

Concealed Handgun Laws in the United States*

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Abstract

This paper examines concealed handgun laws in the United States with the ultimate goal of measuring the effect those laws have on crime rates. Existing literature on the subject of concealed handgun laws shows conflicting results and opinions. Most authors agree that more research on this subject needed. In this study, states are matched into pairs based on their probability of adopting certain concealed handgun laws. A technique similar to the one used by Fryer and Greenstone (2007) is used to match the states. This is a new approach to examining concealed handgun laws. States that adopted the laws are compared to states with similar probabilities that did not adopt the law. The results of this project show evidence that laws allowing citizens to carry concealed weapons do indeed lower crime rates, in particular, violent crime rates.

Part I

Introduction

There are often questions about what the founding fathers of our nation truly intended in the words of the Declaration of Independence and the Constitution. The Second Amendment to the Constitution of the United States of America is one of the most popular issues in government and politics in recent history. The exact words include: “*A well regulated Militia, being necessary to the security of a free State, the right of the people to keep and bear Arms, shall not be infringed.*”¹ Some interpretations of this have changed over the history of our nation. Individual states also have different interpretations of what the founding fathers meant by the Second Amendment.

The issue of gun control is a hotly debated topic today that is often brought up in political campaigns during election season or often after shootings covered by the media. In recent years, there have been a number of school shootings which have left a number of young people dead, including the violent massacre at Virginia Tech University.² Immediately following the tragedy, there was a great deal of talk in the media as well as the Virginia state legislature on the subject of gun control.

In the 2008 presidential election, the issue was brought up once again. Senator John McCain had the support of the National Rifle Association while Senator Barack

¹The Second Amendment to the United States Constitution: “A well regulated militia being necessary to the security of a free State, the right of the People to keep and bear arms shall not be infringed.” Is a part of the United States Bill of Rights. The U.S. Supreme Court has upheld the right of citizens to own firearms, saying a ban would violate the Second Amendment rights of American citizens. Most recently, in 2008, the United States Supreme Court ruled that a District of Columbia law banning possession of handguns in the home was in violation of the Second Amendment in the case: *District of Columbia v. Heller*, 128 S.Ct. 2783 (2008).

² On April 16th 2007, a gunman opened fire on students and faculty at Virginia Polytechnic Institute and State University killing 32 and injuring others before committing suicide. It is the deadliest shooting incident during peacetime in United States history. Source: *Deadliest Shootings in the U.S.*, MSNBC.

Obama had the support of most gun control advocates. Following the election of Barack Obama, gun and ammunition sales increased despite an economy in recession, which many attribute to fears that President Obama would restrict gun ownership and gun sales even more.³

Concealed gun laws have been a very important part of the gun control discussion. Many have challenged and defended the right to carry a firearm concealed on or near the person. The history of concealed handgun law as well as a background on the explanations and theories behind many gun control policies are in the following two sections of this paper. The issue of gun control has been and continues to be an important issue in our nation's history.

History of Concealed Handgun Law

According to Cramer and Kopel (1995), there were laws in place in the years before the Civil War that addressed the issue of concealed handguns. Some states banned the carrying of concealed handguns, even including on-duty law enforcement agents. In the 1897 Supreme Court case *Robertson vs. Baldwin*, 165 U.S. 275, the Court decided that laws regulating concealed firearms did not infringe upon the right "to keep and bear arms", and therefore was not a violation of the Second Amendment.

In the 1920s and 1930s many states adopted "A Uniform Act to Regulate the Sale and Possession of Firearms." This law prohibited unlicensed concealed carrying of a firearm. Most states understood the need for law enforcement and some others to carry a concealed weapon and adopted provisions that allowed concealed carry for certain

³There are a number of articles that reported on the rise in gun sales. Gun and ammunition sales actually began to rise when Senator Obama clearly led in polls. The numbers continued to rise in the weeks and months after the election. An article from CNN, *Gun Sales Surge After Obama's Election*, tells more on this story.

individuals. Vermont, one state that did not adopt the Uniform Act, did not adopt a statute prohibiting concealed handguns. Vermont is unique in having no statutes prohibiting or regulating the concealed carry of handguns except with the intent to injure someone.⁴

After World War II, New Hampshire, Washington, and Connecticut were the first states to adopt what are known as “shall issue” statutes. Grossman and Lee (2008) discuss the differences in the laws. In shall issue states, authorities are normally required to issue a right to carry permit unless there is a cause disqualifying the applicant (such as being a convicted felon), and the authorities do not have discretion in deciding whether or not the applicant has reasonable need for the permit. Today there are thirty-nine shall issue states in the United States in which officials cannot deny a concealed-carry permit to a citizen as long as that citizen meets certain basic requirements.⁵ May issue states also require a permit to carry a concealed weapon; however, the issuing of such permits is at the discretion of government officials. May issue laws allow the authorities a great deal of power to deny applications for concealed carry permits. May issue laws generally require applicants for permits to give a reason for why it is necessary for them to carry a concealed weapon. Nine states have may issue laws. Two states, Vermont and Alaska are said to be unrestricted, with Alaska often also referred to as a “shall issue” state. While Alaska automatically issues permits to residents who meet the criteria, Vermont, as mentioned earlier, has no statutes regarding concealed carry permits.^{6 7} No state has ever gone from being a “shall issue state” to being a “may issue” state.

⁴ While it may seem somewhat ambiguous, this is how Vermont law is written. Statute Title 13: Section 4003, from the Office of the Attorney General of Vermont.

⁵ See Table 1 at the end of this paper for a complete list of the year each state adopted a shall issue law.

⁶ Alaska law can be found on the Alaska Division of Statewide Services webpage at, <http://www.dps.state.ak.us/statewide/permitslicensing/concealedhandguns.aspx>

Explanations For and Against Gun Control

Dezhbakhsh and Rubin (1998) discussed the possible effects of gun control laws. The two possible effects the authors discuss are the “facilitating effect” and the “deterrent effect”. The facilitating effect is an increase in crime due to an increase in gun ownership resulting from laws that allow easier access to and ownership of firearms. The deterrent effect on the other hand, is that if potential victims’ likelihood of owning a gun increases, then the criminals’ uncertainty of the victims’ gun ownership increases. This would likely result in a decrease in crime. The more often those victims carry a gun and use it in self-defense, the more risk a criminal expects to be taking on when attacking a victim. The authors’ opinion is that depending on the population characteristics of a certain area, gun laws may either lead to an increase or decrease in crime rates.

In economics these effects may be thought of as the substitution effect and income effect often discussed as a part of consumer theory. In this model, the “consumer” is a person who may or may not commit a crime. Instead of incomes increasing, the availability of guns is increasing (the facilitating effect). The substitution effect, which addresses changes in relative prices to consumers, is the change in the relative price of committing crimes. The price of committing a crime could be the risk of being apprehended or even shot (the deterrent effect).

Lott (2001) has done extensive work in law and economics as well as public choice theory. According to Lott, areas where carrying a concealed weapon is legal have

⁷ Vermont law, The Vermont Statutes Online, Title 13: Crimes and Criminal Procedures, Chapter 85: Weapons.

a 69 percent decrease in the death rate from public multiple shootings like those at Virginia Tech and Columbine High School^{8,9}

Lott (2001) discusses the National Academy of Sciences report on gun control. The Clinton administration set up a panel, made up mostly of gun control advocates, at the National Academy of Sciences to study the affect of gun control laws, however their focus was to examine the negative side of guns. A good example of the public choice model, the Clinton administration's aim was to appear tough on crime through their assault weapons ban and Brady Act, when in fact according to Lott, "the panel couldn't identify a single gun control regulation that reduced violent crime, suicide or accidents." The 328 page report was based on 253 journal articles, 99 books, 43 government publications, and the panel's own empirical work, but they still could not find any evidence of increased gun control laws reducing crime rates. The panel however decided to ignore that perhaps their questions had been answered, and instead they called for more funding to continue their research.⁸

An important point that must be addressed is how the laws affect a person's decision making. In places where it is illegal to carry a concealed firearm, law-abiding citizens are the ones not carrying while criminals are the ones that are carrying firearms. Laws restricting the use of guns therefore benefit those who intend to use them for criminal activity. Law abiding citizens lose their right to defend themselves with a gun. Gun laws, such as concealed-carry laws, do very little to stop criminals from breaking the

⁸ On April 20 1999, two gunmen opened fire and set off explosive devices killing 15 and injuring more at Columbine High School in Littleton, Colorado. Source: Deadliest Shootings in the U.S., MSNBC

⁹ This paragraph was taken from my 2007 Senior Assessment paper for my Bachelor of Science Degree in Business Economics, *Determinants of Violent Crime Rates and the Affect of Gun Control*.

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law.¹⁰ Despite a law prohibiting possession of firearms within 1000 feet of a school in the United States, there have still been a number of fatal school shootings across the nation in the recent decades.¹¹

The last important issue that is often discussed with an increase in gun ownership is the number of accidental shootings. While this paper does not study accidental shootings or cases of mistaken identity in shootings, both numbers may be affected by concealed gun laws and an increase in the number of people carrying a firearm. Proponents of gun control (opponents of the right to carry concealed firearms) argue that less gun control leads to an increase in the number of accidental shootings. Miguel A. Faria Jr., M.D., editor of the Medical Sentinel, has done much research on the topic of gun control. In 1997 and again in 2001, Faria discussed the work of the American Medical Association's (AMA) campaign against domestic violence. Dr. Arthur Kellermann, head of the Emory University School of Public Health, was a lead investigator in the AMA's campaign. Dr. Kellermann (1986) claimed that, "scientific research proved that defending oneself or one's family with a firearm in the home is dangerous and counter productive, claiming 'a gun owner is 43 times more likely to kill a family member than an intruder.'" Dr. Edgar Suter, Chairman of Doctors for Integrity in Policy Research, found many flaws in this study however. Dr. Suter writes: "The true measure of the protective benefits of guns are the lives and medical costs saved, the injuries prevented, and the property protected --- not the burglar or rapist body count. Since only 0.1 - 0.2 percent of defensive uses of guns involve the death of the criminal,

¹⁰ In the real world, there are many people that may fit in both the criminal and non-criminal categories based on different criteria. This study simply defines a "law abiding citizen" as a person who follows the gun laws in place. Once a person chooses to break a gun law, he or she is no longer considered "law abiding".

¹¹ The GUN-FREE SCHOOL ZONES ACT OF 1990 prohibits the possession or discharge of a firearm in a school zone (defined as being within 1,000 feet of a school).

any study, such as this, that counts criminal deaths as the only measure of the protective benefits of guns will expectedly underestimate the benefits of firearms by a factor of 500 to 1,000” (Faria, 2001).¹²

The Effects of Concealed Handgun Laws (A Brief Review of Past Results)

Lott vs. Others

John Lott is not the only one to find that crime rates were lower in areas where concealed carry is legal. On the other hand, there are those that have questioned the findings of Lott and others.

Lott and Mustard (1997) found that shall issue laws reduce the number of violent and property crime rates without increasing accidental deaths. This reduction in crime rates is, according to Lott and Mustard, due to the deterrent effect. Their study included cross-sectional data from counties in the United States. In addition to crime rates, the authors put a monetary value on concealed carry laws:

The estimated annual gain from all remaining states adopting these laws was at least \$5.74 billion in 1992. The annual social benefit from an additional concealed handgun permit is as high as \$5,000.

(Abstract, Lott and Mustard, 1997)

Dezhabkhsh and Rubin (1998) believe that Lott and Mustard’s findings are suspect. In their own study, they aim to overcome what they call shortcomings of the Lott and Mustard study. Their study tried to measure how various unique factors in a county might affect the magnitude of the change in crime rates as a result of shall issue

¹² Some of this paragraph was taken from my 2007 Senior Assessment paper for my Bachelor of Science Degree in Business Economics, *Determinants of Violent Crime Rates and the Affect of Gun Control*.

laws being enacted. They found the results to be smaller than those in the study conducted by Lott and Mustard. In their conclusions they list these effects:

For murder, for example, there is only at best a small reducing effect. For robbery, many states experience increases in crime. For other crimes, results are ambiguous, with some counties showing predicted increases, and some predicted decreases (p 473).

Webster, Vernick & Ludwig (1998) discuss their disagreement with Lott and Mustard's 1997 findings. The main problems these authors have with the findings of Lott and Mustard are not taking into account crime cycles and omitted variable bias. Some important variables that Lott and Mustard are accused of omitting include changes in local drug markets, police practices, and poverty. Webster (et al) conclude that shall issue laws do not reduce crime rates:

Subsequent research correcting for several of the problems with Lott and Mustard's study shows no evidence that these laws reduce violent crime (p 983).

Lott responded to Webster (et al) in the same issue of the *American Journal of Public Health*. Lott claims that his study takes into account crime rate trends over the 16 years of data in the study. Lott measures crime rate patterns before and after the adoption of laws. Other studies, Lott admits have not included many important variables, but the study by Lott and Mustard accounted for changes in county demographics (Lott, 1998).

Another study by Lott, along with Stephen G. Bronars, shows the "spillover" effect of shall issue laws. Criminals are said to move from one community to another

more in response to changes in concealed handgun laws than in response to arrest rates. The spillovers are largest for property crimes and happen immediately and continue to increase over time after adoption of the law. This is further evidence that supports the opinion of Lott that concealed handguns actually do deter criminals (Bronars & Lott, 1998).

The next section, Part II, will discuss matching states based on their probability of a state adopting a “shall issue” law. Part III will compare the effects of a state adopting shall issue laws on the crime rates.

Part II

Using Probability of Adopting the Law to Match States

This study uses the approach by Fryer and Greenstone (2007) who studied the causes and consequences of attending historically black universities. In their paper, they estimate the probability of a student attending a historically black college or university using a probit model. Once probabilities are estimated, students who attended both historically black colleges and universities and those who attended traditionally white institutions with similar probabilities of attending a historically black college or university are matched into pairs. Outcomes of these pairs, years after completing college, are then compared. This method allows the authors to gain information on whether the type of school attended is a determining factor of future outcomes or if other variables may have existed prior to choosing a college that is responsible for future outcomes.

This study matches states into pairs using the probability of each state adopting a “shall issue” law. The outcomes (crime rates) of the matched pairs can then be compared. States that adopted shall issue laws are compared to the matched pair states that did not adopt the law but should have, given their similar probability to those states that did. By matching states based on their probability to adopt a law, we are able to match states with similar characteristics important in determining when and why states adopt such legislation. This type of study is superior to cross-sectional analysis among all states in the U.S. due to the fact that we are comparing states with similar characteristics in different years. This method should lower the amount of biased in the estimates due to important omitted variables.

In trying to generate the probability of a state adopting a shall issue law in a certain year, the variables that affect whether or not the law is adopted must be determined first. For this part, the study by Grossman and Lee (2008) is very useful. In their article, the authors state that the goal of their paper is to “...*explain the timing and pattern of the adoption of different gun control laws across U.S. states during the past 40 yr.*” (pg 198) The next section will discuss the variables and data used to predict probability.

Data/Variables

The data and variables used for this study are for the years 1960 through 2001, taken directly from the article by Grossman and Lee.¹³ In their study, the focus is on the variables affecting whether or not a state adopts a shall issue gun permit law and the timing of the adoption of such laws. Forty-eight states were used, with Vermont and New Hampshire already being classified as shall issue states prior to 1960. The dependent variable used in their study was whether or not a state is “shall issue”. A dummy variable was used with a “1” meaning the state had adopted shall issue and a “0” meaning the state had not adopted the law. Classification of states as shall issue states was determined by the authors on a case-by-case basis.¹⁴

¹³ The data used for this study is what was provided by Dr. Richard S. Grossman of Wesleyan University after I requested the data via e-mail. I explained to him that I wanted to use his data and what he had done to estimate the probability of a state adopting a shall issue law for my applied project. It should be noted that Dr. Grossman was unsure whether this was the exact same data set used for his study with Stephen A. Lee. I would like to thank Dr. Grossman for providing me with this data set to use in this study.

¹⁴ See Grossman & Lee, 2008; page 202, Section “IV. Data” for further explanation.

A. Crime

The first variable mentioned in the Grossman and Lee (2008) article is crime. Crime is often a reason given by those who favor and those who oppose shall issue laws. The authors mention:

At a rally in Salt Lake City prior to the adoption of Utah's "shall issue" law, proponents argued that a rising crime rate made it important for law-abiding citizens to be able to purchase guns.¹⁵

On the other side of this issue, proponents of gun control argue that reducing the number of guns would reduce the crime rate. Crime rates were taken from the FBI's Uniform Crime Report, U.S. Department of Justice, Bureau of Justice Statistics, 1960 – 2001.

B. Neighboring Jurisdictions

The next variable mentioned in the article is "neighboring jurisdiction". Neighboring states' laws are said to influence how a state decides to set their own laws. The passage of shall issue laws in neighboring states should make a state want to adopt a shall issue law itself. Grossman and Lee point out that one reason this may be an influence is that politicians supporting the right to carry and overall gun rights may simply use "keeping up with surrounding states" as way to push their initiatives. Bronars and Lott (1998) discuss the "spillover effect" of shall issue laws. That is, criminals will likely move into nearby or adjacent jurisdictions where the gun laws are stricter and the risk of a victim using a gun is less. By adopting laws that are similar to surrounding areas, criminals have less incentive to move to that area. This variable is measured by the percentage of each state's border that is contiguous to a shall issue state.

¹⁵ Grossman and Lee referenced "*Salt Lake City Tribune*, January 29, 1995, p. B3."

C. Urban Population

Grossman and Lee discuss that it seems to be the case that states with greater rural populations tend to be shall issue states while states with very urbanized populations are may issue. The logic here is that urban areas may believe that concealed carry should be more restricted. Those in rural areas might be more accustomed to owning guns and hunting and therefore more accustomed to and comfortable with the idea of concealed carrying of firearms. To measure this variable, the authors used the percentage of a state's population that lives in a metropolitan statistical area according to the U.S. Department of Commerce, Bureau of the Census (1960-1961).

D. Political Factors

Political factors were also included by Grossman and Lee. Republicans tend to be more in favor of second amendment (gun) rights while democrats tend to favor stricter gun control. According to Lott and Mustard (1997), states that have right to carry laws tended to be Republican with large NRA memberships.¹⁶ This variable is measured by the political party affiliation of the state's governor along with which party has control over the state legislature.

Brief Review of Results from Grossman and Lee

Grossman and Lee show results for eleven different models with various combinations of variables. All variables were found to be significant in explaining the adoption of shall issue laws except political factors. Crime itself was not found to be

¹⁶NRA stands for National Rifle Association.

significant, but the change in crime over both three and five year periods was found to be significant (Grossman & Lee, 2008).

Explaining Matched Pairs and Probit

The variables from Grossman and Lee were used to estimate the probability for a state adopting a “shall issue” law using a probit model. The states with similar probabilities (within .05) are matched into pairs. States with similar probabilities would have similar characteristics that affect whether or not a state adopts a shall issue law. Next, the crime rates for matched pairs are compared to help determine the effect of the law. For example, Indiana adopted a shall issue law in 1980. Nevada had a similar probability of adopting the law in 2001 but did not. The crime rates of the two states in the given years are then compared. This is repeated for two years and three years after the given years to see the effects of the shall issue law on crime rates.

In total, Grossman and Lee’s dataset contained over 1700 observations. From 1960 through 2001, there were 29 states that adopted shall issue law. Therefore there are only 29 observations with SI (Shall Issue Law) = 1.¹⁷ This poses a problem for running probit effectively, having close to 1700 observations for which SI = 0. In order to bring the number of observations with SI = 0 and SI = 1 closer together, the data for the year shall issue was adopted along with the data for the year 8 years prior to adoption are used. For states in which the law was not adopted during the time frame, 2001 was considered “0 years until adoption of law” and the data for “8 years until adoption of law” was also used as in the other observations. This gave a total number of 96 observations for this probit model.

¹⁷ SI (Shall Issue): 1 = shall issue law adopted, 0 = shall issue law not adopted.

Using the observations for “8 years until adoption of law” may seem somewhat arbitrary but was chosen as it better predicted the outcomes of states. One reason for this may be that in the years immediately before the adoption of law, the characteristics determining whether a state is to adopt a law or not are similar to those in the year the law is adopted. Taking data from 8 years prior to adoption of the law allows for those characteristics to change. Political factors, neighboring jurisdictions, crime rates, and urban populations may not change much from one year to the next but over 8 years those variables can be very different.

Model

The equation estimate with probit is:

$$\text{Shall_Issue_Dummy} = a + b_1\text{Crime}^* + b_2\text{Urban_Population} + b_3\text{Political_Factors}^{**} \\ + b_4\text{Percent_border} + b_5\text{Population} + e$$

* b_1 Crime includes various variables for crime:

Qni	Total crime index (QNI2 is crime index squared)
QNV	Violent Crime Index
QNP	Property Crime index (not using this)
dQNI3	3-year change in total crime index
dQNI5	5-year change in total crime index
dQNV3	3-year change in violent crime index
dQNV5	5-year change in violent crime index

** b_3 Political_Factors:

DD	Democrats control house, senate, governor
RR	Republicans control house, senate, governor

Other variables:

SI	“shall issue” Dummy, 1 = adopted law, 0 = law not adopted
Pop	Population
SMSA	Percent of population living in urban areas
PctBorderSI	percent state's border that touches a "shall issue" state

Using the predicted probabilities based on this model, we are able to match the states based on similar probabilities of adopting shall issue law. The matched pairs resulting from this model can be seen in Table 2 at the end of this paper. Some states are matched with only one other state while other states have multiple matches such as Michigan with twelve matches. There are sixty-four matched pairs of states that have adopted shall issue laws with states that have not adopted shall issue in the given year. States can be matched with more than one other state.

The next section, Part III, will discuss the comparison of crime rates in matched state pairs.

Part III

Data

Data for individual state crime rates is taken from the United States Department of Justice, Bureau of Justice Statistics. The range for this data is 1960 – 2007 and is measured annually. Violent crime rates and property crime rates are examined separately as there is an expectation of differing effects of concealed carry laws on the different types of crimes, based on previous studies and literature.

First Approach

As mentioned above in Part II, states have been matched based on the probability that they will adopt shall issue legislation. To measure the effects of the law, the crime rates in states that adopted shall issue legislation are compared to their matched pair or pairs that did not adopt the law.

The first attempt to measure this effect was to take the difference in crime rates in each given year.¹⁸ For example, Oklahoma adopted shall issue in 1995 and was matched with 1981 West Virginia. The difference for these would be calculated as:

$$\text{Difference} = (\text{Oklahoma_ViolentCrime_1995}) - (\text{WestVirginia_ViolentCrime_1981})$$

For states that have more than one match such as Arkansas, the average of the crime rates of matched states is subtracted. The calculation is as follows:

¹⁸ For the rest of this project, years should be thought of as the number of years until shall issue is adopted (or should have been adopted in the case of the matched pair states) or the number of year after shall issue was adopted.

$$Difference = (Arkansas_ViolentCrime_1995) - ((Connecticut_ViolentCrime_1961 + Florida_ViolentCrime_1979 + Maine_ViolentCrime_1977) / 3)$$

This difference is calculated for all states and their matched pairs. The difference is also calculated for the year prior to adoption and then calculated for the next four years after the adoption of the law. Those differences are then compared. If the law is affecting the crime rates, there may be a change in the differences from one year to the next. If crime rates are in fact decreasing as a result of the adoption of shall issue legislation, we would expect to see the differences in crime rates decrease in the years after adoption.

Table 3a shows the average differences in violent crime rates for each year. The difference in violent crime rates stays almost constant from the year before adoption of the law through the year after adoption but then begins decreasing after that based on these averages. When it comes to property crimes, the averages are increasing but also see a decrease two years after the adoption of the law as seen in Table 3b. Using a two sample t-test, the differences in each year can be compared to test for statistical significance of these decreases. Despite apparent decreases in crime rate differences, none of the t-tests yielded values that make these differences statistically significant. Perhaps a downward trend did begin as a result of the new law. One possible way to measure this would be if the crime rates still continued to decrease in the many years after the time range used in this test.

Second Approach

There are twenty-nine states that adopted shall issue legislation during the time period covered in this paper. Simply looking at the change in the crime rate before and after the adoption of such legislation may shed some light on the issue. Graph 4a shows

the average annual violent crime rates for shall issue states and the averages for their matched pairs from four years prior to adoption of the law until four years after adoption of the law. The graph shows that crime rates were higher in shall issue state before adoption of the law and the gap widened until the law was adopted at which point the gap began to narrow. Graph 4b shows the annual change in the violent crime rates for both groups over the nine year span. Table 4c shows the average violent crime rates for the shall issue states for the four years prior to adoption of the law and four years after the adoption of the law. In the four years leading up to the adoption of the law, the average violent crime rate was increasing at around 5.12% (total over four years) while in the years after the adoption of the law the average violent crime rate actually *decreased* around 9.02%. This should then be compared to the results in Table 4d which shows violent crime increasing in the matched pair states by around 2.3% in the years before the law *should be* adopted. In the years after the “should be” adoption year, the violent crime rate decreased by around 0.9%.

So in states where shall issue was adopted, there was a decrease of around 14 percentage points in the growth of crime rate over the period. The drop in states where shall issue should have been adopted but was not, was only around 3 percentage points. This is evidence that perhaps the change in the law led to a reduction in the rate and number of violent crimes. The crime rate did not just begin to increase at a lower rate but actually decreased over the years. This is also evidence that the laws may take some time to gain effect.

The numbers for property crime are similar, as can be seen in Table 5a and 5b. From the four years before until the year of adoption of shall issue legislation, the average property crime rate grew 0.49% in shall issue states. From the year of adoption

to four years after adoption of the law, the property crime rate fell approximately 8.03%. In the matched pair states, property crime rates fell by 1.53% in the years prior to the should be adoption year of the law and fell 4.0% in the years after the “should be” year. Similar graphs for property crimes are seen in Graphs 5c and 5d. Graph 5c shows that once again, crime rates in shall issue states were higher than crime rates in non-shall issue (matched pair) states. The gap stays somewhat constant until the third year after the adoption of the law in which the gap begins to narrow. Graph 5d shows the annual average change in property crime rates. Before adoption of shall issue legislation, the growth in crime rates in shall issue (to be) states escalates above rates in matched pair states, but after the adoption of the law, the rate for shall issue states drops below that of non-shall issue states.

In order to measure the statistical significance of these numbers, a two sample t-test was performed using the average crime rates in shall issue states and comparing them to average crime rates in their matched pair states. The first set of test conducted compared the average violent crime rates of all shall issue states in the four years prior to adoption of the law plus the rate in the adoption year with the similar average rates in the four years before each matched pair state should have adopted the law plus the year the law should have been adopted. The results of this t-test (as seen in Table 6a) gave a very small p-value, showing that average violent crime rates among all shall issue states are higher than those in the matched pair states where shall issue was not adopted. These results are in line with Grossman and Lee’s findings on crime rates affecting whether a state adopts shall issue legislation or not. Table 6b shows similar results when comparing property crime rates. Property crime rates are higher in shall issue states prior to the

adoption of the law and in the years immediately after adoption of the law than in the matched pair states.

The next set of t-tests that are conducted are used to compare the average rates of change for crime rates in the years before and after shall issue legislation was or should have been adopted. The test in table 7a tests the null hypothesis that the average annual changes in violent crime rates are equal for the two groups of states. The t-test yielded a value of around .45 for the years before the law was adopted showing that we cannot reject the null that the two are statistically equal. However in the years after the law was adopted, the t-test resulted in a value of .01 which shows that the null can be rejected. This shows that the annual changes in violent crime rates are indeed lower in shall issue states than in non-shall issue states the years after shall issue legislation is adopted.

When it comes to property crimes, the t-tests for the periods before and after the adoption of shall issue legislation gives us results of .35 and .15 respectively. Although the data and graphs suggest that if there is a difference in property crime rates and annual changes, the shall issue states saw a drop in rates relative to their matched pairs, we cannot reject the null hypothesis that the changes in property crime rates are equal.

Explanations and Conclusions

The above mentioned data and results are evidence that shall issue legislation leads to a reduction in violent crime rates. The crime rate did not just begin to increase at a lower rate but actually decreased over the years. There is also some evidence that the laws may affect crime rates almost immediately, but the effects can continue to change and be felt in the years after adoption of the law. Different explanations can be proposed for this. Perhaps as criminals are faced with a situation in which a victim has a concealed

weapon, they become less likely to commit a violent crime. So, as more and more criminals are confronted for the first time with a victim who is armed, the less and less that criminal chooses to commit violent crimes (at least in that state). In some cases, maybe criminals were actually shot and maybe even killed while carrying out a violent crime. Perhaps more criminals are apprehended by police due to private citizens acting with force. So explanations could be that the criminals are choosing to commit fewer violent crimes or that the number of potential criminals on the street actually decreased.

Property crimes include burglary, larceny-theft, and motor vehicle theft. The explanation for why gun laws may affect property crimes may be difficult to realize. Most property crimes would not require that the criminal use a weapon in anyway, because the victim is often not face to face or even near the criminal. Some criminals might be less likely to steal a car or property out a victim's driveway for fear of being seen and then facing a victim with a firearm. Some people may be less likely to commit acts of vandalism if they believe the victim might come out at any second with a gun, but many property crimes seem as though they'd be unaffected by firearms.

One main reason for a possible decline in property crimes as a result of right to carry laws may be the same as addressed above for violent crimes. If the number of criminals committing violent crimes decreases, whether because the criminals have moved to neighboring jurisdictions, been incarcerated as a result of being caught by a victim with a gun, or maybe even been shot and killed, it is likely that the number of property crimes would decrease as well. Bronars and Lott (1998) discussed the spillover effect on property crimes, that a shall issue law in one are leads to criminals moving to a nearby area. The nearby area with no shall issue law will often see an increase in not

only violent crimes but property crimes as well, a point that Bronars and Lott say other researchers ignore.

Gun control and concealed weapons laws have become a very popular issue over the history of our nation. There is conflicting literature on the subject of concealed weapons laws, however most research seems to conclude that shall issue laws lead to a reduction in crime rates due mostly to the deterrent and spillover effects.

The prediction of probabilities for states adopting shall issue laws can be difficult. Grossman and Lee's 2008 study provide a good understanding of why states adopt shall issue laws. There are a number of ways that states may be matched based on the data used in their study as well as other studies. This unique use of the technique used in Fryer and Greenstone (2007) to study concealed handgun laws and other laws in the states should be further explored.

The evidence in this study shows support for the idea that shall issue laws and the right to carry a concealed weapon do lead to a reduction in crime rates. The data shows that shall issue laws reduce property crime rates, but the evidence supporting that idea is somewhat weak in this study and not statistically significant. The evidence is somewhat stronger that shall issue laws do reduce violent crime rates in the states. The change in violent crime rates was lower for shall issue states and statistically significant. All of the data and calculations seem to support this.

While some of the differences that may be responsible for differences in crime rates are eliminated through the use of matched pairs analysis, the best way of improving this study may be to include a some other control variables when comparing crime rates. Some states' crime rates may be feeling the effect of a state specific shock or change in certain variables.

*Tables and Graphs**

*Tables and graphs are in the order they are first mentioned throughout the paper.

Table 1
(Alphabetical)

Shall issue law adoption 1960 - 2001

1994	Alaska
1994	Arizona
1995	Arkansas
1969	Connecticut
1987	Florida
1989	Georgia
1990	Idaho
1980	Indiana
1996	Kentucky
1996	Louisiana
1985	Maine
2001	Michigan
1991	Mississippi
1991	Montana
1995	Nevada
1995	North Carolina
1985	North Dakota
1995	Oklahoma
1990	Oregon
1989	Pennsylvania
1996	South Carolina
1986	South Dakota
1996	Tennessee
1996	Texas
1995	Utah
1995	Virginia
1961	Washington
1989	West Virginia
1994	Wyoming

Table 1b
(Chronological)

1961	Washington
1969	Connecticut
1980	Indiana
1985	Maine
1985	North Dakota
1986	South Dakota
1987	Florida
1989	Georgia
1989	Pennsylvania
1989	West Virginia
1990	Idaho
1990	Oregon
1991	Mississippi
1991	Montana
1994	Alaska
1994	Arizona
1994	Wyoming
1995	Arkansas
1995	Nevada
1995	North Carolina
1995	Oklahoma
1995	Utah
1995	Virginia
1996	Kentucky
1996	Louisiana
1996	South Carolina
1996	Tennessee
1996	Texas
2001	Michigan

Table 2
Matched Pairs
 *Shall Issue Adopted

Adoption Year*	State	States (with probit value within .05)
1994	Alaska	95 AR*, 61 CT, 91 MT*, 61 WA*, 94 WY*
1994	Arizona	87 AR, 69 CT*, 61 CT, 80 IN*, 95 NV*, 01 NM, 61 WA*
1995	Arkansas	61 CT, 79 FL, 77 ME, 91 MT*, 61 WA*, 94 WY*
1969	Connecticut	90 IN*, 95 NV*, 01 NM, 61 WA*
1987	Florida	01 HI, 01 IA, 01 KS, 88 KY, 93 MN, 87 NC, 78 SD, 96 TX*, 95 VA*, 61 WA*
1989	Georgia	91 MS*, 01 OH, 86 SD*, 61 WA*
1990	Idaho	01 NE, 01 NM, 96 TN*, 61 WA*
1980	Indiana	95 NV*, 01 NM, 61 WA*
1996	Kentucky	77 ME, 01 MD, 93 NE, 95 NC*, 95 OK*, 96 TX*, 95 VA*, 61 WA*, 81 WV
1996	Louisiana	61 WA*
1985	Maine	01 MN, 01 MO, 77 ND, 87 OK, 82 OR, 61 WA*
2001	Michigan	01 MO, 83 MT, 93 NM, 93 NY, 85 ND*, 93 OH, 90 OR*, 88 TX, 87 UT, 61 WA*, 89 WV*, 01 WI
1991	Mississippi	01 OH, 86 SD*, 61 WA*
1991	Montana	61 WA*, 94 WY*
1995	Nevada	61 WY*
1995	North Carolina	95 OK*, 96 TX*, 95 VA*, 61 WA*, 81 WV
1985	North Dakota	93 OH, 90 OR*, 88 TX, 87 UT, 61 WA*, 89 WV*, 01 WI
1995	Oklahoma	61 WA*, 81 WV
1990	Oregon	81 PA, 88 SC, 88 TX, 87 UT, 87 VA, 61 WA*, 89 WV*, 01 WI
1989	Pennsylvania	01 RI, 93 RI, 88 SC, 88 TN, 87 VA, 61 WA*, 93 WI
1996	South Carolina	95 UT*, 61 WA*, 86 WY
1986	South Dakota	61 WA*
1996	Tennessee	61 WA*
1996	Texas	95 VA*, 61 WA*, 81 WV
1995	Utah	61 WA*, 86 WY
1995	Virginia	61 WA*, 81 WV
1961	Washington	89 WV*, 81 WV, 01 WI, 93 WI, 94 WY*, 86 WY
1989	West Virginia	01 WI
1994	Wyoming	95 AR*, 91 MT*, 61 WA*, 94 AK*

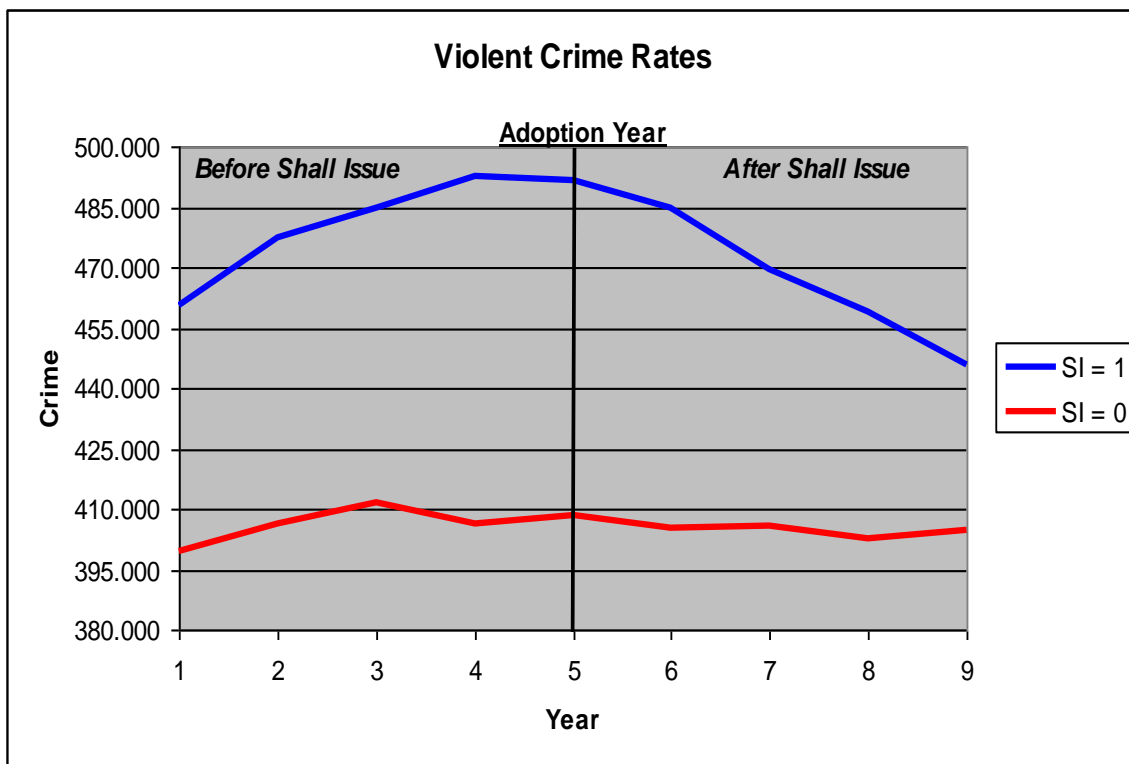
Table 3a

Difference in Violent Crime Rates (Averages)	
Year Before Adoption	121.9187
Adoption Year	120.2364
1 Year After	121.3993
2 Years After	81.54388
3 Years After	62.6974
4 Years After	58.16107

Table 3b

Difference in Property Crime Rates (Averages)	
Year Before Adoption	638.605
Adoption Year	713.791
1 Year After	796.795
2 Years After	771.5732
3 Years After	634.9421
4 Years After	570.7152

Graph 4a



Graph 4b

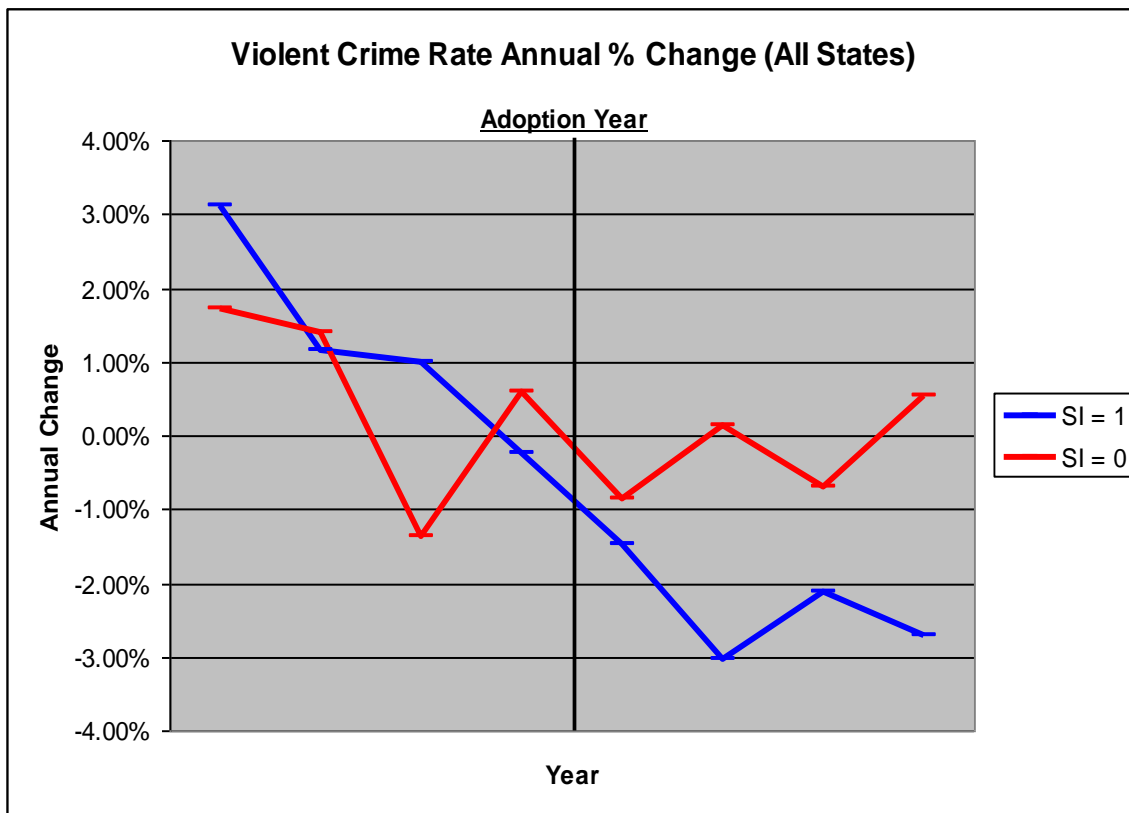


Table 4c
Violent Crime
SI=1

Adoption of Shall Issue Law	Average Violent Crime Rate
4 years prior	460.780
3 years prior	477.600
2 years prior	484.487
1 year prior	492.453
Adoption Year	491.543
1 year after	484.853
2 years after	469.490
3 years after	459.120
4 years after	445.767
Change before SI Adopted	
23.486	5.121%
Change after SI Adopted	
-43.479	-9.019%

Table 4d
Violent Crime
SI=0 all years

Adoption of Law	Average Violent Crime Rate
4 years prior	399.367
3 years prior	406.187
2 years prior	411.818
1 year prior	406.184
Adoption Year	408.558
1 year after	405.015
2 years after	405.591
3 years after	402.711
4 years after	404.856
Change before SI should have been adopted	
9.191	2.301%
Change after SI should have been adopted	
-3.702	-0.906%

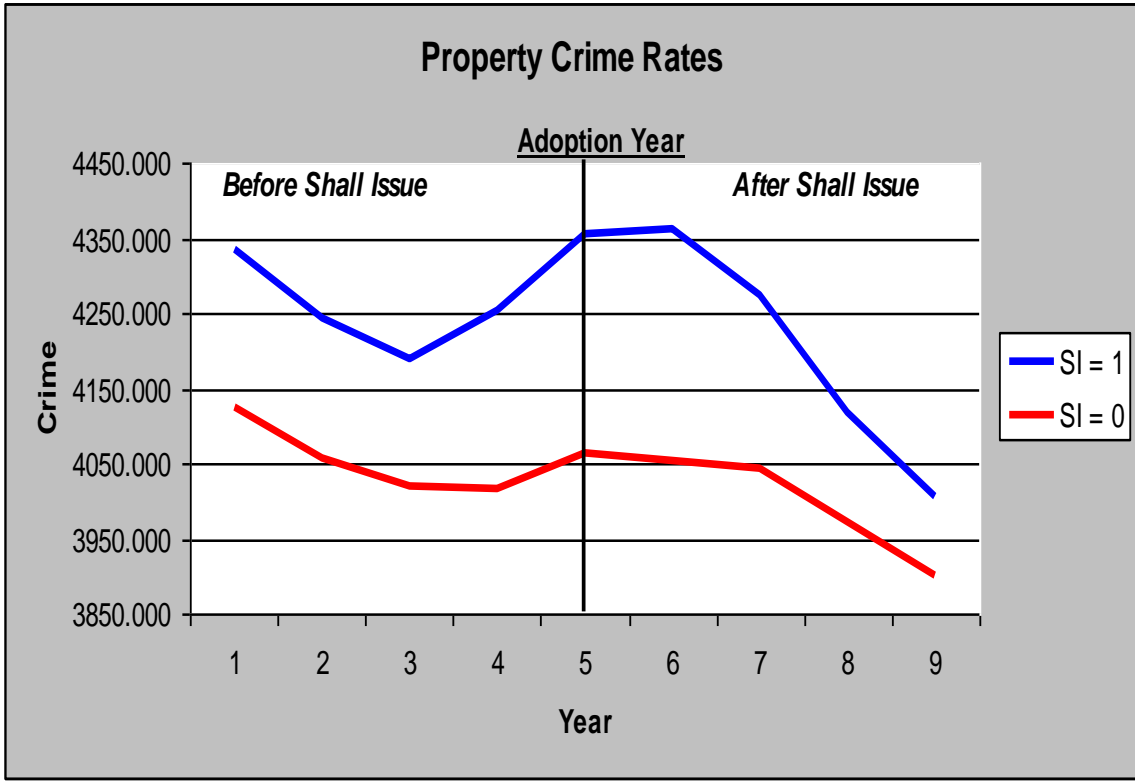
Table 5a
Property Crime
SI=1

Adoption of Shall Issue Law	Average Property Crime Rate
4 years prior	4334.603
3 years prior	4242.634
2 years prior	4189.841
1 year prior	4252.666
Adoption Year	4355.638
1 year after	4363.248
2 years after	4273.979
3 years after	4117.948
4 years after	4005.928
Change before SI adopted	
21.034	0.485%
Change after SI adopted	
-349.710	-8.029%

Table 5b
Property Crime
SI=0 all years

Adoption of Law	Average Property Crime Rate
4 years prior	4125.811
3 years prior	4057.762
2 years prior	4020.105
1 year prior	4016.960
Adoption Year	4062.709
1 year after	4053.756
2 years after	4044.120
3 years after	3971.880
4 years after	3899.993
Change before SI Adopted	
-63.102	-1.529%
Change after SI adopted	
-162.716	-4.005%

Graph 5c



Graph 5d

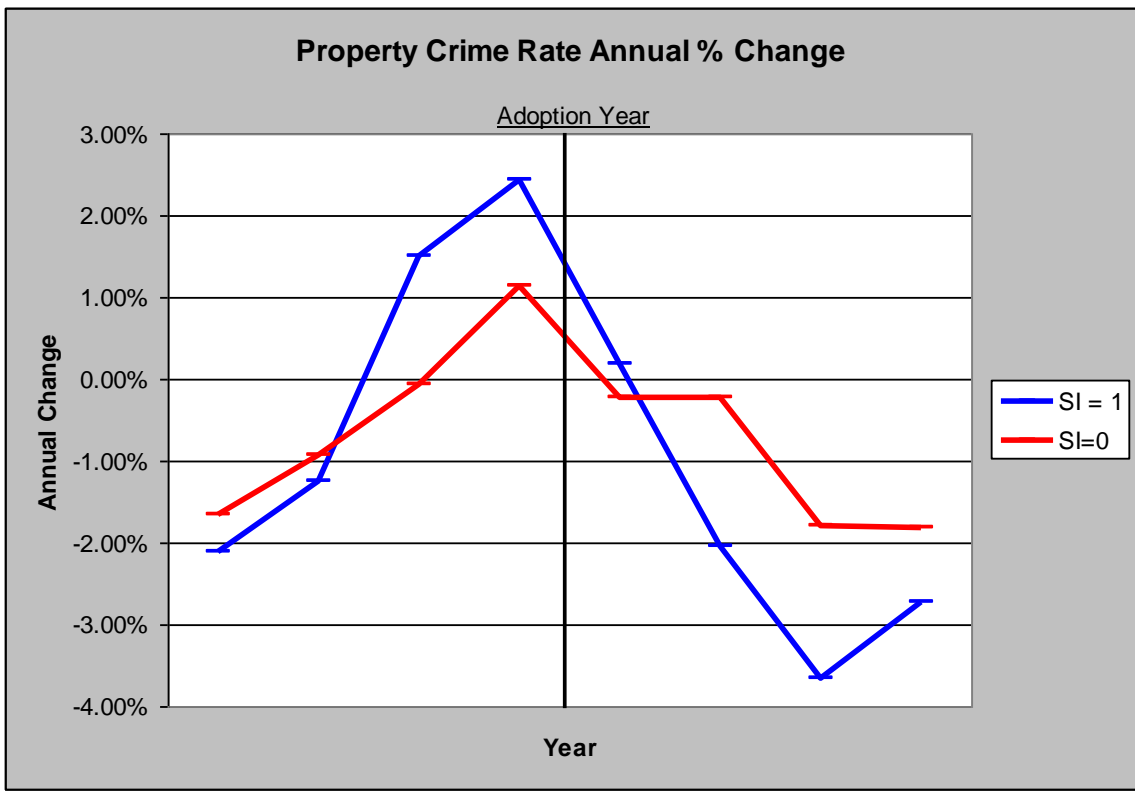


Table 6a
Violent Crime

T-test 4 Prior Years* thru adoption year
Average of all shall issue states' violent crime rates in each year vs. Average of all matched pair states' violent crime rates in each year
9.59104E-07
T-test adoption year thru 4 years* after
Average of all shall issue states' violent crime rates in each year vs. Average of all matched pair states' violent crime rates in each year
2.80982E-05
*Years are defined as the number of years until (or since) the adoption of the law. Example: Alaska adopted the law in 1994, so the years included for Alaska are 1990 – 1998, with 1990 being year -4, 1991 being year -3 and so on. Idaho adopted the law in 1990, so years included for Idaho are 1986-1994 with 1986 being year -4, 1987 being -3 and so on.

Table 6b
Property Crime

T-test 4 Prior Years* thru adoption year
0.000163
T-test adoption year thru 4 years* after
0.011061
*See Table 7a for explanation of the term "years".

Table 7a
Violent Crime

T-test 4 Prior Years* thru adoption year
Comparing average annual changes in crime rates
0.449453229
T-test Adoption year thru 4 years* after
Using Average Annual Changes
0.002318964

Table 7b
Property Crime

T-test 4 Prior Yrs to adoption year
Using Average Annual Changes
0.345153
T-test Adoption year to 4 years after
Using Average Annual Changes
0.152097

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