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No Child Left Behind: The Education Policy's Impact on
the Incidence on Crime in the Unites States

By,
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A Thesis Submitted to Department of Economics Skidmore College
In Partial Fulfillment of the Requirement for the B.A Degree
Thesis Advisor: Qi Ge

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Abstract

This paper utilizes state level education data measuring public schools' Adequate Yearly Progress to estimate the impact of the federal education policy, No Child Left Behind (NCLB), on crime rates in the United States. The study employs a fixed effects model and a lagged fixed effects model to evaluate the effectiveness of the implementation of NCLB on decreasing crime through improving the quality and number of educational years completed across the country. The main findings indicate that the policy was effective in decreasing overall property crime and motor vehicle theft. For property crime, the impact of school improvement takes the greatest effect after one and two years. The magnitude of the impact found is small but suggests a pathway for policy makers to further decrease crime by way of focused educational reform.

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1 Introduction

The United States has perpetually worked to improve their quality of life and economic prosperity. Two factors greatly impacting life quality and productivity are education and crime. Education in the U.S. is mainly financed on a state level, and states typically allocate 28% of their budgets to education. Though funding varies from state to state, the U.S. spends more per-pupil than every other nation. Regrettably, their students' performance is only average when compared to other developed nations (Gruber, 2013). Additionally, crime in the United States remains a persistent issue. Economists and policy makers should be concerned about sustainable and preventative measures for decreasing crime and creating a safer more equitable society.

The United States federal government has made efforts to increase the quality of education in the country. The No Child Left Behind (NCLB) Federal education policy was a dramatic reform created in 2001, under President George W. Bush, that overhauled the federal involvement in state public primary and secondary education. All states were required to create a standardized testing program to measure student improvement and report to the federal government. The effectiveness of this policy on the entire education system is not fully clear, and there are many identified flaws of the policy. This study examines the impact of the NCLB policy on state level crime incidence in the United States.

Economic literature predicts that both the increased quality of education and the increased quantity of years completed have a negative impact on crime. Becker (1968) identifies access to greater non-crime income as a deterrent to crime. An individual's increased completion of education gives them a greater amount of human capital and therefore access to higher income opportunities: decreasing the likelihood that they will commit a crime (Mincer, 1974). Aside from purely income driven deterrents to crime, education can increase students' sense of responsibility and citizenship (Lochner, 2004). Understanding the effectiveness of education policy in the United States will be essential to policy makers who wish to decrease crime.

The NCLB policy has received extensive evaluation and criticism for its lack of success in reaching its goals academically (Ladd, 2017). Because local, state, and federal governments

measure the success of the policy through test scores, the policy seems to have been successful due to general increases in student performance (Hanushek and Raymond, 2004). NCLB is designed to target students who are economically and racially disadvantaged, and the nature of its implementation did not allow for this goal to become realized. High quality education should have positive externalities on other areas of society, for example crime instance. Evaluating the NCLB policy for its greater impact on the country is essential to understanding its success. Many past studies have examined particular outcomes of the policy such as the changes in curriculum, changes in housing prices, impacts on drop-out rates and minority student performance. My study is unique because there has not been a previous study that looks specifically on the impact of the NCLB policy on crime incidence. Additionally, my study provides a modern application of the education and crime theories of existing literature to examine the policy's effectiveness.

I construct a fixed effects model where I estimate the impact on crime that can be explained by the level of success of the NCLB policy across all fifty states and the District of Columbia. All observations are at the state and year level from 2005-2014. I use data from the Federal Bureau of Investigation that reports the crime rate per 100,000 people. To measure policy implementation, I utilize data from the U.S. Department of Education indicating the number of public schools in the state who are reaching the policy's baseline goals of Adequate Yearly Progress (AYP). Additionally, I incorporate a vector of control variables that help in identifying the policy's direct effect. I additionally examine the impact of the policy implementation in the following year, second year, and third year by using a lag in the regression.

The results prove a small impact on crime due to the policy implementation. There is a 1.880 decrease in property crime and a 0.51 decrease in motor vehicle theft that is associated with a one percentage point increase in the number of schools that meet AYP in that state. These results are significant at the ten percent level. Additionally, I find negative, insignificant, and small in magnitude effects on violent crime and other specific types of property crime. I find that the impact on property crime is negative and greater in significance and magnitude in the first, second and third year following the change than the impact in the current year.

My results present meaningful directions for future education policy that attends to the more specific needs of schools to create education reform that will have lasting impacts on students and their communities. My results are limited because of the lack in specificity of the data because it does not account for district level interactions. It is also limited in the number of years included and the full effect of the policy may not be captured.

My paper is divided into seven sections. Following the introduction, the second section discusses and reviews the relevant literature. The third section explains the data used in the analysis. The fourth section describes the empirical methodology. The fifth section presents the results of the regression analyses. The sixth section discusses the limitations of the study, interprets the results, and advises on future research and policy implications. The seventh section concludes the study. All tables and figures are presented in the appendix following the conclusion.

2 Literature Review

To fully understand the theoretical and empirical mechanisms relevant to this study, the literature review is divided into two sections. The first section focuses on economic theory and findings that are related to education and crime. More specifically, it looks at rationale for crime decisions, the human capital theory, and education's impact on crime decisions. The second section of the literature focuses on the background and impacts of the No Child Left Behind policy. The components will include the effectiveness of accountability measures on student outcomes and the success of the policy in attaining its original goals.

Crime is a term that encompasses many different illegal acts. This literature review focuses on crime in general, but the assumption is that the crimes are committed with the intention to generate a type of income. Property crimes are likely to be the category that elicit an obvious monetary return, but violent crimes may also be associated, though not limited to these intentions. This study examines and differentiates between property and violent crimes, but it is also important to be aware of the distinction in consideration of the literature review.

2.1 Crime and Education

2.1.1 Crime Causation Theories

The motivation to study education's impact on crime comes from a desire to reduce crime through preventative measures. It is essential to understand the mechanisms of crime decision making to combat it. The rational decision to commit a crime is a function of a number of circumstances that include education, the amount of human capital possessed by the individual, and other life characteristics. The intersection of the literature illustrating these approaches gives economists an understanding of how to affect crime incidence.

A pioneering study of the mechanisms of crime outlines the intricacies of the costs of crime and the costs of combating them. Becker (1968) develops a model to understand the motivations for committing a crime and the cost of addressing crimes. The topics included in the analysis are the damages, the cost of apprehension and conviction, the supply of offenses, and punishments. Crime must be considered in the context of society. Because of this, the damages ensued from a crime are retained by the individual that it is committed against and the public whose safety is compromised. Hereby, the net cost of a crime is equal to the gain, held by the perpetrator, minus the harm done (Becker, 1968). Under this cost structure, the offender typically experiences diminishing marginal returns; as the harm done increases, the marginal gain decreases. An important consideration is that the cost of crimes is accounted by the value of the object in question (for example: in the case of a property crime: the item stolen or damaged), but the harm done to society is often much larger than the monetary value of the object.

Becker (1968) describes the cost of law enforcement as a tool for apprehension and conviction. Naturally, the more that a government spends on law enforcement, the higher their ability to prevent and mitigate crime. Law enforcement power and ability is a part of the consideration of committing a crime. Law enforcement can reduce crime through their presence by being a deterrent to commit a crime in the first place as well as discovering crime and ending it. Under the assumption that a criminal will continue to commit crimes if he is not caught, the number of offenses that will be reduced when he is discovered, stopped, and penalized by law enforcement increases. Following this conjecture is

the effect of punishment on crime: if the probability of conviction increases, then the cost to commit a crime also increases. Additionally, if the cost of the punishment increases, in terms of monetary value or time incarcerated, then the cost of the crime increases (Becker, 1968).

To understand crime from an economic perspective, Becker (1968) creates a rationale for the “supply of offenses.” When an offender chooses to commit an offense, there has been a comparison of utilities in options, and the offender has determined that the utility of committing the crime is greater than the utility of using his time and resources for other engagements. Alongside this utility comparison is a number of social theories predicting why crimes are committed such as family background, upbringing, and moral compass. These theories, while possible and likely related, are not a part of the utility cost and benefit mechanism that creates criminals.

Becker (1968) presents the essential function that predicts crime offenses and helps explain the components that lead to a crime decision:

$$O_i = O_i(P_i, F_i, U_i)$$

Where O_i is the number of offenses committed, P_i is the probability of conviction, F_i is the punishment of the particular crime, and U_i is an aggregate of a number of other personal factors such as income ability or opportunity cost of committing the crime. As mentioned before, the probability of being caught and the strength of the punishment will be negatively correlated with the number of offenses. Risk preference differentials among individuals will create variance on the size of the impact of P_i . For example, risk seekers will have a smaller negative correlation on their number of offenses than those whom are risk averse. The inclusion of U_i tells about additional ways that crime can be influenced besides law enforcement tactics. For example, education would increase an individual’s income capabilities, thus reducing the number of offenses committed (this effect will be explored in greater detail later in the literature review). Another note on risk aversion is that income from crime may increase when an individual is very risk seeking, so opportunities for non-crime income may never be a choice considered.

The punishments associated with crime are also a part of crime decision rationale. Punishments can vary from a fine to death, and their effectiveness differs in how they deter crime.

For example: completing jail time, the cost of imprisonment is the sum of the earnings forgone while incarcerated and the cost of the restrictions placed on freedom while there. A higher sum of earnings due to higher income will increase the cost of imprisonment for offenders. Aside from imprisonment, Becker (1968) presents a “case for fines,” to use fines as punishment for all crimes, and discusses the drawbacks of this solution. When crimes are punished with fines, state resources are conserved. If the fine is larger than the gain of committing the crime, then this is an effective way to deter crime. This method does not include the behavior ridicule of committing the crime and allows for the purchase of offenses. Income disparities would allow the wealthy to commit while lower income groups will be punished for their debt and inability to pay the fine. Through understanding punishment tools and the costs and benefits to committing a crime, Becker (1968) outlines the mechanism for committing a crime and shows the locations in which theory suggests that crime can be reduced. Becker’s (1968) study was monumental for this field, but its age is limiting and we must look to more recent research to see modern implications. In conjunction with Becker (1968), Witt and Witte (2000) also evaluate economic theories behind crime causation. Specifically, they look at the effect of incentives on criminal behavior and the evaluation of alternative strategies to reduce crime. Their conclusion is that crime decision making must be explained using a dynamic model that is able to incorporate many elements such as non-crime income, family characteristics, and location.

2.1.2 Human Capital Theory

Because potential non-crime earnings are a determinant of a crime decision, it is relevant and necessary to review literature that describe the human capital theory. Human capital is one’s measured capacity to earn based on skills, knowledge and experience. When an individual has completed higher levels of education and training, they increase their employment opportunities. Employment that requires a greater amount of schooling typically is compensated with a greater wage. The first depiction of this theory is laid out by Mincer (1974). Mincer (1974) seeks to understand how wage inequality can be explained through differences in human capital investment and how earnings can be understood through human capital investment behavior. Schooling experiences range in quality across different areas, but generally, they have an impact on one’s ability to generate income. The model that

he creates also includes age as an essential component. Generally, over a lifetime, individuals experience diminishing returns on investment. This is because a certain level of human capital will allow for a fixed income opportunity, and once this level is realized, returns do not continue increasing. Card (1999) completes a confirmation analysis of this model and furthers its applications. His study seeks to deny the proposition that a greater inherent earning capacity is what causes an individual to choose to complete more education, known as “ability bias” in which the causation of completed education on crime is in reverse; crime-minded and lower skilled individuals are less likely to complete more education, and confirm Mincer’s (1974) human capital theory.

Though there may be an “ability bias” that increases someone’s earning capacity if they have, for example, a greater IQ, Card (1999) finds this effect to be essentially insignificant. Hansen (2003) addresses this ability bias issue. Hansen (2003) rejects this bias and finds that this issue is not the case and it is safe to conclude causation of education on crime when controlling for neighborhood characteristics, family background, and other relevant variables.

Card (1999) finds, in a review of more recent studies observing human capital’s impact on wages, that the model is still valid and significant. The econometric specification for the human capital theory is as follows,

$$\text{Log } Y = a + \beta S + \kappa X + \rho X^2 + \epsilon$$

Where LogY is individual earnings in logarithm terms, a is a constant, β is the coefficient that the number of years of completed education has on earnings, S is the number of years of education completed, κ is the coefficient predicting the effect of experience on earnings, X is the number of years working since completing education (experience), and ϵ is a statistical error term. Education is a random variable that is likely to vary with other variables such as race, family background, parents’ education level, school quality, and measured cognitive ability (Card, 1999). There is a correlation between one’s stock of human capital and their subsequent investment at any point in their lifetime (Mincer, 1974). Higher levels of returns are connected to the variables that are regularly associated with greater levels of education. Additionally, returns on education are declining at the highest levels

of education. The inclusion of years of experience is essential to determining earnings because wages increase with experience. (Card, 1999).

The human capital theory is demonstrated in a country wide case: Meghir, Palme, and Schabel (2012) study the long-term impacts of the 1950 Swedish education policy reform on the subsequent crime rates of the country. In 1950, the country implemented a complete overhaul of their primary and secondary schooling trajectory by creating a nine-year compulsory model for all students. They found that this policy intervention resulted in lowered crime rates among affected students. Following Mincer (1974), Meghir, Palme and Schabel (2012) focus on the intergenerational transmission of human capital on an individual's earnings and crime decision outcomes. The Swedish educational reform allows for greater family resources and better parenting. Resources reach parents through increases in public school funding. The education reform also involved parents in the schooling process. These two mechanisms increase the transmission of human capital for students and consequently reduce crime. This study is important, but because of the size and demographics of Sweden, the results are not easily transferrable to other countries who operate on a larger scale and who are made up of more diverse populations. Additionally, the study was not able to utilize a control group because the policy was implemented nation-wide, so it is difficult to discern the effects of the policy from the effects of other national improvements in Sweden.

Empirical evidence confirms that increasing one's education level increases their human capital and ultimately increases their earning potential and actual earnings. As mentioned previously, this phenomenon fits into Becker's (1968) model of crime as a mechanism to decrease the number of offenses by making them more costly to the perpetrator.

Locher (2004) takes the human capital theory and makes another connection to crime. Lochner's (2004) guiding argument is that when human capital levels are higher, access to a larger income is possible, and the opportunity cost of committing a crime increases. This is through the fact that the income from a crime will likely be less than the non-crime income, and the income forgone if the offender is incarcerated is larger. Lochner (2004) uses data from the National Longitudinal Survey of Youth (NLSY) for self-reported crime and other personal characteristics data

and the Uniform Crime Reports from the U.S. Department of Justice for data on crime incidence. The NYLSY followed 12,686 individuals since 1979 and gathered data on life characteristics and actions. It also contains data of each participant's Armed Forces Qualifying Test scores.

Lochner (2004) provides relevant background to his study. While there is a larger body of literature that supports conjectures regarding age and crime, there is a lack of literature studying education and crime. Age, crime, and education are still very closely related. Criminal decisions depend on past investment choices. Present returns from crime are dependent on expected punishment, potential earnings lost from non-crime activities and/or incarceration. Increasing human capital will affect one's opportunity cost of committing a crime, but in some individuals, it may increase their criminal ability in which their criminal participation would increase. This effect is present for more skilled crimes that reap greater returns (Lochner, 2004). This proposition is not directly related to my study, but its inclusion is important in understanding the landscape of crime decisions.

Lochner (2004) describes a life cycle probit analysis model that predicts criminal participation as a function of human capital investment and age. He predicts criminal outcomes of an individual based on real individuals' schooling, experience and background. Lochner's findings illustrate several key indicators. He finds that criminal participation declines with age and education. Because of the data provided in the NYLSY, he is able to control for many variables such as cognitive ability, family background, and location. From this data, it is also apparent that high school drop outs are significantly more likely to commit crime. To differentiate between specific crime types, Lochner summarizes that education decreases both violent and property crimes, but there is an increase for white collar crimes with education. This increase is plausible because education will not only give knowledge of how to commit these crimes, but it will give access to opportunities where these crimes are possible.

In the analysis, Lochner (2004) discerns a particular relationship between age and crime participation. There is a peak crime age between 18 and 19 where property crime decreases dramatically following these ages. Violent and white-collar crimes have a more steady and slow decrease over age. An explanation for this peak age is that adolescents commit crimes before they start working and have any increased human capital past high school (Lochner, 2004). Hansen (2003)

confirms that crime age peaks in the mid to late teens. She examines the case for England and Wales for males ages 16-25. Through studying two groups, one of which completed high school and one of which stopped high school at age 16, she finds that the continuation of education past the compulsory requirement decreases crime in these individuals. The three avenues for the decrease in crime are: teens are in school and not on the streets committing crimes, teens are encouraged to have career aspirations that would deter them from crime, and teens would gain skills and knowledge that would increase their non-crime earning potential (Hansen, 2003).

2.1.3 Educational Policy's Impact on Crime

These findings are related to other mechanisms of crime reduction and their effectiveness. The difference between the short-term and long-term effects of policy are essential to consider if the intention is to reduce crime. Lochner (2004) states that permanent wage subsidies are an additional way to decrease crime because the wage of non-crime work will be supported and sustained. This is in opposition to temporary wage subsidies which would only deter crime in the short run. Another previously discussed mechanism is law enforcement. While this acts as a deterrent and active opponent to crime, it will also not act as a long-term solution. Often sentences for crimes are temporary and contain no restorative components, so recidivism of offenders is likely. While Locher's (2004) study is useful, the data used does not control for the quality of education that each individual has received. The proxy for the quality of education here could be an individual's standardized test scores, but this still doesn't account fully for the quality of their primary and secondary education. Because it incorporates individuals from across the country there may be effects that are a result of the location where they received schooling. Education quality differs greatly across the United States, and not controlling for this is an essential drawback.

Lochner (2004) also finds evidence that early childhood preschool intervention programs are effective in reducing future crime; this tool is consistent with education's success in reducing crime. Policies that promote skill investment will be more cost-effective than policies that punish or subsidize lower levels of wages (Lochner, 2004). Heckman (2006) finds that investing in disadvantaged students at an early age strongly affects their later productivity. These interventions are underinvested in overall.

Heckman (2006) also states that early childhood investment in both cognitive and non-cognitive skills are essential. Furthermore, the early development of these skills are more important to a student's outcomes than their financial resources.

Furthering the literature that supports education as a tool to reduce crime is a study by Lochner and Moretti (2004) that studies changes in compulsory schooling laws in the U.S. and reductions in crime. The social benefits that are created through crime reduction are also analyzed in this study because offenders do not consider the social costs when committing a crime. Data from the census and the FBI are used to gather crime information and personal characteristics. Because the census data indicates where the participant is living and if they are incarcerated or not, Lochner and Moretti (2004) are able to see that incarceration is much more likely for individuals who have not completed high school. This relationship is stronger for blacks than whites. Compulsory schooling attendance laws varied across states in the U.S., so there is an opportunity to measure, and control for other factors that may impact crime, if the schooling requirements have an impact on crime in that state. These laws mandate school attendance to a certain age, so they directly affect educational achievement. There were no trends before the change in the laws indicating an existing relationship and the change in the law in any given state was not associated with state resources directed towards fighting crime. A simple econometric method is specified,

$$C_i = \beta s_i + \gamma X_i + \epsilon_i$$

Where C_i is adult crime committed, β is the net effect of education on crime, s is educational attainment and X is an aggregate of individual characteristics. Similar to Lochner (2004), the mechanism at play is the increase of one's opportunity cost to commit a crime when they have a greater education. Additionally, education can change preferences and increase patience and risk aversion in people. The findings indicate that whites are 76% less likely to become incarcerated if they have completed high school while blacks are 34% less likely to become incarcerated with the high school education. The largest impacts are found in murder, assault and motor vehicle robbery. Additionally, there are social benefits to reductions in crime and these are considered. A one percentage point increase in the male high school graduation rate will be associated with a \$1.4 billion savings from crime. Otherwise, there

will be a \$2,100 savings per additional male high school graduate. Lochner and Moretti (2004) add to the support for crime reduction through increasing educational attainment.

Anderson (2010) also takes advantage of the variation in compulsory schooling laws across the US and county level arrest data to understand the impact of these laws on crime for 16-18 year olds. He finds that having a higher minimum age requirement for dropping out of high school has significant negative impacts on crime. In states with a greater age requirement, though, there is evidence suggesting that some street crime is displaced to school crime. This displacement would need attention from the school administration. Similarly, Maynard (2015) studies the impact of dropping out of high school on adult outcomes. Using the National Survey on Drug Use and Health and four measures of arrest history, dropouts, ages 18-25, are found to be more likely to be arrested for larceny, assault, drug possession and sales than their peer high school graduates (Maynard, 2015). The studies completed that examine the impact of completing high school find similar results, but these results are limited again because of the nature of survey data pulled from all over the country. While the results of these studies indicate a negative impact, there may be some self-selection in survey participants that bias the effect of high school completion on crime.

Understanding the specific policy tools to affect education and furthermore decrease crime is essential to this study. Lochner (2010) examines how specific education policies impact crime. He focuses on early childhood intervention education policies that are aimed to better socialization among children. Greater levels of social skills are found to decrease crime. Additionally, he looks at how programs meant to intervene in high school, to decrease drop outs, are effective in increasing graduation rates. He finds that high school programs do not have an impact on educational attainment, but they do have an impact on decreasing crime (Lochner, 2010). Because not all education is of the same caliber and quality, it is important to focus on ways to improve education. Usher (1997) studies how education can be a deterrent to crime and how this mechanism is underestimated when civic externalities of education are not considered. Civic externalities that encourage model citizenship and investment in your community will decrease crime alongside the human capital assumptions. Policy

makers must consider the ways to improve education so that it provides access to all groups and encompasses a wholistic approach to learning.

In critically examining the literature on education and crime there are clear gaps in the specificity of the literature and the quality of the data evaluated. For the literature that uses survey data, it is difficult to control location specific effects. The surveys can incorporate personal characteristics that account for the effect of family background on crime, but these surveys lend themselves to measurement errors and the profiles and circumstances of many are left out.

Existing literature shows evidence that crime decisions can be affected through an increase in education as a function of the human capital model (Mincer, 1974). Aside from the human capital model, the literature describes how education can improve human citizenship and personal responsibility, and this effect can also decrease crime. There has been extensive research into the mechanism itself, but there are few studies that evaluate the effectiveness of education reform on crime, especially in the United States. Policy implications will include agendas that promote increased education, access to education, and increased quality of education. Critical evaluation of current policy directives surrounding education are essential to understanding this theoretical framework in the context of the United States.

2.2 No Child Left Behind

In 2001, President George W. Bush reinstated the Elementary and Secondary Education Act under the name: No Child Left Behind (NCLB). Under the policy, public schools across the nation are expected to measure students' performance and meet national standards. Each state is expected to build their own version of an assessment test to track their progress. The distinguishing aspect of NCLB is that it would institute a public accountability measure for public schools in each state. The program is targeted at assisting disadvantaged students of the country. Schools are required to test students and be evaluated on a number of measures that indicate the progress of the school. Schools that are recipients of Title I funding are required to meet Adequate Yearly Progress standards (AYP). Schools under AYP are to be provided additional support. With greater accountability, states are rewarded greater flexibility in the ways they can spend their funding and direct their initiatives. They

are encouraged to increase teacher retention and quality as well as technology training and professional development. Children in under-performing schools are also given the option to transfer schools or utilize tutoring (Hoffman and Jorgensen, 2003). The federal policy affects all states' public education systems and has been under evaluation for its effectiveness in carrying out its goals. Literature studies its impacts on student outcomes and other specific factors.

This study will utilize state and yearly AYP data to represent the extent of the implementation of the policy. AYP is measured through several indicators present at the public school. The main component is school test scores; reading and math scores are expected to increase. The exact quantity of improvement is not specified in the policy description. Using the baseline of the scores in 2001, schools are expected to meet benchmarks that put them on track to achieve 100% reading proficiency by 2014. The reporting of scores must also be broken down by subgroups such as economically disadvantaged students, students with learning disabilities, Caucasian students, Hispanic students, Black students, Native American students, and Asian-American students. Secondary public schools must also include their progress towards reducing their drop-out rate. To meet AYP standards, 95% of students in the school and 95% of the students in each subgroup needed to complete the state exam. Each subgroup must meet or surpass the goals for that year in their test score improvements (Hoffman and Jorgensen, 2003). Unfortunately, for analysis purposes, the measurement of AYP varies by state and school based on their student body and where their scores began at the policy adoption.

2.2.1 Impacts of NCLB

Accountability measures under NCLB create public information on the performance of schools and whether they are meeting the AYP. Schools that receive federal Title I funding are required to meet these marks. Title I funding is directed at schools that contain a disproportionate number of low income students. State by state qualifications for Title I vary. After two years of not meeting the AYP standards, a school will be named as "failing" and would be sanctioned to additional improvements. The determination of failing is broadly defined and is not always accurate of how the school was doing. If one subgroup of students is falling behind, then the entire school will be labeled

failing. Bogin and Nguyen-Huang (2014) study the impact of failing school designations on housing values. They find that neighborhoods with schools named failing experienced a decrease in housing value. Because public schools are partially financed through property taxes, this further crippled low-income areas. This study is done in Mecklenburg County, North Carolina where the state level designation to be a Title I school is that the school must have 75% of the student body qualify for subsidized lunches. In the analysis, they adopt a highly parameterized hedonic model to identify the impact of the perception of the failing school quality on the value of homes in the area. The model examines all the neighborhoods in the county. It includes the test scores of the students and school level student demographics. The failing designation is a dummy variable indicating either failing or not. Sales of single-family homes in the county from 2002-2006 are used as data for the housing values. They find a six percent decrease in housing values when the neighborhood school is deemed failing. This is clearly an unintended consequence of the NCLB policy and does not assist in aiding the schools that have the greatest need (Bogin and Nguyen-Huang, 2014).

Hanushek and Raymond (2004) take a different look at the effectiveness of accountability measures under the NCLB Act. They find that generally, accountability measures increase student performance. They are able to take advantage of differentials in the introduction of accountability across states to measure growth in student performance. Since the 1980s, certain states have been implementing their own means for testing student outcomes. The NCLB Act was implemented in 2001, and now all states have to be tested for student outcomes. Because certain states were already operating in an accountability regime, Hanushek and Raymond (2004) are able to compare the difference in outcomes for states who have to newly adopt accountability to those already using it. They use student outcomes derived from The National Assessment of Educational Progress (NAEP). The NAEP is a random sampling of students from 4th, 8th, and 12th grade who are tested on their reading and math abilities. This independent assessment allows for a standardized and national measure of academic achievement. Three significant conclusions follow the analysis. First, they find that accountability improved all student outcomes. There is no significant difference between reporting scores and attaching consequences. Finally, accountability increases outcomes for Hispanics

and narrows the white-Hispanic gap, but accountability widens the white-black gap. Accountability measures may be an effective tool moving forward to improve education outcomes, but they may not promote equality for the groups who are not able to respond positively. It is advised that there be multiple policy directives to meet the many needs faced by the education system and disadvantaged groups (Hanushek and Raymond, 2004).

Though the intentions of the NCLB policy were rooted in the direction to assist disadvantaged groups, there are many flaws to the policy and its implementation. Ladd (2017) uses a policy review lens to critically review the benefits and drawbacks of NCLB. The policy was created in a response to concerns surrounding the nation's education system. There was a need for increased rigor in education to have students gain the ability to compete in an increasing globalized and knowledge-based society. Additionally, there are many apparent inefficiencies in the U.S. education system. Most important was the concern for civil rights and the issue that minorities were lagging in achievement. Using test scores from the NAEP, the program shows general increases in student outcomes after the policy, but the results are not consistent across areas or groups. Dee and Jacob (2010) complete an in-depth analysis on the impact of the policy across subjects. Overall, they find that there is achievement in increasing mathematics scores, but there is no increase in reading scores. Their study implicates that the policy has a generally positive impact on student outcomes and state attention to schooling (Lee and Jacob, 2010). There is not a control group to show what outcomes would have been without the policy, so these results must be considered with less weight.

Within the implementation of the policy, there are some positive externalities. One is that the testing creates a massive amount of data available on student abilities. Additionally, the intention to give more focus on disadvantaged populations is a step in a positive direction. Finally, the policy increases the number of teachers who have master's degrees, raising the overall qualifications of teachers in the nation. On the other hand, the policy contains many flaws. First, the focus on schooling is very narrow and does not allow for a diverse development of learning experiences, because efforts are focused on multiple choice style test outcomes. Schooling skills should not only include how to succeed in the labor market, but how to be a good citizen, how to live a happy

life, and how to help others. Another drawback is that the regime changed the math and reading curriculum nature by focusing on testing rather than open ended learning. Finally, the policy creates unrealistic expectations for outcomes of struggling schools and those schools were not given the necessary support to reach the goals (Ladd, 2017).

The main problem that comes with measuring the effectiveness of a policy through test scores is the limitation that the test scores may not effectively be measuring education quality fully. The test administered to students may be able to gauge students' knowledge of a subject, but it cannot always determine the ability that the student can apply the knowledge critically or whether the student has been given the opportunity to be self-motivated or responsible. Considering the literature surrounding education and crime, we know that the number of years completed, and the quality of the education are both important to decreasing crime. The measuring of the quality of education through testing may be a superficial indicator. The NCLB accountability requirements certainly organized public schools around improving their education, but the focus of quality and wholistic education became neglected.

2.2.2 Ineffectiveness of NCLB

Researchers and policy analysts have identified many ways in which the No Child Left Behind Act changed the curriculum of schools across the country and the ways in which the delivery of that material has changed. Figlio (2006) studied the implementation of the policy in Florida public schools. He finds that the ways in which the material is delivered to students was primarily in the interests of the testing format. Fletcher (2006) studies the impact of the NCLB act on Career and Technical Education programs (CTE). These vocational programs for non-college bound secondary students are essential to connecting these individuals with a job that would be sustainable. Because the NCLB testing requirements do not include the evaluation of CTE curriculum, these programs became neglected. All students were held to the AYP standards despite students' different interests and career trajectories. Consequently, the students who need to utilize the CTE programs do not have their academic needs met.

Hursh (2007) understands the NCLB act as a Neo Liberal education policy that brings the competitive market structure into the classroom. Many politicians see this approach as appealing when competing with the increasingly globalized economy, so policies like NCLB have passed. Hursh (2007) argues that the approach does not yield as many positive outcomes as social democratic approaches. He finds that the goals of the policy, to increase equality and close the achievement gap, are not being reached but are becoming worse. He concludes that policies should not focus on creating productive workers but on creating students who will work towards human welfare and planetary health.

The NCLB act creates inefficiencies in school operations and integration. As part of the AYP reporting, schools must differentiate progress by racial subgroup. Chellman (2007) studies this aspect of the policy and identifies adverse effects. Because schools in the United States have been historically segregated, and only slowly integrated, this remains the case in many places. Chellman (2007) uses evidence from New York State schools to look at the differences in diversity across districts. Urban and larger schools are more likely to serve ethnically diverse populations while suburban and rural schools are almost entirely homogeneous in race. This burdens the urban schools with reporting of subgroups. This incentivizes the homogeneous schools to avoid integration and reporting. This trend only exacerbates the segregation and racial achievement gap.

Ryan (2003) identifies a number of perverse incentives that were a result of the implementation of the NCLB act. Under the act, schools were incentivized to lower their academic standards to make reaching them easier. In confirmation with Chellman (2007), Ryan (2003) finds that segregation increased under NCLB. Ryan (2003) also finds that the teacher qualification requirements resulted in a less than ideal distribution of qualified teachers and pulled the most qualified teachers away from the schools that needed them the most. Finally, Reeves (2003) identifies that the further chastising of underperforming minority students only puts them at a greater disadvantage. As part of the teacher qualifications requirement, rural schools face a unique set of challenges under NCLB despite homogeneousness in race. NCLB required that teachers be “highly qualified” which, in most cases, required a master's degree. Reeves (2003) finds that because of the isolation and lack of funding of public rural schools, finding these highly qualified teachers was a challenge. She argues that to meet

these requirements, rural schools will need additional funding and guidance from the federal and state government.

NCLB's impact on high schools, high school drop-out rates, and general school attendance are the opposite of its intended purpose in some cases. Figlio (2006) finds that Florida schools use selective discipline on underperforming students to manipulate their test results. More specifically, students who are underperforming are penalized on suspensions so that they are not present for testing. Students who are underperforming are more likely to be the students more likely to commit crimes, so this practice is even more problematic.

The policy aims to decrease drop-out rates nationwide. High drop-out rates are a national crisis especially for low socioeconomic status minority males. Some states employ exit level testing as a means of increasing their scores and accountability. Students are not able to advance in school years if they do not pass. Kritsonis and Walden (2008) find that the implementation of NCLB causes an increase in the minority drop-out rate. Darling-Hammond (2006) finds similar results and suggests that AYP evaluations be revised to incorporate additional assistance to struggling schools and create meaningful assessments to understand the school's performance.

Though the policy's success and failure have been studied rather extensively, there has not been specifically a study that examines the policy's impact on crime directly. The theory of studying the effectiveness of this policy is that if more attention and funds are directed towards disadvantaged students, and crimes are more likely to be committed by populations from underserved areas, then this policy would prove to have an impact on crime. From what the literature describes about the ways in which education can decrease crime by increasing earning ability and improving one's personal responsibility. Many of the previous studies that examine the impact of education on crime use survey data as the variable to determine education. This is limiting in two ways: first it does not allow for the quality of that education to be controlled for, and second, it does not allow for location specific controls that may impact crime and crime decision making. My study will shed light on whether the policy was effective in improving education that translates to life improvements outside of the

classroom. My study will also control for state specific effects on crime and the quality of the education in that state.

2.3 Hypothesis

In estimating the impact that the No Child Left Behind policy had on crime incidence in the United States, I consider the theoretical framework of crime and how education can impact crime. Increasing an individual's level of education can increase their human capital and earning capacity and therefore their likelihood to commit crime decreases. I also consider the studied effectiveness of NCLB on student outcomes and attention to disadvantaged groups. The NCLB policy is meant to improve the quality of education in the United States and ensure access to students of all socioeconomic statuses through increasing accountability measures for public schools, and empirical evidence shows that the policy is effective in generally improving overall student test scores. There is, however, heterogeneity in the student outcomes for different groups. There is also abundance of evidence on inefficiencies of the policy resulting in the continuation of neglect towards disadvantaged students. I expect to find a negative impact on property crime due to the partial effectiveness of the policy, but I expect the magnitude to be small due to the policy's shortcomings. I estimate the greatest impact on property crime because it is most likely to be the crime category affected by crime.

3 Data

This study seeks to estimate the effect of the implementation of the NCLB policy on crime incidence in the United States. The empirical analysis draws upon a wide variety of data to account for the existing factors that may affect crime during the years I study. The policy began in 2001, and I examine the years 2005-2014. I assembled my data set to include relevant variables. It is important to include control variables that are related to crime making decisions and the quality of the education in each state, so this study incorporates eight other controls at the state and year level for each observation. A table of summary statistics is displayed as Table 1; each variable is discussed in specificity in this section.

Independent Variable

Adequate Yearly Progress (AYP). To understand the impact the policy has across the nation, this study utilizes data from the United States Department of Education. For the years 2005-2014 all fifty states and the District of Columbia have reported the percentage of their public schools that are meeting the Adequate Yearly Progress. This data explains the extent of the success that the NCLB program has had on schools' improvement. Schools that have met the AYP requirements have demonstrated a positive change, and they should have beneficial impacts on the students. The literature surrounding education and its impact on crime identifies that a higher quality education and increased years of education can decrease an individual's propensity to commit a crime. The policy intends to both improve the quality of the public education by setting higher standards and seeking greater outcomes as well as decreasing the dropout rate for public high schools. Both measures are incorporated into the AYP determination. Because of this, this data is suitable to represent the variation in the success of the policy across states and across years. This study uses this variation to estimate the policy's impact crime incidence. Figure 1 plots the AYP of eight representative states: Delaware, Minnesota, Montana, North Dakota, Vermont, Louisiana, California, and Texas. Over time, it appears that the number of schools in each state making AYP generally decreases. There is variation throughout the ten-year period and this variation can be utilized to analyze the impact of the policy.

Dependent Variables

Crime Rates. The data that is used to measure crime comes from the Federal Bureau of Investigation Uniform Crime Reports. It is presented as the crime rate per 100,00 in each of the fifty states plus the District of Columbia for the years 2005-2014. First, the crime rate is reported for two aggregate categories: property crime and violent crime. The crime rate is also reported for three specific crime categories: motor vehicle theft, burglary, larceny (these three making up property crime). Because this study follows the intuition that crime can be used as an avenue to generate income, I am mostly focused on property crimes that would result in a direct monetary outcome. Using the crime rate is slightly different than most of the crime dependent variables used in the literature. For example, many studies use an individual's likelihood of being incarcerated as the dependent variable. Figures 2 and 3 plot the property and violent crime trends for the same states

presented in Figure 1 for the ten years included in the study. Property crime rates are close to constant with a slight decrease over time. Violent crime varies greatly by state, but similarly stays fairly constant with a general and small decrease over time.

Control Variables

Unemployment Rate. Because crime making decisions are partially impacted by one's opportunity for non-crime income, I incorporate the unemployment rate as a control. It is expected that if the unemployment rate is low, then there are many job opportunities. A high unemployment rate can indicate that there is a lack of economic opportunity for individuals seeking an income. Potentially, a high unemployment rate could increase one's likelihood of committing a crime. The average unemployment rate for this time period and all states is 6.429% and though the standard deviation is tight at 2.277, the rate ranges from a minimum of 2.4% to a maximum of 14.9%.

Median Income. One additional variable that helps to explain the economic landscape for a state and year is the median household income in real dollars. While the cost of living and incomes vary across different locations, variations in this are likely to impact crime. Higher levels of income may indicate that the cost of living is higher which may have a positive influence on crime. Higher levels of income may also indicate greater economic opportunity. The inclusion of this variable is necessary to control for both cases. The average median income for this study in all years and states is \$50,634 and has a standard deviation of \$8,110.

Percentage of Population 15-24 Years Old. The literature surrounding crime and education indicates that the peak age for crime commitment is between 18-19. Because there may be variance among years and states of how many individuals are at the high crime risk age, I include the percentage of the population that is between the ages 15-24. This is the range because it will be able to include those individuals who are close before and after the peak crime age. States and/or years that have greater percentages of this age group may be linked to greater crime incidence, so the model must control for this. The average percentage of the population that is between the ages 15-24 is 14.6% and ranges from 12.2% to 18.6%.

Completed High school. Individuals who complete high school are less likely to commit crimes. I include the number of high school graduates for the country as a whole for each year in the analysis. This variable is meant to control for any changes in the number of high school graduates and that impact on crime. This variable steadily increases over time for all states.

Total Justice Spending Per-Capita, As discussed in the literature review, another factor that is included in crime making decisions is the probability of being caught and the potential punishment for the act. These two factors can be measured by the state's spending on their justice system. A more present and highly funded system would increase the probability of criminals being caught and punished. Greater spending would likely reduce crime. I include state's spending on their justice system in real dollars for all states and years to mitigate for this preexisting condition that impacts crime. This variable is made per-capita through adjusting for population size by year and state.

Population. Across the United States population varies greatly state-by-state. Even though the crime rates used as the dependent variable are already adjusted for population, I include population as a control for any differences in the population that may have an impact on crime. Additionally, population helps adjust the total justice spending and the GDP as they are both in terms of real dollars and are not adjusted for the population of the respective state and year.

Spending Per Pupil. Because education in the United States is generally funded and advised on a state-by-state level, it is important to control for each state's investment in their own education system. I include the average total spending for public primary and secondary education per pupil in each state for each year included in the study. The intuition behind this variable is that some states dedicate a larger amount of money to their education system. A larger budget per student would allow for schools to produce higher quality education. Higher quality of education in a state may have an existing causal link to lower levels of crime. To control for the existing quality level of education, I utilize this per pupil spending variable in real dollars. Because the data is per pupil, it is already adjusted for the number of students enrolled in the public-school system. This variable has an average of \$10,600, but spending on education varies so much across states that the range goes from a minimum of \$3,003 to a maximum of \$20,910.

4 Methodology

4.1 Fixed Effects

The empirical strategies included in the literature review prescribe a general model to estimate the effects of an education measure on crime. Most literature utilize an ordinary least squared methodology. The literature generally predicts crime on an individual level where the dependent variable is expressed as one person's likelihood of committing a crime or becoming incarcerated. My dependent variable is the crime rate for a state and year. Additionally, the previous literature outlines areas for other factors to be incorporated. Again, this is generally on the individual level where characteristics of someone used in the analysis. Because my dependent variable is at the state and year level, the characteristics that I can control for are at the state level rather than the individual level.

To analyze the impact of the implementation of NCLB on crime, I use a fixed effects model. This model estimates the change in the crime rate that can be attributed to the variation in the percentage of schools that are meeting AYP in each state.

$$\text{Crime Rate}_{st} = \alpha + \beta_0 \text{AYP}_{st} + \beta_1 \chi_{st} + \lambda_s + \theta_t + \epsilon_{st}$$

The Crime Rate, the dependent variable, is the number of incidences of the particular crime in each state in each year. α is a constant. β_0 is the coefficient of interest that predicts the magnitude of the change in the crime rate when the percentage of schools meeting AYP changes by one percentage point. AYP, the independent variable, is the share of schools meeting AYP in each state in each year. χ is the vector of control variables included that may impact crime and state level factors. λ_s is the state fixed effects to control for unidentifiable state specific characteristics. θ_t is the year fixed effects to control for unidentifiable year characteristics. ϵ is the error term that explains any variation in the model that cannot be explained by AYP. Incorporating my hypothesis into the model, I predict that β_0 will have a negative value through the mechanism that education provides opportunity to non-crime income. To see the broad range of effects that the NCLB policy had on crime, I run five separate regressions for five crime rates: property crime, violent crime, robbery, larceny and theft, and motor vehicle theft. I focus on the specific crime rates under property crime because they are directly connected to a criminal's intention to generate income.

4.1 Fixed Effects Time Lag

Improvements in education may have effects that reach past the immediate year in which they are enacted. Literature does not prescribe a specific time lag indicates the number of years needed for the effects of an educational reform to take effect on student outcomes. Because the NCLB policy is meant to affect students from all school levels, it is important to analyze the time lag effects of the policy to capture the impact on crime that in the following year. I specify an additional model that builds on my original fixed effects model:

$$\text{Crime Rate}_{st} = \alpha + \beta_0 \text{AYP}_{s,t-1} + \beta_1 \text{AYP}_{st} + \beta_2 \chi_{st} + \lambda_s + \theta_t + \epsilon_{st}$$

This model now incorporates the AYP variable for each state in the previous year and predicts the crime rate in the current year. β_0 estimates the magnitude of the change in the crime rate in the current year that is due to the change in the number of schools who met AYP in the previous year. I run this regression for lag effects of one, two, and three years for general property crime and motor vehicle theft.

5 Results

5.1 Fixed Effects Regression Results

I find generally insignificant and small in magnitude results across all five regressions with a small exception for property crime. All of my regression results are negative, indicating a decrease in the crime rates due to the policy implementation. Unfortunately, the small significance I do find is not robust when analyzing to a greater extent. The results for all five regressions are displayed in Tables 2-6. My coefficient of interest is β_0 , the change in crime due to a change in the percentage of schools meeting AYP. The β_0 coefficient is displayed in the first row of each table labeled AYP. The first column of each table displays the regression results for only the regression including the crime rate and the AYP variable. The second column of each table displays the results of the regression that include both the crime rate and the AYP variable, and this time, the year and state fixed effects controls are added. The third column of each table includes both the crime rate and AYP variable, the state

and year fixed effects, and all of the control variables. The coefficients for these controls are also presented for each regression.

Generally, for all crime rates, the results become smaller in magnitude and significance as the regression becomes more complete and includes other controls. The third column of results is the most complete and specific in identifying the policy's impact on crime, so it is important to consider these with the greatest validity.

The impact on the property crime rate is the most relevant regression to understanding the impact of the policy. Table 2 displays the regressions on the property crime rate. The third regression that incorporates the fixed effects and the controls predicts that a one percentage point change in the share of public schools meeting AYP will decrease the property crime rate by 1.880 incidences. This result is at the 10% significance level. This is a small in magnitude coefficient considering that the mean for the property crime rate is 3,003. If a state increased the number of schools that meet AYP by 10 percentage points, this would still result in less than a 20-incident decrease of the overall rate.

The impact on violent crime is very small in magnitude and insignificant. Table 3 displays the results on violent crime. The model predicts that a one percentage point increase in the number of schools meeting AYP results in a .190 decrease in the violent crime incidence. This result is not a surprise as violent crimes are not usually linked to crimes that are committed to generate income. Additionally, the NCLB policy did not prescribe any behavioral intervention.

The impact on the three categories that are incorporated into property crime varies when looked at individually. The regression estimated that the increase in one percentage point of public schools meeting AYP is responsible for a .510 decrease in the motor vehicle theft rate. This result is significant at the ten percent level and is consistent with the literature where motor vehicle theft stood out as a crime that is higher proportionally impacted by education (Lochner, 2004). The other two categories of property crime did not yield significant changes due to the policy with a .0440 decrease in the robbery rate, a .865 decrease in the larceny and theft rate that is associated with a one percentage point increase in the number of schools meeting AYP. While only two regression results

are significant, they all indicate negative impacts on the crime rate, which was expected. The results for these regressions are displayed in Tables 4, 5 and 6.

The mechanism that can explain the negative direction for the policy's impact on crime incidence is made of a few components. First, the NCLB policy sought to increase the quality of education for students through creating accountability measures. Additionally, the policy intended to decrease high school drop-out rates which would increase the overall years of education completed. It is difficult to differentiate between the increased quality and increased quantity of education, but it is likely that a combination of both is responsible for the negative impact on crime. As mentioned previously crime can be reduced through higher quality education and through more years of education completed. Because the NCLB policy had multiple goals and measures for determining state schools' Adequate Yearly Progress, they were able to determine if schools were improving in both avenues. While there may be some limitations to measuring this progress, I can observe a general negative impact on crime.

The regression generates coefficients for all control variables which are important to consider in the larger picture of the policy's impact on crime. Focusing primarily on the coefficients for the controls in the regression on property crime, I observe that some of the coefficients show the expected direction, for their impact on crime, while some show the unexpected direction. First, the unemployment rate, when increased one percentage point, is said to decrease property crime by 63.64 incidences. This is not expected because we should expect increased crime when more people are not working. This direction of the coefficient may be explained through the way in which the unemployment rate is measured and may not capture those looking for work that is non-crime related. The percent of the population ages 15-24 has the expected positive influence on crime incidence. Population is estimated to have a small negative impact on crime incidence, which was not predicted. The median income was unclear in whether it would reduce or increase crime, and this regression indicates it would have a small positive impact on incidences. Justice spending per-capita is expected to have a negative impact on crime rates, and this is the case across for the preliminary fixed effects regressions on property crime and motor vehicle theft. Average spending per pupil is expected

to have a negative impact on crime rates as well, but the regression predicts a slightly positive impact on crime. The variable *completed high school* was omitted from the model due to collinearity, so there is no coefficient to report.

The robustness of the regressions is lacking, so any significance must be considered with less weight. Because a few of the control variables are expressed in real dollars, some of which are very large in magnitude, I created new variables that were the log of each of the monetary (GDP, median income, total justice spending, and average per pupil spending) and the population variable. I ran the same regressions with the log variables in place of the originals. Unfortunately, this check shifted my results so that none of the coefficients for AYP were significant, and all shrank in magnitude. It is possible that there were outliers that biased my results.

Because my study's analysis is at the state level rather than the individual level, it is difficult to compare my results directly to previous literature. Locher (2004) finds that the completion of high school results in a 34%-76% decrease in the probability of incarceration. Not all crimes will result in incarceration, but this impact is more substantial than my findings. Additionally, the nature of my analysis allows for the quality of the education received across states to be incorporated while other studies, minus those evaluating specific programs, mostly study the number of years of education completed. It is possible that previous literature is able to identify specific interactions of education on crime for an individual, and these effects may be more difficult to display on a state level analysis.

5.2 Fixed Effects Time Lag Regression Results

I present the results for the lag regressions on property crime and motor vehicle theft in Tables 7 and 8 respectively. My results indicate that there are significant decreases on property crime that can be explained by increases in the number of schools meeting AYP in the previous year, two years ago, and three years ago. An increase of one percentage point of AYP one, two, and three year(s) ago is estimated to decrease the property crime rate by 2.654, 2.877, 2.960 respectively. All of these results are at the 1 percent significance level. Effects that appear in years following the change are essential to consider in studying the effects of education. My results indicate that higher education quality in previous years will decrease crime in later years. This effect should create an overall greater

decrease in crime as more years pass. I do not find any significant results in testing the time lag effects of the policy on motor vehicle theft. The effect on motor vehicle theft is still negative but smaller in magnitude than the initial regression. It is likely that the policy's implications on motor vehicle theft are more immediate than long-run, while there are long run effects on all types of property crime.

Additionally, I conducted a t-test to measure the significance of the difference between the lag of the impact of one year and two years and between two years and three years. I find both differences to be significant at the 1 percent level. The time lag effects on property crime indicate more substantial results than the initial regression for the effects in the current year.

6 Discussion

6.1 Discussions of Results

There are some possible explanations for the results of my study. I found a small decrease in property crime and motor vehicle theft that can be explained by the NCLB policy implementation. Over the years 2005-2014, I observe an overall decrease in crime across the country. I also find significant impacts on property crime that are linked to improvements in AYP from one, two and three years prior. It is probable that the NCLB was partially effective in improving education, and some of this trend translated to crime incidence. As mentioned previously, this mechanism was created through two directives of the policy: intent to decrease the drop-out rate and improve the quality of all levels of education. I find that the policy has negative impacts on all crime rates despite magnitude and significance. The literature identifies many inconsistencies and inefficiencies in the policy that limited its ability to impact underserved students. Schools' manipulation of curriculum and delivery of curriculum changed the educational experience to shape students to test effectively. The literature also indicates that increasing human capital through education decreases one's propensity to commit a crime but becoming a better test taker does not necessarily equate to a higher level of human capital. Additionally, the focus away from non-testing outcome that aided in personal responsibility, citizenship, and applicable job skills were neglected as a result of the policy.

NCLB was created with minorities in mind who were falling behind in achievement. Minorities' lack of resources and access to education put them at a greater propensity to turn to crime for income. The policy's shortcomings in accomplishing this goal causes no essentially significant change in crime decisions due to the policy. Though the NCLB policy was not created with crime reduction as the goal, according to the literature, higher quality education should have resulted in decrease in crime.

6.2 Policy Implications

Through analyzing the No Child Left Behind Policy, my study offers several policy implications for future education reform in the United States and elsewhere. I find the policy to be highly ineffective in reducing the number of students who choose crime over non-crime income. Though this was not the direct goal of the reform, policy makers should be concerned about the externalities and translation of education into the labor market and society. The contribution of this study shows that the NCLB did not create observable impacts on decreasing crime. An awareness of education's ability to affect crime should be considered by policy makers when designing reforms. Effective education reform should decrease crime. A reduction of crime through preventative measures will save money on law enforcement.

The literature studying the effectiveness of the NCLB program indicated the policy's flaws. The policy expected to generate results from creating accountability measures, but the federal government provided scarce resources to achieve improvement. Sanctioning of schools that did not meet AYP was a crippling directive that did not allow for school level improvement. This study confirms that the policy goals remained unfulfilled. Future policy initiatives must provide informed aid to schools in need. Additionally, future policy must stress the preservation of meaningful curriculum that does not show up on standardized tests. This curriculum builds the responsibility and character of students. The literature indicates that early childhood intervention programs are effective in reducing crime, so policy initiatives should incorporate this as beginning for high quality education. Finally, while the U.S. is still in need of reform for primary and secondary schooling,

acknowledging the human capital theory should direct policy makers to make access to higher education better. Education is an avenue to increase productivity, safety and ultimately prosperity.

6.3 Limitations

My study presents many areas for discussion in regard to the limitations of the empirical analysis. Though the study did account for many different factors, the data set was lacking in specificity among almost all variables. The data accounting for the Adequate Yearly Progress of public schools did indicate whether the schools met this requirement, but due to missing variables that were not reported by states, the sample size was small. Additionally, this data was only available for the years 2005-2014, so the rest of the study's data was constructed around this range. The NCLB policy implication began in 2001. Because the study was limited in years due to the AYP variable, I was not able to capture the immediate short term (2001-2004) or longer term (after 2014) impacts of the policy. Primary and Secondary education takes more than ten years for a student to complete, so the impact of the policy may take an extended period to take full effect. The literature indicated that the measure of AYP did not always accurately represent schools' performance, so the variable may not have been able to capture to full effectiveness of the policy, whether it was over or underestimated. Additionally, the measurement of AYP was not concrete and variations in this may not represent school performance fully.

Another major limitation within the data is that all observations were at the state level. The crime data per state does not allow for showing differences in crime across the state. This is problematic for large states made up of diverse landscapes and urban vs. rural contrasts. The crime data also did not differentiate by ethnic group, so there was no way to measure the NCLB's policy's intentions to impact underserved groups. Additionally, because of the structure of public-school administration, there is great variation across districts in the same state, so the implementation of NCLB still varied within states. Even though the crime and AYP data were matched on year and state levels, I cannot be sure that the relationship between them were county/town specific effects of the policy.

The inclusion of control variables was meant to account for any other factors that may also affect the crime rate. Though this added to the robustness of the regression, the specificity of the variables was inadequate to fully represent these factors. The unemployment rate was included to represent economic opportunity, but because of the way unemployment is measured, it may not have captured individuals who commit crimes. The unemployment rate accounts for those actively seeking employment, and individuals who are committing crimes may not report as seeking employment. The racial breakdown of states would have been useful to include to control for differences across states.

Using the average and median of variables for an entire state also limits the extent to which the data can account for specific areas. I use median household income for each state, but it is likely the case that this varies greatly throughout the state's counties. I use average spending per pupil for each state. A large portion of district funding is generated through local property taxes, so areas with higher property values and incomes have higher levels of school funding. Taking the average of per pupil funding for a state does not show the differences among areas and washes out the highest need districts. Overall, the lack of specificity and lack of years included in my study limit my results and conclusions.

6.4 Future Research Directives

My study identifies many new avenues for future research. To extend research on the NCLB policy specifically, creating a study with county level data for crime and AYP would better identify the impact of the policy. This study would not have to encompass the entire country, but it could survey both urban and rural counties that would be representative of the country. This specificity would provide more accurate and controlled results estimating the policy's effect. An extended time period, at least 10 years after 2014, would also be ideal for further research. This would allow to measure for the longer-term impacts of the policy; students who were in younger grade levels would enter working age and the impact on them would be displayed. Allowing for more time and specificity would increase the accuracy and validity of my results.

Future research can also study state specific educational reform on crime. As mentioned previously, the literature lacks studies on specific policies' impact on crime. Because the education

system in the U.S. is very state specific, studying state education policies would show more about pathways for crime reduction in certain states.

7 Conclusion

This study contributes a unique perspective to the literature on the effectiveness of the No Child Left Behind federal education policy by examining its impact on crime. Additionally, it provides an application of the economic theories predicting education's impact on crime. The NCLB policy intended to increase the standards of education across the country by creating accountability measures for public schools. The literature on education and crime predicts a higher quality education, and increased years of completed education both decrease and individual's propensity to commit crimes. My study has incorporated many different economic factors to narrow the analysis of the policy. I find mostly insignificant results on crime incidence across all fifty states and the District of Columbia for the years 2005-2014. I do find a decrease of 1.880 incidences in property crime that are due to the policy, but this result is only significant at the ten percent level and does not pass all robustness checks. I find significant and slightly greater impacts on crime in the first, second, and third year following the policy implementation. I attribute the acute effectiveness of this policy on crime to the policy's shortcomings, its inefficiencies of implementation, support given to schools, and its failure to assist disadvantaged student minorities. There are limitations to my study because of the unspecific state aggregated data that was used as well as the limited time period examined. Future research should investigate the effects of the policy on the county level and allow for additional years for the policy to have an impact on the progress of students. According to my results, an impact of education on crime does seem to exist, and policy makers can utilize this to better design education reform. Policy makers should consider the evaluation of this policy and incorporate additional supports to schools' specific needs to reach achievement goals. A comprehensive and effective educational reform in the United States will have positive externalities on other aspects of society, such as crime, and these impacts will be clear and measurable.

Appendix

Table 1: Summary Statistics

VARIABLES	(1) N	(2) Mean	(3) Standard Deviation	(4) Minimum	(5) Maximum
AYP	395	63.67	20.40	7.700	97.70
Property Crime	510	3,003	730.9	1,524	5,183
Violent Crime	510	400.0	203.1	99.30	1,508
Robbery	510	107.5	95.69	8.500	748.5
Larceny/Theft	510	2,082	453.0	1,161	4,082
Motor Vehicle Theft	510	265.1	172.9	38.90	1,326
Unemployment Rate	510	6.429	2.227	2.400	14.90
Percent Ages 15-24	510	14.2	00.945	12.2	18.6
Population	510	6.034e+06	6.757e+06	506,242	3.870e+07
Median Income	510	50,634	8,110	32,875	76,165
Justice Spending Per Pupil	510	.6208	.2005	.3528	1.6369
Completed High School	510	70,117	591.9	69,308	71,172
Average Spending Per Pupil	510	10,600	3,003	5,216	20,910

Standard Errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Figure 1: Sample of State's Adequate Yearly Progress

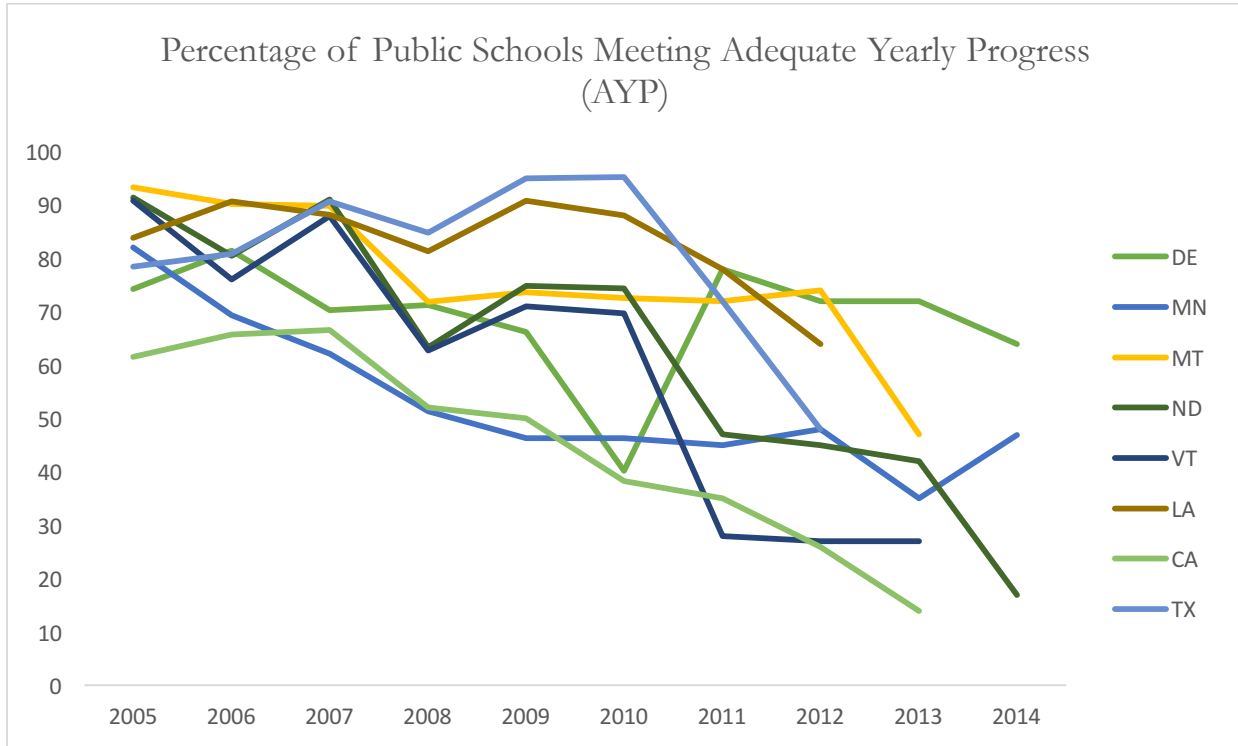


Figure 2: Sample of State's Property Crime Rate

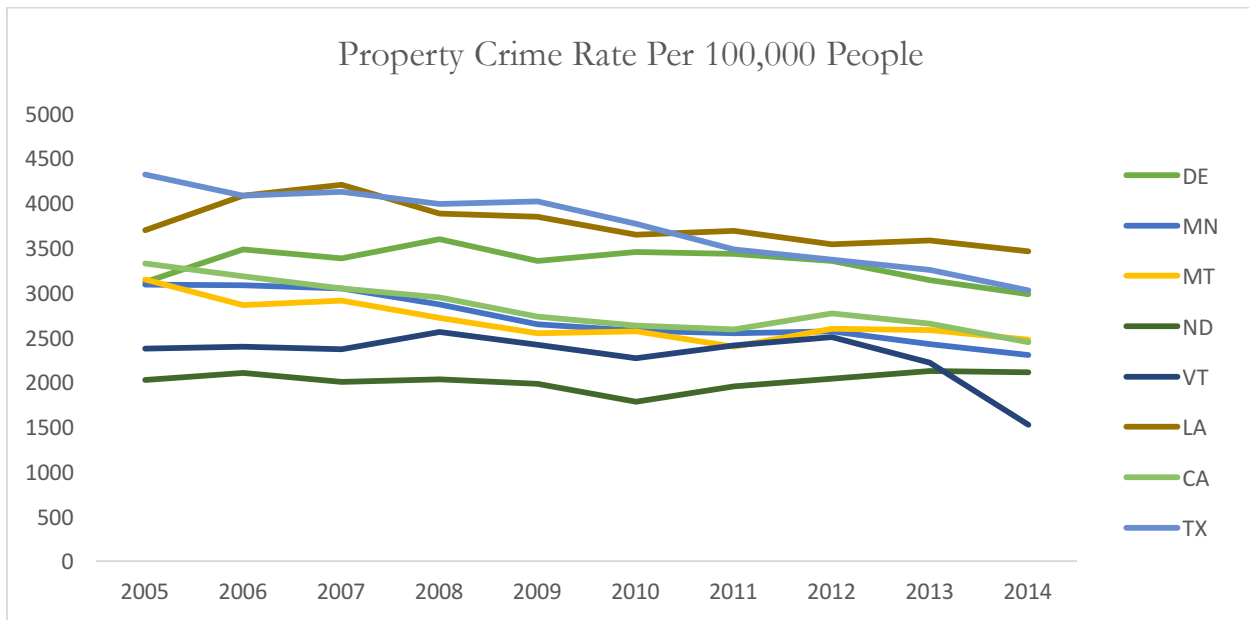


Figure 3: Sample of State's Violent Crime Rate

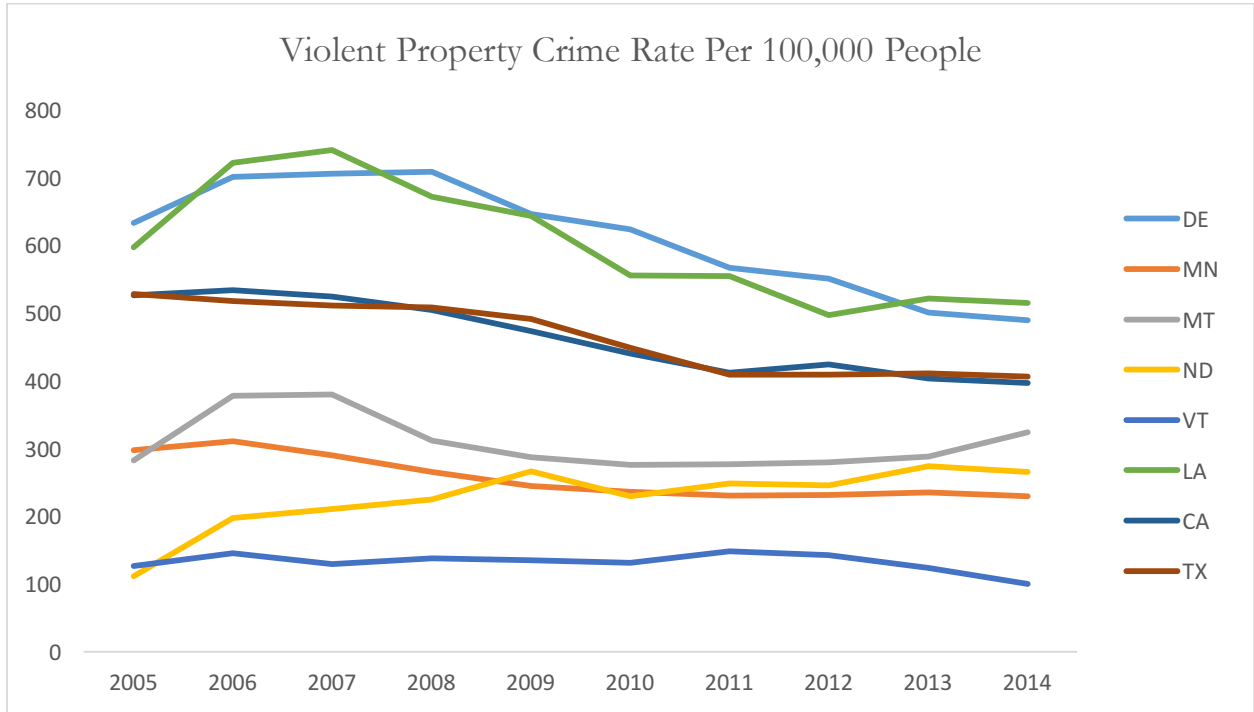


Table 2: Property Crime Fixed Effects

VARIABLES	(1) Property Crime	(2) Property Crime	(3) Property Crime
AYP	-2.155 (1.800)	-2.419** (1.028)	-1.880* (1.004)
Unemployment Rate			-67.02*** (14.47)
Percent of Population Ages 15-24			10,779*** (3,157)
Median Income			-6.77e-05 (0.00525)
Public School Spending Per-pupil			0.0378* (0.0201)
Justice Spending Per-capita			-42.57 (337.3)
Constant	3,198*** (120.3)	3,539*** (102.1)	1,689** (680.2)
Observations	395	395	395
R-squared	0.004	0.938	0.944

This table displays the regression results for the three regressions on property crime. The coefficient generated for AYP indicates a negative significant impact on property crime due to policy implementation.

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Table 3: Violent Crime Fixed Effects

VARIABLES	(1) Violent Crime	(2) Violent Crime	(3) Violent Crime
AYP	-2.191*** (0.497)	-0.280 (0.175)	-0.214 (0.166)
Unemployment Rate			-5.520** (2.385)
Percent of Population Ages 15-24			-2,181*** (520.5)
Median Income			0.00189** (0.000866)
Public School Spending Per-pupil			0.00320 (0.00331)
Justice Spending Per-capita			-109.4** (55.60)
Constant	543.1*** (33.19)	669.8*** (17.36)	1,012*** (112.2)
Observations	395	395	395
R-squared	0.047	0.977	0.981

This table displays the regression results for the three regressions on violent crime. The coefficient generated for AYP indicates a negative insignificant impact on property crime due to policy implementation.

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4: Motor Vehicle Theft Fixed Effects

VARIABLES	(1) Motor Vehicle Theft	(2) Motor Vehicle Theft	(3) Motor Vehicle Theft
AYP	-1.244*** (0.456)	-0.584* (0.340)	-0.510* (0.291)
Unemployment Rate			-29.06*** (4.196)
Percent of Population Ages 15-24			-3,886*** (915.7)
Median Income			1.78e-05 (0.00152)
Public School Spending Per-pupil			0.00299 (0.00583)
Justice Spending			-481.3*** (97.82)
Constant	360.0*** (30.50)	417.2*** (33.81)	1,645*** (197.3)
Observations	395	395	395
R-squared	0.019	0.895	0.928

This table displays the regression results for the three regressions on motor vehicle theft. The coefficient generated for AYP indicates a negative significant impact on motor vehicle theft due to policy implementation.

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5: Larceny/Theft Fixed Effects

VARIABLES	(1) Larceny	(2) Larceny	(3) Larceny
AYP	-0.254 (1.083)	-1.301* (0.698)	-0.865 (0.654)
Unemployment Rate			-25.35*** (9.419)
Percent of Population Ages 15-24			11,908*** (2,056)
Median Income			0.00116 (0.00342)
Public School Spending Per- Pupil			0.0283** (0.0131)
Justice Spending Per-Capita			652.9*** (219.6)
Constant	2,125*** (72.38)	2,574*** (69.32)	-324.6 (442.9)
Observations	395	395	395
R-squared	0.000	0.920	0.934

This table displays the regression results for the three regressions on larceny/theft. The coefficient generated for AYP indicates a negative insignificant impact on property crime due to policy implementation.

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Table 6: Robbery Fixed Effects

VARIABLES	(1) Robbery	(2) Robbery	(3) Robbery
AYP	-1.191*** (0.232)	-0.0847 (0.0669)	-0.0440 (0.0613)
Unemployment Rate			-2.649*** (0.884)
Percent of Population Ages 15-24			-640.3*** (192.8)
Median Income			0.000534* (0.000321)
Public School Spending Per-pupil			0.00263** (0.00123)
Justice Spending Per-Capita			50.05** (20.60)
Constant	185.6*** (15.52)	93.60*** (6.647)	96.56** (41.55)
Observations	395	395	395
R-squared	0.063	0.985	0.988

This table displays the regression results for the three regressions on robbery. The coefficient generated for AYP indicates a negative insignificant impact on robbery due to policy implementation.

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Table 7: Lag Effects on Property Crime

VARIABLES	(Lag 1 Year) Property Crime	(Lag 2 Years) Property Crime	(Lag 3 Years) Property Crime
AYP = L,	-2.564*** (0.986)	-2.877*** (0.942)	-2.960*** (0.972)
AYP	-0.166 (0.968)	-0.735 (0.871)	-1.034 (0.824)
Median Income	0.00285 (0.00469)	0.00530 (0.00459)	-0.000306 (0.00431)
Public School Spending Per-pupil	0.0315 (0.0199)	0.0158 (0.0199)	0.00147 (0.0190)
Justice Spending Per- capita	-172.8 (374.5)	157.7 (382.7)	895.8** (351.1)
Constant	2,505*** (711.9)	2,563*** (768.2)	2,466*** (750.9)
Observations	338	288	242
R-squared	0.960	0.969	0.978

This table displays the regression results for the three lag regressions on property crime. The coefficient generated for AYP indicates a negative significant impact on property crime due to policy implementation from one, two and three years previous. The impact on property crime seems to be greater in the years following the implementation of the policy compared to the impact on the current year.

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Table 8: Lag Effects on Motor Vehicle Theft

VARIABLES	(Lag 1 Year) Motor Vehicle Theft	(Lag 2 Years) Motor Vehicle Theft	(Lag 3 Years) Motor Vehicle Theft
AYP = L,	-0.400 (0.311)	-0.374 (0.276)	-0.146 (0.229)
AYP	-0.274 (0.306)	-0.307 (0.255)	-0.345* (0.194)
Unemployment Rate	-25.02*** (4.148)	-20.33*** (3.821)	-13.84*** (3.239)
Percentage of Population Age 15-24	-4,443*** (954.0)	-4,305*** (901.9)	-3,088*** (656.2)
Median Income	0.000935 (0.00148)	0.00155 (0.00134)	0.00142 (0.00102)
Public School Spending Per-pupil	-0.00479 (0.00628)	-0.0143** (0.00584)	-0.0143*** (0.00449)
Justice Spending Per- capita	-360.8*** (118.2)	-170.2 (112.1)	234.7*** (82.83)
Constant	1,634*** (224.7)	1,453*** (225.0)	720.2*** (177.1)
Observations	338	288	242
R-squared	0.934	0.948	0.969

This table displays the regression results for the three lag regressions on motor vehicle theft. The coefficient generated for AYP indicates a negative insignificant impact on motor vehicle theft due to policy implementation from one, two and three years previous.

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

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