

Senior Project

THE EFFECTS OF EDUCATION
ON PRISONER RECIDIVISM

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I. Abstract

This paper uses human capital theory to model the effects of educating prisoners, on recidivism rates. Educating inmates is a way to increase their human capital, which will increase their opportunity costs associated with crime thus decreasing the probability that they will recidivate. Using data from the United States Department of Justice, Bureau of Justice Statistics it is found that education has a significant negative effect on the probability of recidivism.

II. Introduction

There are currently over 2.1 million prisoners incarcerated in the United States, and the cost of the state prisons alone is over 38.6 billion dollars(Corrections). An estimated 43 percent of inmates in state prisons did not have a high school diploma of equivalency in 2001(Corrections). It is estimated that 650,000 prisoners will be released in 2005(Corrections), and one-third of them are expected to find themselves back in jail or prison within a three-year period. Almost all the federal and state prisons are operating at or above maximum capacity, and the prisoners seem to keep going through a revolving door that we call recidivism. Recidivism is defined as an occurrence where an individual released from incarceration is arrested, convicted and incarcerated again within the three-year period following their release¹.

Education is relatively inexpensive to offer to individuals who are incarcerated. The most common form of education that occurs in the prison system is high school equivalency (GED). There are also vocational and associate level programs offered. College level courses are offered to inmates, however they are responsible for paying for the courses.

This study aims to establish the effect that education within the prison system, has on the probability that a released inmate will recidivate. The hypothesis is that there is an inverse relationship between the participation in educational programs and the probability to recidivate: the more education a prisoner receives the lower the probability that he or she will recidivate. If this hypothesis is supported, this study will suggest that education

¹ Alternative definitions of recidivism according to BJS are: an individual is released from incarceration and gets arrested within the three years following their release and an individual is released from incarceration and gets arrested and convicted within the three years following their release.

is a way to decrease the number of those incarcerated and hence lower the overall cost of crime in society.

III. Literature Review

Alfred Schnur conducted a study on the effects that education had on recidivism in 1948. The author found that the hypothesis that education had no effect on prisoner recidivism had to be rejected. However, the need for education with regards to employment was much different in 1948. In 1948, the average citizen could find work without much education. Today a high school diploma is a necessity for any real employment opportunities.

Langan and Levin (2002) released a Special Report for the Bureau of Justice Statistics on recidivism of prisoners in 1994. In their report, they followed a sample of 38,624 prisoners for three years. Their sample was a representation of the 272,111 actual prisoners that were released in 1994. They used FBI and State crime records from fifteen states (the fifteen states they chose were accountable for two-thirds of all releases in 1994). Their findings were consistent with prior research that around two-thirds of prisoners are rearrested. Their report contained descriptive statistics only, and even though they collected educational information, they did not report on it.

Due to a lack of research done on education as it relates to recidivism in the field of economics the literature used focuses on works that focus on education and how it relates to crime. Lochner (2004) develops a model of crime using Becker's human capital theory: older and more educated people should commit less crime because of the

increased opportunity costs associated with crime. However, white-collar crime should decrease less with education and age because a certain level of education and experience is needed to commit such crimes. In his study, Lochner constructs a Bellman function to predict if an individual will commit a crime or choose a life of crime. This dynamic model measures the benefits associated with crime versus the costs incurred from committing criminal acts. This model spans over the life of the individual, calculating probabilities of committing crimes with reference to age, level of education and work experience. A modified version of Lochner's model is used in this study to estimate the effects of education on the probability that an inmate will recidivate.

Moretti and Lochner (2004) estimate the effects of high school graduation on the participation in criminal activities. Using Census data, the authors find that graduation reduces the probability of incarceration by 0.76 percentage points for whites and 3.4 percentage points for blacks.

There is a multitude of research conducted on crime. Much of the focus of prior studies is to understand what causes one to commit a criminal act. While it is well documented that increasing one's human capital via education also increases their opportunity costs associated with committing a crime, there is not very much information on the effects of increasing one's human capital while incarcerated. This study will examine the effects of increasing an inmate's human capital on the probability that he or she will commit additional crimes after being released from incarceration.

IV. Data

The data used in this paper comes from the United States Department of Justice, Bureau of Justice Statistics. It is obtained through the National Archives of Criminal Justice Data (NACJD). The data spans from 1994-1997. It contains information on individuals from prisons in 15 states that account for over two-thirds of all prisoners that were released in 1994. The data includes their incarceration history, current offense, their total amount of time served, the day they were released, and the state they were released from. In addition the data set includes the number of times arrested, convicted and sentenced to confinement between 1994-1997 if any. Background information on the inmates includes year of birth, sex, age, race, ethnicity, and if they were either a drug or alcohol abuser. It also contains information on educational courses, and individual information on inmates if they completed, participated, participated but it is unknown if they completed or did not participate in these programs. The most common form of education within the prison system is high school equivalencies. Due to lack of detailed information on what exactly these educational courses were, this study assumes that the educational information in the data set is high school equivalencies or GED's. Unfortunately, this information is only available for five of the fifteen states in the data set (Florida, Illinois, New York, North Carolina and Texas). The other states may offer educational programs but since this information is missing, they have been dropped from the sample used in this study. The number of observations in the original set is 38,624 after deleting the states without information on the educational programs the number of observations drops to 11,120.

V. Model

This study focuses on the effects that educating prisoners have on the probability that they will recidivate. The model used in this study will be a variation of the model used in Lochner's work *Education, Work and Crime: A Human Capital Approach*.

Lochner uses Becker's Human Capital theory to show that if the benefits from committing a crime exceed the costs of committing a crime, one will choose to commit the crime. Likewise, if the benefits from committing a crime are less than the costs, one will not choose to commit the crime. The author uses education and work experience to represent human capital, by investing in education or gaining experience through work one increases their productivity thus increasing their value to potential employers.

Lochner found that as the level of human capital increases, so do the opportunity costs of committing crimes. Opportunity costs of crime are not just the fines and time spent in prison but also the forgone income that one could be making. Therefore, as the level of educational attainment increases, the probability of committing criminal acts decreases.

This study will borrow Lochner's theoretical model and add a few variations to it. First, this study will be using a static model rather than a dynamic one. In addition, the sample will consist of only released prisoners. Lochner's sample was a representation of the civilian population and the probability that they will commit crimes. However, this study focuses only on those whom have already been convicted. Finally, this study is focusing on education that has occurred within the prison system.

Once a prisoner is released, if the benefits of committing a crime are greater than the costs associated with committing a crime, then he or she will choose to commit another crime, for which they may be caught and in-turn recidivate. However, if the costs

associated with criminal activity are greater than the benefits received from committing the crime, the released inmate will not choose to commit the crime, thus eliminating the chances of recidivism. Increasing one's human capital, in this case educating prisoners while they are incarcerated, increases the opportunity costs associated with crime. This will reduce the number of those who return to incarceration. Reducing the numbers of those incarcerated and number of crimes committed by released convicts will lower the aggregate cost of crime to society. This study will show that increasing a convict's education level i.e. human capital will decrease the probability that he or she will recidivate.

The estimation for recidivism will be set up as a probit model. There are only two possible outcomes. A prisoner will be released and not commit another crime or a released inmate will commit another crime. A zero will indicate a prisoner will not recidivate and a one will indicate a return to prison. For this model, the definition of recidivism that will be applied is the case that an individual that has been released from incarceration is rearrested and incarcerated again. It will not be based on just arrest information; an arrest does not always lead to incarceration. The dependent variable is R representing recidivism. It is set up as a dummy variable. If the number of times an inmate is confined to jail or prison after their release is greater than zero it will be assigned a one. If the number is zero the variable will be assigned a zero.

$$R^* = \beta_0 + \beta_1 \text{Age} + \beta_2 \text{Female} + \beta_3 \text{White} + \beta_4 \text{Black} + \beta_5 \text{Violent} + \beta_6 \text{Property} + \beta_7 \text{Urate} + \beta_8 \text{Comeduc} + \beta_9 \text{Someduc} + \beta_{10} \text{Unknowneduc} + \upsilon$$

$$R = 1 \text{ if } (R^* > 0)$$

$$R = 0 \text{ if } (R^* < 0)$$

Age represents the age of the prisoner at the time of their release in 1994. *Female* indicates the gender of the person who was released. The Variable *White* indicates an inmate is a Caucasian and *Black* when an inmate is an African-American. These are both coded as dummy variable, and the reference group is the combination of the other minority races (Pacific Islander, Asian, American Indian and other). *Urate* corresponds to the unemployment rate of the state of the prison the inmate was released from. It is the average of the unemployment rates from 1994-1997

The variable *Violent* represents felons incarcerated for committing a violent crime. Examples of violent crimes are murder, sexual assault and robbery. *Property* signifies an inmate is in prison for committing property crimes. Burglary, auto theft and fraud are examples of property crimes. Violent and property are both dummy variables. The reference group is all other forms of crime such as public and drug offences. Examples of public offences are driving under the influence, trespassing, and weapon offences.

The information on the educational attainment while incarcerated was broken down into four dummy variables. *Comeduc* indicates that an inmate has completed educational courses while incarcerated. *Someduc* denotes an inmate who participated in educational courses but did not complete. *Unknowneduc* specifies a prisoner who participated in courses of study but it is unknown if they completed them. Lastly, non-participants were left out of the model as the reference group. *U* is the error term.

It is anticipated that as age increases the probability that a person will recidivate will decrease i.e. there will be a negative relation between age and recidivism. Females

are expected to be less likely to recidivate in comparison to men. Individuals who are African-American are projected to be more likely to recidivate than other minorities. Caucasians as well, are more likely to recidivate in comparison to minorities other than African-Americans.

In terms of type of offence, violent offenders are expected to be less prone to recidivate due to harsher punishments, thus increasing the cost of committing a crime. In addition, many violent acts are crimes of passion. In contrast, those who commit property offences will be more apt to recidivate because the punishments are not as severe. Furthermore, there is a monetary benefit to property crimes. Property crimes give value to individuals who do not get caught. The effects of the unemployment rate should be positive with the probability of recidivating. If the unemployment rate increases released inmates chances of recidivating should also increase. As unemployment increases the opportunities for legitimate work decreases, not having employment reduces the opportunity costs associated with crime.

Education should have a negative effect on recidivism. Educational attainment while incarcerated should decrease the probability that an inmate will recidivate. This should hold true for all levels of education. If an inmate does not participate in educational courses, they are projected to be more likely to recidivate. Increasing educational attainment is a way to increase human capital, which increases the opportunity costs associated with crime therefore reducing the probability of recidivism.

VI. Results

In the sample used by this study of 11,120 released convicts, 32% of them are back in prison or jail, while 67% of them have been rearrested. The variable **Age** was significant and had a negative effect on the probability of a released inmate returning to prison (Table 1). The probability of a female recidivating is negative. If the released inmate is female the chances of recidivism decrease significantly.

If a released felon is white, the probability that they will come back is positive but low and insignificant. If the race of the released convict is black, the probability increased quite dramatically and significantly.

The felons' probability of returning to prison if he or she was incarcerated for a violent crime is negative and is very significant. The probability of recidivating is positive for property offenders and is highly significant.

The unemployment rate has a positive effect on recidivism. If the unemployment rate increases, there is less opportunity for legitimate work; released felons are more likely to recidivate. The unemployment rate is statistically significant.

Education attainment within the prison system is highly significant and negatively related to the probability that an inmate will recidivate. If an inmate completes educational courses while incarcerated the probability that they recidivate decreases by 8.6 percent (Table 2). Of the 650,000 inmates estimated to be released in 2005, 8.6 percent is 55,900 inmates who will not be returning to prison. An inmate participates but does not complete educational courses also has a negative effect on recidivism decreasing the probability by 8.5 percent. Finally, if a convict participates in any educational course

but it is not known if they completed them or if they have not completed them the probability of recidivating still decreases significantly by 5.0 percent.

VII. Conclusion

The cost of keeping an inmate incarcerated for a year often exceeds the average citizen's annual income. The prisons and jails are operating at or above maximum capacity, and the prison population continues to grow. Recidivism is a major issue in the ongoing problems associated with crime.

Human Capital theory suggests that the reason an individual would recidivate is low opportunity costs associated with crime, generated by having low skills and a lack of education. Increasing education within the prison system will in turn increase the level of human capital hence increasing the opportunity costs associated with committing a crime. If the costs of committing a crime outweigh the benefits from committing a crime, the released inmate will not choose to commit an additional crime, thus not recidivate.

Using data on released prisoners from the Bureau of Justice Statistics this study finds that prisoners who attain education while serving out their sentences are less likely to recidivate. There is a strong negative relationship between those who complete educational courses and the probability of recidivating. There is also a significant inverse relation between those who just participate in educational courses and the probability of recidivating.

Prior studies have focused on the factors that cause individuals to commit criminal acts. Much of the policy implementation was related to deterrents. More recently

with Moretti and Lochner, implied policies have been to increase spending on education and investing in market skills as a form of crime prevention.

This study suggests an increase in public spending for education for those who are incarcerated. There should be efforts to increase the effectiveness of educating prisoners. In addition, there need to be incentives to get more prisoners participating and completing educational courses while serving out their sentences. This would in turn increase their human capital and their opportunity costs associated with crime, further reducing the probability that they will recidivate.

This study finds that education significantly reduces the probability that a released convict will recidivate. However, there is a need for more research. Future studies need to have more detailed educational information, beyond that of an inmates completion of educational courses. There needs to be information about what types of courses are offered, and which ones are the most effective for getting released inmates jobs. In addition, it would be useful to track the employment histories of released convicts. Reducing the rate of recidivism will reduce the number of those incarcerated and reduce the overall costs of crime for society.

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Table 1

Variable	Parameter Estimate	Chi Square
Intercept	-0.1548	0.2168
Age	-0.0231	<0.0001
Female	-0.1777	0.0006
White	0.0671	0.1517
Black	0.3643	<0.0001
Violent	-0.2534	<0.0001
Property	0.2221	<0.0001
Urate	0.0794	0.0001
Comeduc	-0.2667	<0.0001
Someduc	-0.2632	<0.0001
Unknowneduc	-0.1496	0.0009

Table 2

Variable	Parameter Estimate	Estimated Probability	Marginal Effect
Comeduc	-0.2667	0.2195	-8.6
Someduc	-0.2632	0.2206	-8.5
Unknown	-0.1496	0.2557	-5.0
No educ		0.3061	