The Effects of Incarceration on Educational Attainment

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Abstract

Mass incarceration is a problem that is seemingly unique to the United States in the western world. The incarceration of citizens has far reaching implications politically, economically, and socially. This study undertakes the task of evaluating how incarceration affects just one aspect of the lives of individuals, through examining its effects on education. Controlling for other variables as predictors of educational attainment, being incarcerated at a young age is correlated with a significant decline in education. For African Americans alone, being incarcerated at or before age 18 is associated with a decrease in educational attainment of 2.4 years; over twice the estimate for white students. Additionally, there is a negligible association between incarceration and educational attainment for Hispanics.

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I.   Introduction

The American justice system is one of the most complex institutions in American society that greatly affects the day to day lives of its citizenry in the United States. With this unyielding power, comes the responsibility to maintain the imperative principles of integrity, fairness, justice, and equality. The system must be held to the highest standard, and subject to the most acute levels of criticism, in order to best serve the needs of those under its jurisdiction. Sharp criticisms of the justice system are common, with some extending further to arrive at a conclusion that the justice system is inefficacious, or worse, that the system itself is broken. Many of these criticisms pertain to inequality, specifically in regards to race, and are well documented in both the media and academia (McConnell and Rasul, 2018; Lofstrom and Raphael, 2016; McKinley, 2014).

One such criticism deals with the topic of incarceration. It is commonly cited that the United States has an increasingly disproportionate rate of imprisonment of its citizens when accounting for population. In fact, the United States accounts for one quarter of the world's prison population while only constituting around 5% of the total global population (Weiss and MacKenzie, 2010). While there remains much debate on the issue, one proposed reason for the cause in such an uptick in the nation's prison population is the increased prosecution and subsequent sentencing for drug related offenses (Rothwell, 2015). According to the Federal Bureau of Prisons (2018), approximately 46% of all inmates in federal prisons currently are there as a result of drug related offenses. While this percentage is much lower for state prisons, this number is significantly higher than for any other category of offense. Another consideration in this criticism is its impact on race. From the most recently available data, African Americans make up about 38% of the federal prison population. With African Americans making up just over 13% of

the population, many accuse the justice system of unequal treatment pertaining to race (United States Census Bureau, 2016).

The inequality in incarceration rates faced by African Americans is best illustrated by the aforementioned prosecution of drug related offenses. According to the National Research Council (2014), their research indicates that blacks are arrested at rates three to four times higher than whites in recent years. This data is concurrent with the fact that there is no significant difference between rates of drug use between blacks and whites when considering all types of drugs. Additionally, they find that there is no evidence that either blacks or whites sell drugs at a higher rate. The implications that are created by incarceration are very serious, as they affect the lives of many people, both directly and indirectly, in society. My research looks to uncover how incarceration might affect just one of the many aspects of life of those who are incarcerated at some point in their lives, specifically focusing on the effects on educational attainment.

Hjalmarsson (2008) indicates that there exists a wide body of literature studying the relationship between incarceration and certain labor market outcomes. The majority of this research looks at the effects of incarceration or of crime on outcomes such as wages, income, or employment (Grogger, 1995; Waldfogel, 1994; Lott, 1990; Western and Beckett, 1999; Nagin and Waldfogel, 1995; Kling, 2006). However, another important social metric to consider is a person's level of education. Education is important in that it has the potential to lead to social mobility, increased opportunities, as well as benefits for a given country at the national level. In addition, education can be used as a proxy for measures such as wage potential. This phenomenon is explained well in research by Card (1999).

The United States compares quite favorably to most western democracies with respect to the education of its citizenry. However, there remains a large gap between the educational

attainment of whites and that of blacks within the country. In the U.S., blacks are less likely than whites to graduate from high school as well as to continue on to pursue a postsecondary education (Ewert, Sykes, and Pettit, 2014). Blacks in the United States also fare worse in terms of high school graduation and university attendance when compared to other industrialized countries. This inequality, when compared to white students in the country, has far reaching potential social implications, some of them mentioned earlier. Ewert, Sykes, and Pettit (2014) conclude that racial inequality is perpetuated by the disproportionate incarceration of black men, which excludes them from economic spheres of social life, hence impacting aspects of their lives such as educational achievement.

This paper undertakes the task of evaluating any potential relationship between incarceration and educational attainment. This research looks to emphasize any difference in effects when compared across demographics such as race and gender. The implications of a significant relationship between incarceration and education could be very important for policymakers in the United States. While incarceration is a necessary function of an effective criminal justice system, the incarceration of persons also plays a role in reducing the stock of human capital in the country. This consequence is more serious if it results in inhibiting the education of those who have the potential to rehabilitate themselves when returning to mainstream society. Additionally, if the effects of incarceration are received differently across demographics such as race, and this coincides with disproportionate rates of incarceration, this could suggest further policy improvements.

This paper contributes to the literature by employing a unique model that attempts to isolate the effects of incarceration on years of education. When evaluating effects on education, a majority of the present literature utilizes high school graduation as a proxy for education. This research

includes the effects on higher education in its analysis. Additionally, this paper places emphasis on variations across demographic groups, an important distinction as many studies choose to forego reporting analysis for different demographic groups, even when justice system interactions vary widely between these groups (Amin et al., 2016).

This paper is organized as follows. The next section, Section II, takes a comprehensive review of the current literature on the issue. Section III will explain the construction, given assumptions, and limitations of the economic model developed within this work. Section IV presents the analysis of the data using the constructed econometric model. Finally, a conclusion summarizing the results of the study is presented in Section V.

II.   Literature Review

While there is a vast range of research on the topics of crime and education in the economic sphere, there is little done to examine how disparities in the criminal justice system may lead to discrepancies in education attainment. This is reiterated by Hjalmarsson (2008), who claims that the research is quite limited in evaluating the impact of interactions with the justice system on education. In this work, I look to contribute new insight into how differential treatment of blacks, whites, and Hispanics with respect to interactions with the justice system may ultimately affect the wage potential and well-being of those involved through educational opportunity. Moreover, there is very little research emphasizing or focusing on how well-documented variances in incarceration rates across racial groups affect these groups' respective educational outlooks.

One issue is that research is commonly one directional, typically focusing on the effects of education and crime, as opposed to the inverse perspective. For example, Lochner and Moretti (2004) found that increases in educational attainment levels lead to a significant reduction in the

probability of incarceration and arrest. However, it should be noted that the reduction in probability of arrest and incarceration appears to have been caused by changes in criminal behavior and not a reduction in the probabilities of arrest and incarceration themselves. One interesting feature to note from their research is that the reduction in probability of imprisonment resulting from education was found to be significantly higher for blacks than for whites. In a separate study, Amin et al. (2016) find strikingly similar results examining the association between the attainment of a vocational degree and the probability of facing arrest.

Other studies are limited in their own respects. Sykes and Maroto (2016) do an excellent job in illustrating the effects of differing incarceration rates on measures of wealth between whites and minority groups in an environment that is difficult to generate an accurate measure of wealth. Their research mentions educational effects briefly, while primarily focusing on the ultimate effects on household wealth.

Ewert, Sykes, and Pettit (2014) direct their research to answering how excluding incarcerated persons from survey data might cause distortions in typical metrics of inequality and educational attainment. Essentially, their study looks at how recent growth in mass incarceration affects measures of educational attainment for males. Strikingly, they are able to conclude that the exclusion of the incarcerated population from sample data results in a significant sample bias. In fact, when incorporating the incarcerated population into survey results, they find that black men have not experienced any significant improvement in high school completion rates in the past two decades. While these conclusions present very important policy and research implications, the results are fairly limited in scope. Ewert, Sykes, and Pettit (2014) choose not to draw any conclusions on the direct effects of incarceration on educational attainment. Additionally, the study

is limited to the effects on high school graduation rates, without considering any effects on higher educational attainment.

One of the most effective studies analyzing the effects of justice systems interactions on education is that of Hjalmarsson (2008). The study utilizes a model that controls for a large set of observable and unobservable characteristics in addition to comparing the marginal effects of different justice system interactions. The justice system interactions of choice are listed as: arrest, charge, conviction, and incarceration. Moreover, the analysis utilizes an approach proposed by Altonji et al. (2005) that measures how sensitive the predictors in the model are to selection on unobservables. Hjalmarsson (2008) looks at the marginal effects of these justice system interactions, when occurring before the age of sixteen, on high school completion by the age of nineteen. Results initially indicate that both arrest and incarceration are significant in their predictions of high school graduation. However, when accounting for selection on unobservable characteristics, only the incarceration predictor is robust to the effects of this little selection for unobservables. Once again, similar to Ewert, Sykes, and Pettit (2014), the scope of the study is limited to the effects on high school graduation, while omitting any effect on higher education. In addition, the research provides limited insight into the potential for different effects across demographic groups.

Kirk and Sampson (2013) uniquely assess the effect of arrest on education, including effects on postsecondary education in their analysis. However, through the use of a longitudinal study that is unique to Chicago neighborhoods, there are significant risks in attempting to generalize these results to a larger national population.

My research looks to add on to this area of study through focusing solely on how incarceration and incarceration rates effect differences in educational attainment. This analysis

will account for effects on the attainment of higher education. While much of the current literature utilizes a patchwork of survey data that often times requires interpolation in its analyses, like Hjalmarsson (2008), I will utilize the most recently available round of National Longitudinal Survey of Youth (NLSY) data in this research. With new data now available, I will be able to consider more recent and more relevant data than in past studies.

III.   Data and Modeling

The data utilized in this paper is the NLSY97, provided by the Bureau of Labor Statistics. The data is designed to present a nationally representative sample of over 9,000 youths between the ages of 12 and 18 as of the year 1997. The cohort is composed of a longitudinal study and respondents are currently interviewed biannually. Data are now available to the public beginning from the first round and continuing through round 17 (2015-16). Additionally, there is an added oversampling of the minority population. This data is the most important for the economic model constructed in this study, as it is fairly current and provides one of the most comprehensive sets of variables for data that is publicly available.

The model developed in this work will share many similarities with that of Hjalmarsson (2008). However, there are some key differences that must be noted. Primarily, the dependent variable of interest in this study will be the respondents' current level of education or, in terms of the NLSY data, the respondents' highest grade completed (HGC). The estimator that the analysis will focus on will be a binary variable, indicating whether or not the participant has been incarcerated at some point before the age of nineteen. The construction of the empirical model is as follows:

$$(1) \; HGC = \beta_0 + \beta_1 \, Ability + \beta_2 \, Mental\_Health + \beta_3 \, Household\_Effects +$$

$$\beta_4 \, Criminal\_Behavior + \beta_5 \, Demographics + \beta_6 \, Incarceration + \varepsilon$$

As shown in Equation (1), explanatory variables are grouped together into categories based on relevance. These categories are listed as ability, mental health, household effects, criminal behavior, demographics, and incarceration. The details and rationale for the specified selection of independent variables will now be examined further.

Ability

Ability, or cognitive ability, is estimated using a single variable from the NLSY study based on test scores on the Armed Services Vocational Aptitude Battery test (ASVAB). Participants were tested on four subject areas: mathematical knowledge, arithmetic reasoning, word knowledge, and paragraph comprehension. These scores are then weighted and aggregated in order to arrive at a percentile value between 0 and 100. It can be noted that this variable is very similar, yet distinct from the calculation of AFQT for the NLSY79 cohort.

Mental Health

A participant's mental health is represented in the model through a survey question administered in the NLSY that is reported by the participant's parent. The question takes into account whether the participant has any physical, emotional, or mental conditions that limits their ability to attend school regularly, or work at a job to generate income. The variable takes a binary form, with a "Yes" response indicating that the participant has a concurrent condition.

Household Effects

The constructed model of Equation (1) controls for a variety of household effects, with each variable likely to play a role in the prediction of education as well as the potential to affect the expected value of the incarceration coefficient. The variables included in the analysis are both the respondent's mother and father's highest grade completed, gross household income, household size, and whether the participant lives in an urban or rural area.

Criminal Behavior

Criminal behavior is included in the model based on the self-reporting of crime by survey participants. Participants were asked to self-report involvement in criminal activity such as the destruction of property, theft of items valued at more than $50, seriously hurting another person, the sale of illegal drugs, the use of illegal drugs, and other property crimes. Including these predictors is very similar to the approach taken by Hjalmarsson (2008). Though, there are important distinctions in the selection of variables, even within the listed categories of explanatory variables. For example, this model uses two survey responses, about whether participants have ever used marijuana or other drugs such as cocaine, in order to create a single indicator variable called "Drug_Use." Another point worth mentioning is that when crime is self-reported, the participants involved tend to underreport the crimes they commit. Many studies also show that underreporting is even more likely for young black males (Lochner and Moretti, 2004). While this may skew the results of the estimators in some way, self-reported crime is still the most direct measure of crime that is both available and observable.

Demographics

Key demographic variables are also included in the analysis. For instance, the age at the time of interviewing for the participant is controlled for, in addition to demographics such as

gender. Indicator variables are also created based on ethnicity. These variables signal if a respondent is either black or Hispanic.

Incarceration

For this analysis, it is very important to define what is meant by incarceration. Incarceration differs significantly from other justice system interactions such as conviction or arrest. Incarceration is often seen as the most severe form of justice system interaction. Incarceration is defined here as the detainment of a person in a prison, jail, or other correctional facility. This is not to be confused with arrest, as incarceration occurs only after following a conviction. In analysis by Hjalmarsson (2008) it is determined that both arrest and incarceration are associated with a less likely probability to graduate high school by age nineteen. However, when accounting for selection on unobservables, incarceration was found to be much less sensitive to this selection than arrest. Hjalmarsson (2008) concludes that incarceration is the justice system interaction that is most likely to represent a real effect. This is another motivation for electing to focus exclusively on the effects of incarceration in this study.

It should also be noted that this model comes with limitations that should be taken seriously. Given the properties of both education and incarceration, the economic model built here is subject to many potential biases in estimation. This research attempts to limit these biases as much as possible, while understanding that reducing the possibility of bias to zero without compromising the effectiveness of the model is impractical.

One risk faced by this model is the potential for simultaneity bias. That is to say that increasing years of education actually results in a decreased probability of incarceration. In order to reduce this risk, Hjalmarsson (2008) limits justice system interactions to those that occur before

sixteen years of age. The model of this study includes incarcerations occurring up to the age of 18. While this does increase the possibility of simultaneity bias, this study finds it important to include incarcerations that occur up to this age in order to have a sample that is representative of the true rate of incarceration.

As mentioned previously, the unique characteristics of education and incarceration cause them to be correlated with an extremely large number of observable and unobservable elements, potentially biasing the resulting coefficients. This poses a significant risk of omitted variable bias. Additionally, through controlling for many variables that may have an effect on education and even on incarceration, the model becomes subject to the risk of multicollinearity. Both scenarios expose the model in question to risk of biased estimators. Research by Hjalmarsson (2008) indicating that incarceration is fairly insensitive to selection on unobservables provides some support that any estimation of the effect of incarceration may represents a real effect.

IV.   Analysis

The analysis conducted herein is in conjunction with the empirical model created in Equation (1). Figure 1 presents summary statistics of the sample selected for this analysis. Figure 1 shows that 51 percent of our sample are males. Additionally, 26 percent are African American and 21 percent are Hispanic. Approximately 2 percent of the sample population has been incarcerated at or before the age of 18.

The econometric model established in Equation (1) utilizes the Ordinary Least Squares (OLS) method of multiple linear regression. Highest grade completed is regressed on each explanatory variable listed and further specified in Equation (1). The results of the regression for the entire sample are illustrated in Figure 2.

Variable	Definition	N	Mean	Std. Dev.
HGC	Highest grade completed.	8885	13.52	3.09
Incarceration	Equal to one if incarcerated at or before the age of 18.	8984	0.02	0.12
Ability	ASVAB math and verbal score percentile.	7093	45.32	29.17
Mental Health	Equal to one if a mental health condition exists.	8976	0.06	0.24
Household Effects				
Gross Household Income	Gross household income for the year of the survey.	6588	46.37[*]	42.13[*]
Father's HGC	Respondent's father's highest grade completed.	7796	11.47	4.68
Mother's HGC	Respondent's mother's highest grade completed.	8461	12.19	3.37
Household Size	Household size as of the survey date.	8984	4.55	1.54
Urban	Equal to one if residence in an urban area.	8604	0.76	0.42
Criminal Behavior				
Destroyed Property	Equal to one if purposely destroyed property.	8957	0.27	0.44
Steal More than $50	Equal to one if stolen something worth more than $50.	8956	0.08	0.27
Attack Someone	Equal to one if attacked and hurt someone.	8953	0.18	0.39
Other Property Crime	Equal to one if committed other property crimes.	8954	0.08	0.28
Sell Illegal Drugs	Equal to one if sold or helped sell illegal drugs.	8954	0.07	0.25
Use Illegal Drugs	Equal to one if used illegal drugs.	8984	0.22	0.42
Demographics				
Male	Equal to one if male.	8984	0.51	0.50
Black	Equal to one if black.	8984	0.26	0.44
Hispanic	Equal to one as Hispanic.	8984	0.21	0.41
Age97	Age as of the survey date.	8984	14	1.40

* Numbers are in '000s of dollars

Figure 1

In Figure 2 it is shown that many of the predictors result in statistically significant coefficients. The variables incarceration, ability, mental health, gross household income, father's and mother's highest grade completed, attacked someone, use of illegal drugs, male, black, Hispanic, and age97 were all significant at the 1% or 5% levels. However, the majority of these

All		
Variable	Parameter Estimate	Standard Error
N = 4428		
Intercept	9.334	(0.449)
Incarceration	-1.368 ***	(0.335)
Ability	0.045 ***	(0.001)
Mental Health	-0.487 ***	(0.143)
Household Effects		
Gross Household Income	0.008 ***	(0.001)
Father's HGC	0.052 ***	(0.010)
Mother's HGC	0.088 ***	(0.014)
Household Size	-0.007	(0.027)
Urban	-0.100	(0.084)
Criminal Behavior		
Destroyed Property	0.020	(0.090)
Steal More than $50	-0.294	(0.156)
Attack Someone	-0.325 ***	(0.106)
Other Property Crime	-0.163	(0.145)
Sell Illegal Drugs	-0.037	(0.172)
Use Illegal Drugs	-0.746 ***	(0.103)
Demographics		
Male	-0.615 ***	(0.075)
Black	0.800 ***	(0.103)
Hispanic	0.559 ***	(0.109)
Age97	0.054 **	(0.027)
Adjusted R-squared	0.351	

*** Significant at the 1% level

** Significant at the 5% level   Figure 2

coefficients are extremely small in magnitude. For example, a one year increase in father's highest

grade completed, is associated with an increase of only 5% of an educational grade for a

participant. Other variables have similarly small predicting effects. Strikingly, some variables are

associated with a significant change in highest grade completed. Incarceration shows a strong negative correlation with highest grade completed. In fact, incarceration at or before age eighteen is associated with a decrease in highest grade completed by approximately 1.37. This represents an entire year plus an additional one-third of a year of schooling. Another notable observation is that suffering from a mental health condition is associated with a decrease in almost half of a grade completion, as is being a male. A rather interesting result is that while selling illegal drugs results in no significant correlation with highest grade completed, using illegal drugs is associated with a significant decline in schooling. Another curious outcome, holding other factors fixed, being black or Hispanic is associated with a significant increase in highest grade completed.

It is important to compare these results across demographic groups in order to gain vital insight about how these interactions vary for differing groups of people. Figure 3 and Figure 4 display the separate regression analyses of the data for males and females, respectively.

The analysis of the data for males and females looks very similar to the data for the population as a whole. Perhaps the most important difference to note is the difference in the effect of incarceration. It appears that incarceration negatively affects females' highest grade completed more than its potential effect on male subjects. One other important difference to point out is that past violent behavior, such as attempting to attack or cause harm to another person, ultimately results in a negative association with highest grade completed for males while being statistically insignificant for females.

As mentioned throughout this paper, incarceration generally affects members of different races and ethnicities in different ways and to different extents. In order to roughly see how comparing these differences can be insightful, analysis for different races and ethnicities are also

| *Males* | | |
Variable N = 2253	Parameter Estimate	Standard Error
Intercept	8.844	(0.588)
Incarceration	-1.209 ***	(0.353)
Ability	0.044 ***	(0.002)
Mental Health	-0.475 ***	(0.179)
Household Effects		
Gross Household Income	0.009 ***	(0.001)
Father's HGC	0.067 ***	(0.014)
Mother's HGC	0.081 ***	(0.018)
Household Size	-0.015	(0.037)
Urban	-0.018	(0.110)
Criminal Behavior		
Destroyed Property	0.042	(0.109)
Steal More than $50	-0.325	(0.184)
Attack Someone	-0.455 ***	(0.129)
Other Property Crime	-0.191	(0.154)
Sell Illegal Drugs	-0.126	(0.208)
Use Illegal Drugs	-0.659 ***	(0.137)
Demographics		
Black	0.619 ***	(0.139)
Hispanic	0.530 ***	(0.141)
Age97	0.043	(0.036)
Adjusted R-squared	0.383	

*** Significant at the 1% level

Figure 3

included here in Figure 5, Figure 6, and Figure 7. Figure 5 shows the analysis specific to black

participants, Figure 6 is specific to Hispanic participants, and Figure 7 shows the analysis for only

white participants.

Females		
Variable	Parameter Estimate	Standard Error
N = 2175		
Intercept	9.180	(0.680)
Incarceration	-1.952 **	(0.811)
Ability	0.047 ***	(0.002)
Mental Health	-0.536 **	(0.230)
Household Effects		
Gross Household Income	0.007 ***	(0.002)
Father's HGC	0.038 **	(0.016)
Mother's HGC	0.094 ***	(0.022)
Household Size	-0.002	(0.040)
Urban	-0.189	(0.128)
Criminal Behavior		
Destroyed Property	-0.030	(0.154)
Steal More than $50	-0.241	(0.275)
Attack Someone	-0.122	(0.178)
Other Property Crime	0.030	(0.347)
Sell Illegal Drugs	0.085	(0.292)
Use Illegal Drugs	-0.828 ***	(0.156)
Demographics		
Black	0.961 ***	(0.151)
Hispanic	0.598 ***	(0.167)
Age97	0.068	(0.041)
Adjusted R-squared	0.297	

*** Significant at the 1% level

** Significant at the 5% level   Figure 4

There are some key differences in the analysis when comparing estimators across race and

ethnicity. One interesting point, is that mental health as a predictor is only statistically significant

for white respondents, and results in a negative correlation with highest grade completed. The

Black		
Variable	Parameter Estimate	Standard Error
N = 930		
Intercept	10.557	(1.002)
Incarceration	-2.402 ***	(0.676)
Ability	0.054 ***	(0.004)
Mental Health	-1.048	(0.333)
Household Effects		
Gross Household Income	0.008 **	(0.003)
Father's HGC	0.021	(0.021)
Mother's HGC	0.136 ***	(0.034)
Household Size	-0.055	(0.050)
Urban	-0.209	(0.202)
Criminal Behavior		
Destroyed Property	0.031	(0.197)
Steal More than $50	-0.509	(0.337)
Attack Someone	-0.252	(0.204)
Other Property Crime	-0.513	(0.323)
Sell Illegal Drugs	0.465	(0.487)
Use Illegal Drugs	-0.913 ***	(0.225)
Demographics		
Male	-0.771 ***	(0.164)
Age97	0.021	(0.059)
Adjusted R-squared	0.374	

*** Significant at the 1% level

** Significant at the 5% level   Figure 5

same is true for the effect of father's highest grade completed as well as attacking or attempting to

cause serious harm to another person. The most interesting result is how the estimated effect of

incarceration compares across racial lines. For example, for Hispanic participants alone,

Hispanic Variable N = 766	Parameter Estimate	Standard Error
Intercept	12.216	(1.027)
Incarceration	-0.886	(0.816)
Ability	0.046 ***	(0.004)
Mental Health	-0.092	(0.388)
Household Effects		
Gross Household Income	0.009 ***	(0.003)
Father's HGC	0.030	(0.022)
Mother's HGC	0.044	(0.027)
Household Size	-0.002	(0.060)
Urban	-0.485	(0.279)
Criminal Behavior		
Destroyed Property	0.227	(0.219)
Steal More than $50	-0.489	(0.335)
Attack Someone	-0.085	(0.247)
Other Property Crime	-0.214	(0.349)
Sell Illegal Drugs	0.761 **	(0.387)
Use Illegal Drugs	-0.660 ***	(0.245)
Demographics		
Male	-0.709 ***	(0.178)
Age97	-0.052	(0.065)
Adjusted R-squared	0.309	

*** Significant at the 1% level

** Significant at the 5% level   Figure 6

incarceration is not statistically significant at the 5% level. What may be even more surprising, is

the parameter estimate for incarceration for African American respondents. The coefficient is

White Variable N = 2732	Parameter Estimate	Standard Error
Intercept	8.485	(0.578)
Incarceration	-0.970 **	(0.441)
Ability	0.042 ***	(0.002)
Mental Health	-0.391 **	(0.174)
Household Effects		
Gross Household Income	0.007 ***	(0.001)
Father's HGC	0.079 ***	(0.014)
Mother's HGC	0.088 ***	(0.019)
Household Size	0.019	(0.039)
Urban	-0.047	(0.098)
Criminal Behavior		
Destroyed Property	-0.034	(0.115)
Steal More than $50	-0.240	(0.207)
Attack Someone	-0.422 ***	(0.145)
Other Property Crime	-0.088	(0.184)
Sell Illegal Drugs	-0.398	(0.212)
Use Illegal Drugs	-0.682 ***	(0.132)
Demographics		
Male	-0.527 ***	(0.096)
Age97	0.094 ***	(0.035)
Adjusted R-squared	0.341	

*** Significant at the 1% level

** Significant at the 5% level   Figure 7

double in magnitude to that of white participants, and nearly triple that of Hispanics. Being

incarcerated before the age of nineteen for African Americans is associated with a decrease in

highest grade completed of 2.4, nearly two and a half years of schooling. Other than for Hispanics, there is a consistent negative relationship between incarceration and educational attainment.

V.   Conclusion

Inequality in incarceration seems to be a pervasive issue in modern American society while inequality in education and through other metrics is seemingly on the decline. However, some studies show that the exclusion of those who are incarcerated from all spheres of society, including survey data, masks the prevalence of inequality and the stagnant progress in reducing it (Ewert, Sykes, and Pettit, 2014). These policy implications for incarceration are quite serious, as they greatly impact our society and our nation.

This study has found a significant negative relationship between incarceration and educational attainment. When controlling for a diverse selection of relevant variables, the effects of incarceration on a person's highest educational grade completed remain consistent. The model built in this study achieved an Adjusted r-squared of 0.351, accounting for over 35% of the variation in highest grade completed. Although, concerns should be raised about the potential for biased estimators in the model constructed in this paper. Previous research by Hjalmarsson (2008) indicates that even with little selection on observables, the effects of incarceration on high school graduation are robust. This supports the possibility that the estimated effect demonstrated here by incarceration on education is a real effect.

Additionally, this research has demonstrated how estimates for incarceration can vary greatly across demographic groups. Holding other variables fixed, if there exists a real effect such that incarceration unequally affects the population of different groups, further policy implications can be recognized and carried out in future research.

References:

Altonji, Joseph G., Elder, Todd E., and Taber, Christopher R. 2005. "Selection on Observed and Unobserved Variables: Assessing the Effectiveness of Catholic Schools." *Journal of Political Economy* 113 (1): 151–84.

Amin, Vikesh, Flores, Carlos A., Flores-Lagunes, Alfonso, and Parisian, Daniel J. 2016. "The Effect of Degree Attainment on Arrests: Evidence from a Randomized Social Experiment." *Economics of Education Review* 54: 259-73.

Card, David 1999. "The Causal Effect of Education on Earnings." *Handbook of Labor Economics* 3: 1801-63.

Ewert, Stephanie, Sykes, Bryan L., and Pettit, Becky 2014. "The Degree of Disadvantage: Incarceration and Inequality in Education." *Annals of the American Academy of Political and Social Science* 651: 24-43.

Federal Bureau of Prisons. 2018. "Statistics." Last modified April 28. https://www.bop.gov/about/statistics/statistics_inmate_offenses.jsp.

Grogger, Jeffrey 1995. "The Effect of Arrests on the Employment and Earnings of Young Men." *Quarterly Journal of Economics* 110 (1): 51–71.

Hjalmarsson, Randi 2008. "Criminal Justice Involvement and High School Completion." *Journal of Urban Economics* 63 (2): 613-30.

Kirk, David S., and Sampson, Robert J. 2013. "Juvenile Arrest and Collateral Education Damage in the Transition to Adulthood." *Sociology of Education* 86 (1): 36-62

Kling, Jeffrey R. 2006. "Incarceration Length, Employment, and Earnings." *American Economic Review* 96 (3): 863–76.

Lochner, Lance, and Moretti, Enrico 2004. "The Effect of Education on Crime: Evidence from Prison Inmates, Arrests, and Self-Reports." *American Economic Review* 94 (1): 155-89.

Lofstrom, Magnus, and Raphael, Steven 2016. "Crime, the Criminal Justice System, and Socioeconomic Inequality." *Journal of Economic Perspectives* 30 (2): 103-26.

Lott, John R., Jr. 1990. "The Effect of Conviction on the Legitimate Income of Criminals." *Economics Letters* 34: 381–85.

McConnell, Brandon, and Rasul, Imran 2018. "Racial and Ethnic Sentencing Differentials in the Federal Criminal Justice System." *AEA Papers and Proceedings* 108: 241-45.

McKinley, James C. Jr. 2014. "Study Finds Racial Disparity in Criminal Prosecutions." *The New York Times*, July 8 https://www.nytimes.com/2014/07/09/nyregion/09race.html.

Nagin, Daniel, and Waldfogel, Joel 1995. "The Effects of Criminality and Conviction on the Labor Market Status of Young British Offenders." *International Review of Law and Economics* 15: 109–126.

National Research Council. 2014. The Growth of Incarceration in the United States: Exploring Causes and Consequences. Washington, DC: The National Academies Press. https://doi.org/10.17226/18613.

Rothwell, Jonathan 2015. "Drug Offenders in American Prisons: The Critical Distinction between Stock and Flow." *The Brookings Institution* (blog)*,* November 25. https://www.brookings.edu/blog/social-mobility-memos/2015/11/25/drug-offenders-in-american-prisons-the-critical-distinction-between-stock-and-flow/.

Sykes, Bryan L., and Maroto, Michelle 2016. "A Wealth of Inequalities: Mass Incarceration, Employment, and Racial Disparities in U.S. Household Wealth, 1996 to 2011." *RSF: The Russell Sage Foundation Journal of the Social Sciences* 2 (6): 129-52.

United States Census Bureau. 2016. "QuickFacts." Last modified July 1 https://www.census.gov/quickfacts/fact/table/US/PST045216.

Waldfogel, Joel 1994. "Does Conviction Have a Persistent Effect on Income and Employment?" *International Review of Law and Economics* 14: 103–19.

Weiss, Douglas B., and MacKenzie, Doris L. 2010. "A Global Perspective on Incarceration: How an International Focus Can Help the United States Reconsider Its Incarceration Rates." *Victims and Offenders* 5 (3): 268-82

Western, Bruce, and Beckett, Katherine. 1999. "How Unregulated is the US Labor Market? The Penal System as a Labor Market Institution." *American Journal of Sociology* 104 (4): 1030–60.