, at which time many states began to enact stricter regulation on right to carry laws, this movement culminated in the National Firearms Act of 1934. This law required that the transfer registered firearms, which were at that time “machine guns” and “short-barreled firearms” had to be done through the federal registry. In 1968, the Gun Control Act was signed into law by President Lyndon B. Johnson. In “Value of Civilian Arms Possession As Deterrent To Crime Or Defense Against Crime,” Don Kates evaluated specific instances of civilians carrying firearms, including the City of Orlando, Florida. In 1966, the city of Orlando responded to a wave of sexual assaults by offering firearms training classes to women. The program had perceived success due to a decrease in rapes the following year. It was not until the early 1980s that female gun lobbyist Marion Hammer called for less strict right to carry laws in all Florida. Since the passage of shall issue legislation in Florida, 31 states have passed shall issue right to carry laws.

While virtually every aspect of the gun control debate is continuous, there is one thing upon which everyone seems to agree; females are far less likely to own guns than males. According to a recent study done by Gallup, men are three times more likely than women to own a gun. Along with being physically weaker, this makes women an even more appealing target to attackers. When a female is carrying a firearm, it may tip the scale so she is on an equal or superior footing as her attacker. Females, therefore, have the most to gain from right to carry laws, because these laws might prevent them from becoming victims in the first place. Some of the studies that will be discussed in the following paragraphs argue that right to carry laws can lead to an escalation of violence. This may be the case in some instances, but there is plenty of empirical and anecdotal evidence to suggest that even drawing a gun can deter an attacker. And

after all, if a female shoots and kills a potential rapist, escalation of violence is not an injustice or a negative externality.

II. Literature Review

In 2012, the Government Accountability Office, at the request of Congress, published a study called “States’ Laws and Requirements for Concealed Carry Permits Across the Nation.” This study offered a detailed history of state laws and regulations and the dates the legislation was implemented. The GAO study shows the wave of shall issue legislation in recent years. It also gave an in-depth analysis of permit issuing agencies and provides a detailed map of states with concealed carry reciprocity laws. This GAO study focused on changes made between 2002 and 2012. The CQ Researcher, with “Gun Control: Should Lawmakers Tighten Firearm Restrictions,” illustrated the drastic changes in concealed carry laws since 1981. In addition, this study, provided a historical timeline of gun-control legislation dating back to the 1920s. The evidence gathered by the researchers of these two studies documented the legislative changes that have occurred over nearly 100 years. Further studies have examined the impact firearms have had on society.

Lott and Mustard (1997) took an in-depth look at effects of right to carry laws. They examined data from 1977-1992 from the Uniform Crime Report, Bureau of Justice Statistics and county level data of right to carry permits in Arizona, California, Florida, Oregon, Pennsylvania and Washington. They concluded that murder, rape and aggravated assault rates all fell significantly in states that adopted right to carry laws. Helland and Tabrrok (2004) added further credibility to Lott and Mustard’s conclusion by developing a theoretical model that suggested the positive effect that right to carry laws have on deterring crime was under-estimated in the Lott

and Mustard study. Others, such as, Bartley and Cohen (1998), reached the same conclusion. The conclusions of these studies suggest that by increasing the cost of committing a crime (by arming potential victims) the number of crimes will decrease.

Black and Nagin (1998) published a study which thoroughly critiqued Lott and Mustard's methods. Black and Nagin argued that counties with a population below 100,000 should not be included in the analyses because of the bias that it introduces. The original Lott and Mustard model dropped counties for those years in which no crimes are reported, creating missing data in the sample. After excluding counties with populations under 100,000 in the states that Lott and Mustard analyzed, Black and Nagin reran the model. They concluded that Lott and Mustard's data did not provide a basis for a confident conclusion, and that Lott and Mustard's estimates are highly sensitive to small changes in the model. Lott responded to this critique in his 1998 article "The Concealed-Handgun Debate" in which he rebutted Black and Nagin's sensitivity claim applied to less than 1% of the regression he and David Mustard reported. He also gave a list of solutions to the problem that he and Mustard offered in the first article, the first of which was predicted arrest rates for the missing estimates generated from the first stage of the two-stage least squares estimates.

In order to broaden the scope of this issue, Kates and Mauser (2006) looked at firearms on an international level in their study "Would Banning Firearms Reduce Murder and Suicide?" Kates and Mauser compared murder and suicide rates in foreign countries, where gun control is stricter, to murder and suicide rates in the United States. They found a negative correlation between guns and murder rates.

In Gun Availability and "Violent Crime: New Evidence from the Incident-Based Reporting System" Stolzenberg and D'Alessio (2000) attempted to determine if gun availability

was related to violent crime, gun crime, juvenile gun crime, and violent crimes with a knife. Their results showed a strong positive relationship between illegal gun prevalence and violent crime, gun crime and juvenile gun crime. The data was acquired from the National Incident-Based Reporting system for the years 1991-1994 in South Carolina. Stolzenberg and D'Alessio (2000) look at the correlation between legal and illegal gun availability and (1) violent crime rate, (2) gun crime rate, (3) youth gun crime rate, and the (4) knife crime rate.

There are a number of studies that offer the opposite conclusion of Lott and Mustard and others. Duggan (2001) contributed to the literature by arguing that measuring the sales of "Guns and Ammo" magazine provided the most accurate way of estimating gun ownership. Duggan used this proxy in an attempt to include legal and illegal gun ownership in his analysis. Duggan concluded that firearms influence crime primarily by increasing the homicide rate.

Ludwig (2000) critiqued Lott and Mustard in his study "Gun Self-Defense and Deterrence." Here, Ludwig looked at state-level juvenile data from 1977-1994 and conducted a "Difference-In-Differences-In-Differences" regression. He concluded that concealed carry laws cause crimes to increase. He critiqued Lott and Mustard's methodology in great detail, concluding that Lott and Mustard did not adequately capture and control for unmeasured variables. Ludwig argued that Lott and Mustard's fixed effect model assumed all differences in crime are due to the concealed carry laws.

Cook and Ludwig (2006) also concluded that less restrictive gun laws lead to more crime. In "The Social Cost of Gun Ownership" they examined the externalities of owning a gun. Guns can provide positive externalities, such as deterring crime, or negative externalities, such as misuse by an owner resulting in an accident or ending up in a dangerous person's hands. In this study, as a proxy for gun prevalence Cook and Ludwig used the percentage of suicides

committed with a firearm. This was meant to be an improvement from Duggan's "Gun and Ammo" magazine subscription proxy for gun prevalence. The panel data used in this study came from the 200 counties with the largest populations in 1990. Cook and Ludwig concluded that there is a positive relationship between gun prevalence and homicide rates, but not with other types of crime.

In their book, *Guns in America: National Survey on Private Ownership and Use of Firearms* Cook and Ludwig examined data collected from the National Survey of Private Gun Ownership (NSPOF) conducted in 1994. The survey sampled 2,568 noninstitutionalized adults age 18 and over who were fluent in English and Spanish in 1994. One of the key points that the survey addressed was defensive gun use. They looked at defensive gun usage in instances of rape, aggravated assault, and robbery, and compared their estimates to the total crime counts from the National Crime Victimization Survey (NCVS) from the Bureau of Justice Statistics. The results showed that their defensive gun usage estimate was actually higher than the total rape count from the NCVS. However, in the cases of aggravated assault and robbery the numbers make sense. The discrepancy between these results suggests that victimization reporting regarding rape data may not be accurate.

The most recent and comprehensive work done on the gun prevalence and its association with homicide rates was conducted by Seigel et al. (2013). In their study, data on gun ownership and age-adjusted firearm homicide rates was collected from 1981-2010 across all 50 states. This study controlled for age, gender, race/ethnicity, urbanization, poverty, unemployment, income, education, income inequality, divorce rate, alcohol use, violent crime rate, nonviolent crime rate, hate crime rate, number of hunting licenses, age adjusted non-firearm homicide rate,

incarceration rate and suicide rate. They also found that more guns leads to a higher homicide rate.

Glaeser and Glendon (1998) attempted to answer the question “who owns guns?” by using the General Society Survey 1972-1994. They found that women are unlikely to own guns. They also found that individuals who live in bigger cities are less likely to own guns. Glaeser and Glendon also cite Cook and Moore (1981), who showed that the average gun owner owns 4.5 guns. This research put into question many of the studies that only look at the largest counties and areas. Knowing where gun owners live and the amount of guns they are likely to have can help discern whether more guns cause more crime or more guns result in less crime.

Kleck and Hogan (1999) conducted an analysis that used survey data from individuals incarcerated for criminal homicide and the general population. The question Kleck and Hogan attempted to answer was: “Does Gun Ownership Increase the Likelihood That a Person Will Commit a Criminal Homicide?” The data was compiled from two surveys, the U.S. Census Bureau’s Survey of State Prisons, which surveyed inmates who committed a homicide between 1980-1991 and, the General Social Survey of adults 18 and older in 1982,1984,1985 and 1988-1991. Kleck and Hogan combined these data sets in order to identify variables possibly related to homicide or gun ownership. This study concluded that that gun ownership may have a weak effect on homicidal behavior in the population in general.

In their study, “Deterring Delinquents: A Rational Choice Model of Theft and Violence,” Matsueda and Kreagers (2006) estimated models using panel data of high risk youth in Denver. They used a number of different models to show perceived risks of criminal acts. Matsueda and Kreagers argued that criminals act rationally rational criminal will seek the most vulnerable target. Criminals see females as easier victims because of the physical weakness.

Few studies have conducted an analysis of firearm laws that pertain to a specific demographic like the one I am proposing. The one that comes closest is Thomas Marvell's analysis, "The impact of Banning Juvenile Gun Possession" (2001). Using data from the Department of Justice's Uniform Crime Report, Marvell executes a fixed-effects regression analysis to see if the laws that were put in place across different states at different times were effective in reducing juvenile firearm violence. Marvell found no conclusive results to show if the laws were effective.

Smith (1994) studied data on crimes against women. In his study "Enhancing the Quality of Survey Data on Violence Against Women: A Feminist Approach," Smith exposed the drastic number of unreported crimes. There are major flaws in the ways that crime data is collected, and it is not lagged or categorized correctly according to Smith. Smith suggests that rape can be highly underreported because of the stigma attached with it. *Female Victims of Sexual Violence, 1994-2010* was a special report published by the Department of Justice in March, 2013. This publication used information from the Bureau of Justice Statistics' National Crime Victimization Survey. Department of Justice researchers collected data on nonfatal crimes reported and not reported to the police from a national sample of persons age 12 and older. The researchers concluded that there has been a dramatic decline in sexual violence, citing that between 1995 and 2010 the rate of completed rape or sexual assault declined from 3.6 per 1,000 females to 1.1 per 1,000. The researchers also concluded that, in only 1 in 10 instances of rape or sexual assault did the offender have a weapon.

III. Methodology

$$\begin{aligned} RAPE = & \alpha + \beta_1 ShallIssue + \beta_2 PersonalIncome + \beta_3 Populationdensity \\ & + \beta_4 Unemployment + \beta_5 PropotionMale + \beta_6 ProportionWhite \\ & + \beta_7 Educationattainment + \beta_8 Propunder18 + \beta_9 AgeProportions \\ & + \beta_{10} Proportionover65 + \varepsilon_{IT} \end{aligned}$$

I contribute to previous research by developing a model that looks at all states right to carry laws over a longer time series. This study is concerned with laws that allow law abiding citizens to carry a firearm. It can be said with almost no uncertainty that illegal guns are connected with crime. I am attempting to determine if more guns in the hands of law aiding citizens can prevent crime. A number of states have passed right to carry legislation since the publication of Lott and Mustard's study in 1997. In the 2013 report conducted by the Government Accountability Office at the request of Congress, it was reported that between 2002 and 2012, the number of states that passed shall issue laws increased from 29 to 39. Using panel data in a fixed effects model, I will look at the implications that these laws have on crime, specifically regarding females, over time. The impact the laws have on rape will indicate how right to carry laws effect crimes against women because the victims of rape are almost exclusively women.

The overwhelming majority of the prior studies conducted have looked at whole populations. My analysis will use similar methods to that of Thomas Marvell (2001) who studied the juvenile population specifically. Marvell's analysis offered a broad look at the effects of juvenile firearm laws by running a number of fixed-effect regressions using different variables. My study, like Marvell's considers specific firearm laws, not gun prevalence like many other researchers study. Because I am specifically looking at crimes

against women, rape will be the most telling in the effectiveness or ineffectiveness of shall issue laws. However, I will also include the murder, violent crime and robbery rates because even though they will not shed as much light on how the laws affect women, it would be inexcusable to leave them out of the analysis. Leaving these crimes rates out could be ignoring some of the most significant ramifications of the law. The Department of Justice includes murder, non-negligent manslaughter, robbery, forcible rape, and aggravated assault in their specification of violent crime.

Table A. Dependent Variables Names

Variable	Source	Description
Rape	UCR-DOJ	Rape rate per 100,000 for all 50 states from 1960-2010
Murder	UCR-DOJ	Murder rate per 100,000 for all 50 states 1960-2010
Violent Crime	UCR-DOJ	Violent crime rate per 100,000 all 50 states from 1960-2010. Violent crime includes murder, non-negligent manslaughter, robbery, forcible rape, and aggravated assault.
Robbery	UCR-DOJ	Robbery rate per 100,000 all 50 States from 1960-2010 (excluding larceny and white collar crimes)

Table B. Independent Variables Names

Variable	Source	Description
Shall Issue	GAO	Issuing authorities must issue concealed carry permit unless the citizens has a criminal history. (least restrictive)
May Issue	GAO	Requirements in place for obtaining a concealed carry permit such as firearm training. Issuing authorities have the right to not issue a permit if the citizen doesn't present justification for having one.
No Issue	GAO	State prohibits concealed carry
Young	Census	Population of the state population under 19 years of age. 1967-2008
Prop Age	Census	Proportion of the state broken down into 5 year age increments ranging from 20-65. 1967-2008
Old	Census	Proportion of the state population over 65 years of age. 1967-2008
Propfemale	Census	Proportion of the state population that is female 1967-2008
Propwhite	Census	Proportion of the state population that is white 1967-2008
Unemployment Rate	BLS	State unemployment rate 1967-2008
Population density	Census	State population density 1960-2010
Income per capita	BEA	State income per capita 1960-2010
Education Attainment	Turner et al.	Workforce's average years of schooling

IV. Results

Before running the fixed effects regression, I lagged both the may issue and shall issue laws two years to allow time for implementation. The first two regression only include shall and may issue states because they are the overwhelming majority. The only jurisdictions missing from this are Illinois and the District of Columbia which are no issue jurisdictions. They also

exhibit a number of characteristics which make them anomalous. Crime rates in Illinois do not accurately represent the whole state because they are skewed by Chicago. Housing the federal government and the high levels of law enforcement and military personnel that comes with it makes the District of Columbia an anomaly. The analysis of laws and crime rates of these states would be useful in a county or city level analysis.

Table 1 contains the results of a regression in which I included shall issue, may issue and no issue jurisdictions. The variables for shall issue and may issue are lagged two years to allow for implementation of the law. To get a better understanding, I ran shall issue and may issue separately. As represented in Table 2, shall issue had a negative coefficient and a significant p-value, suggesting that it has a positive effect in decreasing the rate of rapes. The may issue had a positive variable but was not significant, which can be seen in Appendix A. Looking at Table 3, regarding murder rate the coefficient for the shall issue law was negative and significant, showing a decrease in murder rate. When the same regression is ran using the may issue dummy as seen in Appendix C, a positive and significant coefficient is observed, showing an increase in the murder rate. These results indicate that less restrictive gun laws decrease murder rates. In the case of violent crime neither more restrictive may issue laws, nor the less restrictive shall issue laws showed a significant impact as seen in Table 4 and Appendix F. Shall issue laws seem to decrease rape and murder rates however, in the case of robbery there is an increase, as seen in Table 5 and Appendix E. Education attainment and race prove to be significant throughout the majority of the regressions, consistent with prior research. In all of the regressions, standard errors corrected for autocorrelation, heteroskedasticity, and contemporaneous correlation. Fixed effects included with Driscoll-Kraay standard errors.

Table 1. Rape Rates

	Coefficients	P-Value
Shall Issue	-3.673	0.026
May Issue	-2.190	0.252
No Issue	-2.908	0.053
Personal Income per capita	-.0001	0.505
Population density	0.009	0.487
Unemployment rate	-.426	0.026
Proportion male	-204.138	0.054
Proportion white	59.378	0.001
Education attainment	3.062	0.003
Proportion of population under 20	-12.680	0.437
Proportion 20-24	255.114	0.027
Proportion 25-29	-50.526	0.503
Proportion 30-34	648.197	0.000
Proportion 35-39	-223.273	0.121
Proportion 40-44	506.186	0.000
Proportion 45-49	48.061	0.694
Proportion 50-54	430.178	0.039
Proportion 55-59	-333.765	0.290
Proportion 60-64	673.804	0.037
Proportion over 65	40.662	0.126
Constant	-68.818	0.342

Dependent Variable: Rape, OLS Fixed Effects (Driscoll Kraay standard errors). 49 cross sections, 1960-2010. 1595 Observations.

Table 2. Rape Rates in Shall Issue States

	Coefficients	P-Value
Shall Issue	-1.546	0.023
Personal Income per capita	-.0001	0.506
Population density	0.011	0.487
Unemployment rate	-.435	0.022
Proportion male	-221.551	0.062
Proportion white	59.413	0.001
Education attainment	3.240	0.001
Proportion of population under 18	-11.696	0.464
Proportion 20-24	229.114	0.022
Proportion 25-29	-50.522	0.494
Proportion 30-34	651.197	0.000
Proportion 35-39	-226.073	0.114
Proportion 40-44	503.296	0.000
Proportion 45-49	69.527	0.547
Proportion 50-54	427.018	0.037
Proportion 55-59	-339.465	0.269
Proportion 60-64	693.476	0.027
Proportion over 65	34.291	0.193
Constant	-68.199	0.383

Dependent Variable: Rape, OLS Fixed Effects (Driscoll Kraay standard errors). 49 cross sections, 1960-2010. 1595 Observations.

Table 3. Murder Rates in Shall Issue States

	Coefficients	P-Value
Shall Issue	-.894	0.001
Personal Income per capita	.0001	0.532
Population density	-.0006	0.162
Unemployment rate	-.0973	0.039
Proportion male	-51.803	0.265
Proportion white	3.213	0.692
Education attainment	-.5730	0.003
Proportion of population under 18	-1.155	0.577
Proportion 20-24	79.593	0.000
Proportion 25-29	-47.763	0.000
Proportion 30-34	105.363	0.000
Proportion 35-39	-58.941	0.024
Proportion 40-44	9.234	0.792
Proportion 45-49	6.108	0.872
Proportion 50-54	102.578	0.068
Proportion 55-59	-214.96	0.037
Proportion 60-64	5.201	0.940
Proportion over 65	-2.727	0.807
Constant	35.68242	0.132

Dependent Variable: Murder, OLS Fixed Effects (Driscoll Kraay standard errors). 49 cross sections, 1960-2010. 1595 Observations

Table 4. Violent Crime Rates with Shall Issue Laws

	Coefficients	P-Value
Shall Issue	8.324	0.558
Personal Income per capita	-.003	0.217
Population density	1.130	0.000
Unemployment rate	-1.276	0.704
Proportion male	6690	0.000
Proportion white	661.148	0.000
Education attainment	76.049	0.000
Proportion of population under 18	-337.908	0.004
Proportion 20-24	1943	0.082
Proportion 25-29	-3616	0.002
Proportion 30-34	10905	0.000
Proportion 35-39	-7213	0.007
Proportion 40-44	2725	0.192
Proportion 45-49	5039	0.025
Proportion 50-54	517.975	0.812
Proportion 55-59	-4302.171	0.066
Proportion 60-64	10485	0.000
Proportion over 65	315.625	0.55
Constant	-5333	0.000

Dependent Variable: Violent Crime, OLS Fixed Effects (Driscoll Kraay standard errors). 49 cross sections, 1960-2010. 1595 Observations.

Table 5. Robbery Rates in Shall Issue States

	Coefficients	P-Value
Shall Issue	12.313	0.008
Personal Income per capita	-.002	0.095
Population density	.667	0.000
Unemployment rate	.786	0.503
Proportion male	1287.494	0.103
Proportion white	360.006	0.000
Education attainment	16.190	0.000
Proportion of population under 18	-90.031	0.071
Proportion 20-24	1060.44	0.021
Proportion 25-29	-664.321	0.151
Proportion 30-34	3198.17	0.000
Proportion 35-39	-2009.801	0.023
Proportion 40-44	1428.696	0.051
Proportion 45-49	1267.948	0.292
Proportion 50-54	1477.288	0.077
Proportion 55-59	-2220.445	0.154
Proportion 60-64	3812.954	0.002
Proportion over 65	88.460	0.730
Constant	-1492.933	0.000

Dependent Variable: Robbery, OLS Fixed Effects (Driscoll Kraay standard errors). 49 cross sections, 1960-2010. 1595 Observations.

VI. Conclusion and Implications

The debate over right to carry laws is not as clear as some researchers claim. My research indicates that the less restrictive right to carry laws decrease rape and murder rates. Because rape is the most telling crime variable pertaining to females, these results demonstrate that less restrictive right to carry laws benefits females. The empirical evidence of my study also implies the laws have no significant impact on violent crime rates. Further less restrictive right to carry laws have an increase in robbery rates. The results do not solely fit the beliefs held on either side of the gun control debate. The increase in robbery rates can be explained by offenders changing their targets. Offenders would be more prone to rob an empty house while homeowners were at work or school rather than risk robbing a victim on the street who could be carrying a gun. Although this is seen as a negative externality of shall issue laws it simply shows offenders reacting rationally to potential risk.

There is no clear conclusion regarding violent crime rates. Rape and murder were both included in the violent crime variable along with non-negligent manslaughter, robbery and aggravated assault. The results demonstrate that shall issue laws decreases rape and murder and increases robbery. This could imply that the aggregation of these crimes together in this variable is perhaps not the best way to evaluate the situation. Aggravated assault could be heavily influenced by domestic violence. Right to carry laws pertain to carrying a firearm in public, the laws intended purpose is not to deter crimes that occur in public not household violence. In future research it would be useful to collect data on crimes that have occurred exclusively outside the home.

In some of the previous studies, the percentage of firearm suicides divided by the total number of suicides was used as a proxy for gun prevalence, meaning the amount of guns in an

area. This proxy was preceded by the number of Guns and Ammo magazine subscriptions there are in a certain area to estimate gun prevalence. Both of these variables were excluded from my analysis for a number of reasons. First of which, gun prevalence includes illegal firearms. Right to carry laws pertains to law abiding citizens who acquire firearms and carry them according to the law. A citizen who is willing to get a permit from an issuing authority is very unlikely to use it in a crime.

Acquiring data to look at results particular to females is nearly impossible. Perhaps the best indicator in determining how right to carry laws affects crimes against females would be the number of females buying handguns. The only way this could be calculated across states would be if the FBI released the number of NCIC checks that were ran on specifically women, when purchasing a handgun. With this proxy comes the assumption that all women buying handguns intend to use them for concealed carry purposes and not target shooting or hunting.

Conducting an analysis on state level laws brings about certain issues. For example, in states with may issue laws, counties differ in the issuing of concealed carry permits. One county could be very similar to a shall issue in the way it allocates concealed carry permits while a neighboring county could be very restrictive in issuing permits. Anecdotal evidence supporting that claim is prevalent. Further complicating the issue, some counties have firearm regulations that differ from the state's law, such as, the counties in the Philadelphia metropolitan area, are not shall issue even though Pennsylvania is a shall issue state. Further research should be focused on conducting analyses on various counties in various states. It would also be beneficial to evaluate how many concealed carry permits are obtained in each state. By examining this, future researchers could determine the effects guns in the hands of trained, lawful citizens have on different crimes. Examining more specific crime categories could provide further insight. This

analysis supplies a foundation on which more research can be done. Further research may want to expand upon my model by using a thorough empirical identification strategy.

VII. References

- Black, Dan A., and Daniel S. Nagin (1998) "Do Right-to-Carry Laws Deter Violent Crime." *J. Legal Stud.* (27) : 209.
- Cook, Philip J., and Jens Ludwig (1997) *Guns in America: National Survey on Private Ownership and Use of Firearms*. US Department of Justice, Office of Justice Programs, National Institute of Justice.
- Cook, Philip J., and Jens Ludwig (2006) "The social costs of gun ownership." *Journal of Public Economics* (90.1) 379-391
- District of Columbia v. Heller* (2008) 128 S. Ct. 2783, 554 U.S. 570, 171 L. Ed. 2d 637
- Driscoll, J. C., and Kraay, A. C. 1998 "Consistent Covariance Matrix Estimation with Spatially Dependent Panel Data." *Review of Economics and Statistics*, (80) 549–560
- Duggan, Mark. (2000) "More Guns, More Crime" National Bureau of Economic Research. No. 7967
- Glaeser, Edward L., and Spencer Glendon (1998) "Who Owns Guns? Criminals, Victims, and the Culture of Violence." *The American Economic Review* (88.2) 458-462
- Helland, Eric, and Alexander Tabarrok. (2004) "Using placebo laws to test" More Guns, Less Crime". *Advances in Economic Analysis & Policy* 4.1
- Jones, Jeffrey M. (2013) "Men, Married, Southerners Most Likely To Be Gun Owners." *Gallup Politics: Gallup.com*. 1 Feb. 2013
- Kates Jr, Don B.(1900) "Value of Civilian Handgun Possession As a Deterrent to Crime Or a Defense against Crime, The." *Am. J. Crim. L.* (18) 113
- Kates, Don B., and Gary A. Mauser (2006) "Would Banning Firearms Reduce Murder and Suicide? A Review of International Evidence." *bepress Legal Series* 1413

- Kleck, Gary, and Michael Hogan. (1999) "National case-control study of homicide offending and gun ownership." *Social Problems* 275-293
- Lott Jr, John R. "Concealed-Handgun Debate" (1998) *J. Legal Stud.* (27): 221.
- Lott, Jr, John R., and David B. Mustard. (1997) "Crime, Deterrence, and Right-to-Concealed Carry Handguns." *The Journal of Legal Studies* 26.(1) 1-68.
- Ludwig, Jens. (2000) "Gun Self-Defense and Deterrence." *Crime and Justice* 363-417.
- Mantel, Barbra (2013) "Gun Control" *CQ researcher*, (23) 233-256
- Marvell, T. B. (2001) "The Impact of Banning Juvenile Gun Possession" *Journal of Law and Economics*, 44(S2), 691-713.
- Matsueda, Ross L., Derek A. Kreager, and David Huizinga (2006) "Deterring delinquents: A rational choice model of theft and violence." *American Sociological Review* (71.1) 95-122.
- Planty, Michael, et al. (2013) "Female Victims of Sexual Violence, 1994-2010." Special Report.(No. NCJ 240655). Washington, DC: Bureau of Justice Statistics. US Department of Justice
- Siegel, Michael, MD, Craig S. Ross, MBA, and Charles King, PhD. (2013) "The Relationship Between Gun Ownership and Firearm Homicide Rates in the United States, 1981-2010." *The American Journal of Public Health*
- Smith, Michael D. (1994) "Enhancing the quality of survey data on violence against women: A feminist approach." *Gender & Society* (8.1) 109-127.
- Stolzenberg, Lisa, and Stewart J. D'Alessio (2000) "Gun Availability and Violent Crime: New Evidence from the National Incident-Based Reporting System." *Social Forces* "78.4" 1461-1482.
- Turner, C, Tamura, R., Mulholland, S. E., and Baier, S. (2007) "Education and output of the States of the United States: 1840-2000", *Journal of Economic Growth* (12) 101-158.
- U.S. Government Accountability Office (2012) *Gun Control: States' Laws and requirements for Concealed Carry Permits Vary the Nation* (Publication No. GAO-12-717.

*Dr. Siegel et al, of Boston University were kind enough to send me a copy of their study "The Relationship Between Gun Ownership and Firearm Homocide Rates in the United States, 1981-2010" after the study was approved, but prior to its publication in the American Journal of Public Health

VIII. Appendix

A. Rape Rates in May Issue States

	Coefficients	P-Value
May Issue	1.546	0.053
Personal Income per capita	-.0001	0.526
Population density	0.018	0.481
Unemployment rate	-.429	0.025
Proportion male	-244.551	0.062
Proportion white	56.840	0.002
Education attainment	3.047	0.003
Proportion of population under 18	-11.768	0.456
Proportion 20-24	230.537	0.021
Proportion 25-29	-56.135	0.456
Proportion 30-34	657.177	0.000
Proportion 35-39	-229.422	0.112
Proportion 40-44	493.529	0.000
Proportion 45-49	80.298	0.482
Proportion 50-54	427.018	0.050
Proportion 55-59	-357.807	0.247
Proportion 60-64	714.926	0.023
Proportion over 65	34.433	0.198
Constant	-52.279	0.539

Dependent Variable: Rape, OLS Fixed Effects (Driscoll Kraay standard errors). 49 cross sections, 1960-2010. 1595 Observations.

B. Murder Rates controlling for all Laws

	Coefficients	P-Value
Shall Issue	-.526	0.052
May Issue	.180	0.683
No Issue	.730	.095
Personal Income per capita	-3.86e-06	0.924
Population density	-0.006	0.140
Unemployment rate	-.100	0.035
Proportion male	-57.171	0.286
Education attainment	-.476	0.011
Proportion of population under 18	-1.045	0.635
Proportion 20-24	79.575	0.000
Proportion 25-29	-44.668	0.002
Proportion 30-34	106.202	0.000
Proportion 35-39	-58.013	0.025
Proportion 40-44	11.578	0.752
Proportion 45-49	13.189	0.772
Proportion 50-54	430.178	0.085
Proportion 55-59	-333.765	0.040
Proportion 60-64	3.654	0.959
Proportion over 65	-4.708	0.673
Constant	39.111	0.150

Dependent Variable: Murder, OLS Fixed Effects (Driscoll Kraay standard errors). 49 cross sections, 1960-2010. 1595 Observations.

C. Murder Rates in May Issue States

	Coefficients	P-Value
May Issue	.516	0.045
Personal Income per capita	.0001	0.480
Population density	-.008	0.102
Unemployment rate	-.094	0.044
Proportion male	-64.642	0.190
Proportion white	1.596	0.847
Education attainment	-.669	0.005
Proportion of population under 18	-1.108	0.590
Proportion 20-24	79.061	0.000
Proportion 25-29	-50.718	0.000
Proportion 30-34	109.108	0.000
Proportion 35-39	-61.094	0.023
Proportion 40-44	2.768	0.939
Proportion 45-49	11.651	0.717
Proportion 50-54	95.670	0.104
Proportion 55-59	-226.620	0.030
Proportion 60-64	17.959	0.798
Proportion over 65	-2.886	0.794
Constant	44.864	0.965

Dependent Variable: Murder, OLS Fixed Effects (Driscoll Kraay standard errors). 49 cross sections, 1960-2010. 1595 Observations

D. Robbery Rates controlling for all Laws

	Coefficients	P-Value
Shall Issue	3.395	0.601
May Issue	-5.807	0.464
No Issue	-24.718	0.016
Personal Income per capita	-.0004	0.024
Population density	.598	0.000
Unemployment rate	1.0075	0.402
Proportion male	913.223	0.260
Education attainment	13.701	0.000
Proportion of population under 18	-125.589	0.038
Proportion 20-24	1132.618	0.014
Proportion 25-29	-526.407	0.251
Proportion 30-34	3229.504	0.000
Proportion 35-39	-1860.606	0.042
Proportion 40-44	1701.123	0.020
Proportion 45-49	1506.504	0.197
Proportion 50-54	1229.511	0.169
Proportion 55-59	-1943.439	0.244
Proportion 60-64	3351.871	0.005
Proportion over 65	149.853	0.579
Constant	-964.679	0.005

Dependent Variable: Rape, OLS Fixed Effects (Driscoll Kraay standard errors). 49 cross sections, 1960-2010. 1595 Observations.

E. Robbery Rates in May Issue States

	Coefficients	P-Value
May Issue	-3.588	0.226
Personal Income per capita	-.002	0.112
Population density	.684	0.000
Unemployment rate	.754	0.530
Proportion male	1453.567	0.068
Proportion white	385.344	0.000
Education attainment	17.185	0.000
Proportion of population under 18	-92.524	0.062
Proportion 20-24	1092.25	0.018
Proportion 25-29	-629.676	0.191
Proportion 30-34	3141.06	0.000
Proportion 35-39	-1975.646	0.024
Proportion 40-44	1534.646	0.031
Proportion 45-49	1534.826	0.309
Proportion 50-54	1569.565	0.071
Proportion 55-59	-2037.815	0.183
Proportion 60-64	3629.974	0.002
Proportion over 65	95.657	0.721
Constant	-1618.845	0.000

Dependent Variable: Robbery, OLS Fixed Effects (Driscoll Kraay standard errors). 49 cross sections, 1960-2010. 1595 Observations.

D. Violent Crime Rates Controlling for all Laws

	Coefficients	P-Value
Shall Issue	-25.865	0.109
May Issue	-20.090	0.463
No Issue	-82.982	0.015
Personal Income per capita	-.005	0.094
Population density	.963	0.00
Unemployment rate	-.684	0.838
Proportion male	6085.159	0.001
Education attainment	66.827	0.000
Proportion of population under 18	-420..008	0.002
Proportion 20-24	2101.338	0.054
Proportion 25-29	-3435.795	0.002
Proportion 30-34	10940.77	0.000
Proportion 35-39	-6922.767	0.012
Proportion 40-44	3229.129	0.090
Proportion 45-49	5280.556	0.013
Proportion 50-54	38.197	0.987
Proportion 55-59	-3792.255	0.120
Proportion 60-64	9535.343	0.000
Proportion over 65	528.086	0.378
Constant	-4314.106	0.000

Dependent Variable: Violent crime, OLS Fixed Effects (Driscoll Kraay standard errors). 49 cross sections, 1960-2010. 1595 Observations.

F. Violent Crime Rates in May Issue States

	Coefficients	P-Value
May Issue	15.091	0.343
Personal Income per capita	-.003	0.281
Population density	1.135	0.000
Unemployment rate	-1.24	0.716
Proportion male	6749	0.000
Proportion white	693.62	0.000
Education attainment	75.091	0.000
Proportion of population under 18	-9348.76	0.003
Proportion 20-24	2087	0.054
Proportion 25-29	-3622	0.002
Proportion 30-34	10838	0.000
Proportion 35-39	-7167	0.007
Proportion 40-44	2881	0.166
Proportion 45-49	5068.218	0.023
Proportion 50-54	566.412	0,795
Proportion 55-59	-4068	0.075
Proportion 60-64	10324	0.000
Proportion over 65	345.409	0.5370
Constant	-5415	0.000

Dependent Variable: Violent Crime, OLS Fixed Effects (Driscoll Kraay standard errors). 49 cross sections, 1960-2010. 1595 Observations.