



2016

# The Long-Term Economic Impact of Juvenile Criminal Activity

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### Recommended Citation

Hyla, Eric 16 (2016) "The Long-Term Economic Impact of Juvenile Criminal Activity," *The Park Place Economist*: Vol. 24

Available at: <http://digitalcommons.iwu.edu/parkplace/vol24/iss1/17>

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## **Abstract**

When the juvenile penal system is supposed to be focused on rehabilitation, how does committing crimes and being caught as juveniles affect their future economic success? In 2012, the FBI Arrest Statistics reports an estimated 1,319,700 minors were arrested. Since so many youths interact with the criminal system, it is vital for the strength of the workforce and for the quality of life of the minors to ensure that the system is rehabilitative. Using ordinary least squares regressions, I examine data collected from the National Longitudinal Survey of Youth's 1997 cohort, and examine how interactions with the formal juvenile correctional system impacts a youth's future income, taken in 2013. I find being caught for delinquent behavior, and subsequently being arrested, does significantly impact future income but only when education is not controlled for. Finally, I discuss the results and what they say about the juvenile criminal system, and suggest future policy.

## **Keywords**

juvenile justice system, policy, crime, rehabilitation, future income

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## Abstract

When the juvenile penal system is supposed to be focused on rehabilitation, how does committing crimes and being caught as juveniles affect their future economic success? In 2012, the FBI Arrest Statistics reports an estimated 1,319,700 minors were arrested. Since so many youths interact with the criminal system, it is vital for the strength of the workforce and for the quality of life of the minors to ensure that the system is rehabilitative. Using ordinary least squares regressions, I examine data collected from the National Longitudinal Survey of Youth's 1997 cohort, and examine how interactions with the formal juvenile correctional system impacts a youth's future income, taken in 2013. I find being caught for delinquent behavior, and subsequently being arrested, does significantly impact future income but only when education is not controlled for. Finally, I discuss the results and what they say about the juvenile criminal system, and suggest future policy.

## I. Introduction

Juvenile delinquency is defined as conduct by a juvenile characterized by behavior that is beyond parental control and therefore subject to legal action. There are many juvenile delinquents in the United States. Any minor who has ever drunk alcohol underage or trespassed on somebody's property or even has run away from home is a "delinquent" and could be legally reprimanded if caught. Combined with other, more serious charges such as shoplifting or simple assault, one of the largest categories of juvenile arrest since zero tolerance policies have been enacted in school, these delinquent actions lead to hundreds of thousands of youths being arrested and charged each year (Shelden 2012).

The United States' juvenile correctional facilities are supposed to be focused on rehabilitation rather than punishment. Instead of prisons, American youths are sent to "correctional facilities" in order to be transformed from troubled minors into productive members of society. Does the juvenile correctional system actually rehabilitate delinquents, or does it negatively impact their futures? With a large minority of youths in the country interacting with the system it is vital for the strength of the workforce and for the quality of life of the minors to ensure that the system really is rehabilitative. I hypothesize that the system does not work optimally, and that being caught and formally punished for juvenile delinquent behavior in fact significantly negatively impacts future income.

Using ordinary least squares (OLS), I examine data collected from the National Longitudinal Survey of Youth's 1997 cohort, and examine how interactions with the formal juvenile correctional system impacts a youth's future. The study is furthered by also analyzing how education changes the correlation, whether through direct or indirect means. This paper seeks to add to the important literature surrounding the efficacy of the juvenile correctional system and suggest policy implications of the system and what could be targeted in order to potentially improve it.

## II. Theory and Literature Review

Human capital theory argues that individuals increase their value to employers and the workforce by making investments in themselves, such as through education or work experience. The effects of being formally processed for juvenile delinquent behavior would mostly manifest itself through impacts of human capital. Potential impacts are the loss of potential human capital development while in the facility, the degradation of already obtained

human capital, or even the acquisition of human capital through successful job training programs and other rehabilitative programs within the system. The opportunity costs of exposure to the correctional system could potentially be enormous, especially for juveniles, whose peers are building the human capital foundation required to make themselves competitive upon entering the labor market.

To measure a youth's exposure to the formal correctional system, two metrics are utilized. The first is whether or not the youth had been arrested. This is the base level of interaction with the juvenile correctional system and covers the largest number of children. It is important to note that most of the minors who have been arrested will not find themselves convicted or even charged with a crime. Some may be released to their parents or guardians. This variable will capture the effects of the broadest exposure to the formal system. It is an important baseline to consider when examining the effects that being convicted of delinquent behavior will have on youths. The second metric is whether the youth has been convicted of a crime. Most youths convicted of crimes will experience all of the negatives associated with interacting with the formal system, including the opportunity costs associated with spending time in correctional facilities.

The two more obvious opportunity costs are loss of work experience due to time spent in the system, and a loss of education. Loss of work experience is difficult to measure by itself, but its impact will be included in the conviction variable. Using the human capital theory, when education is controlled for, most of the impact of conviction on income will be a result of the lost experience at work. The lost experience could be both direct, such as an employer not hiring or firing a youth specifically because they were sanctioned because of delinquent behavior, or indirect, such as a youth in a correctional facility not being able to spend time on the job learning how to be more a more efficient worker. Another opportunity cost could be the loss of formal education, such as not being able to attend college or dropping out of high school. The system tries to combat the loss of work experience by providing work training programs for the inmates. In his research on adult prisoners, Kling suggests that the state does an adequate job in mitigating the loss of employment experience with these job training programs, and that there are no significant negative correlations between time spent

in prison and employment upon release (Kling 2006). Two issues stand out with Kling's findings, however. First, that there are other studies that have found that incarceration does, in fact, negatively impact employment (Waldfogel 1994, Freeman 1991). Secondly, Kling's study focused on adult offenders so his results may not hold up when examining minors.

Delinquent activity leading to a loss of education is very widely discussed in the literature. Education and delinquency are significantly intertwined. First, youths who have been arrested or have experienced some other form of formal intervention due to delinquent behavior are significantly less likely to finish high school (Sweeten 2006, Hjalmarsson 2008). Sweeten's study finds that the effect is increased amongst youths who are typically less delinquent. These findings are important because they suggest that any kind of formal intervention, not just time spent in a correctional facility, has a major impact on education. Since higher educational attainment has been linked to more income, Sweeten's and Hjalmarsson's findings suggest that being arrested just one time for delinquent behavior can significantly negatively affect future income. Education impacts crime as well; a higher minimum high school dropout age reduces the amount of juvenile arrests (Anderson 2014). Additionally, increased early childhood education reduces crime later in life (Lochner 2010). The implication is that since formal intervention reduces education, it also increases the likelihood of that youth committing more crime in the future, lowering their human capital and income even further. Formal intervention could start a youth on a vicious downward spiral.

Other variables that affect both income and likelihood of formal intervention need to be controlled for, such as race. Minorities generally earn less income than their peers. Minority youth are also overrepresented in formal interventions (Shelden 2012). Minorities, especially Black Americans, are significantly more likely than any other group to be arrested, are more likely to be charged, and finally of those charged, they are the most likely to be convicted of a crime. Minorities are also more likely to be sent to correctional facilities than white peers who have been convicted of the same crime (Shelden 2012). Race is important to control for because the skewed minority representation in youths who have been exposed to the juvenile system may bias the comparison between the youths who have been

exposed to the system and those who have not.

Gender is another important control. Women in the US are not paid as much as men. Additionally, female youths and male youths are not equally represented in the formal system. A female delinquent is less likely to formally arrested than a male for crimes, such as petty theft or trespassing, but more likely to be arrested than males for status offenses, actions that are only illegal because of the person’s minor status, like running away from home. Further, when charged and convicted with a crime, females face harsher sentences than males who have committed the same crime and are more likely to be sent to a reform school (Shelden 2012).

Socio-economic status of youths growing up typically affect likelihood of formal intervention and future income. Youths from families who are wealthier generally make more money later in life than those who come from poor families. They have access to better education with higher quality teachers, are exposed to less violence, and are raised in a culture that promotes post-secondary education and stable employment (Galster, Marcotte, Mandell, Wolman, & Augustine 2007). Plus, youths who grow up in wealthier areas are less likely to be arrested for minor offenses and are more likely to be dealt with informally. Additionally, if youths are arrested, those with wealthier parents are less likely to be punished by the state for their actions (Shelden 2012).

### III. Data and Empirical Model

The data used to create the model is collected from the National Longitudinal Survey of Youth 1997 (NLSY97) cohort. Gathered by the Bureau of Labor Statistics, the NLSY97 is composed of about 9,000 young men and women, randomly selected from all over the nation, who were 12 to 16 years old as of December 31, 1996. The youths were interviewed annually. Of the 8,984 men and women selected, 5,225 reported their incomes in 2013. Although the loss is fairly significant, there is still a large enough sample base that the outcomes should still be representative. The panel nature of the data is ideal because I am able to look at events that happened to the individuals as children and then analyze the impacts 18 years in the future.

With the NLSY97 I can identify minors who committed crimes and analyze their earnings as adults against their peers who did not commit

crimes as a youth. One of the drawbacks in using the 1997 cohort instead of 1979 cohort is that I will miss out on earnings throughout the entirety of the person’s working career and instead will only capture the short to medium term effects. It may be entirely possible that the earnings of youths involved and not involved with the formal system will converge in the future but this data would not be able to capture the convergence. Had the 1979 cohort been used, long term income data could have been gathered, however the data would have represented a sample that would have been a youth in the late 70s instead of the late 90s. Therefore, to better examine the current issue and supply more applicable policy suggestions, the more recent cohort appears to be the better option.

There are a few biases to be aware of with the data. First, the NLSY oversampled Black and Hispanic participants, creating a larger than representative sample size of minorities. This is addressed by the controls for race. Another potential bias is the possible loss of survey subjects in a non-random manner. It may be that the people I want to examine, those who have been involved in some sort of legal issue as a youth, would be more likely to drop out of the sample, thus skewing the result.

Table 1. below provides a brief description of each variable, its mean values, and whether the means are statistically significantly different. The means for dummy variables are represented in percentage terms.

**Table 1: Descriptive Statistics**

Variable	Description	Mean (Arrested)	Mean (Not Arrested)	Sig. (2-tailed)
<b>Dependent</b>				
Income	Total Income from wages and salary in the year 2013	33792.50	38815.87	0.000
<b>Independent</b>				
Arrested	Whether the respondent was ever arrested for an illegal or delinquent offense in or before December 1998	100%	0%	0.000
Convicted	Whether the respondent was ever convicted or plead guilty to charges in or before 1998	100%	0%	0.000
Education	Highest grade of school completed to date	11.70	13.71	0.000
Black	Whether respondent is black or not	29.9%	25.42%	0.001
Hispanic	Whether respondent is Hispanic or not	22.25%	21%	0.335
Female	Whether respondent is female or not	32.28%	51.2%	0.000
Poverty Ratio	Ratio of household income relative to the poverty level in 1997	2.2487	2.9189	0.000

Because the theory and literature suggests that education is the primary vehicle through which the formal juvenile correctional system would affect youths, the data is analyzed using two linear regressions. The first model includes all of the controls besides education. The second model includes education to examine its impact on the Arrested and Convicted variables. Ordinary least squares will be utilized to analyze the data. The equations used for the model are:

$$1. \text{ Income} = \alpha + \beta_1(\text{Arrested}) + \beta_2(\text{Convicted}) + \beta_3(\text{Poverty Ratio}) + \beta_4(\text{Female}) + \beta_5(\text{Black}) + \beta_6(\text{Hispanic}) + u$$

$$2. \text{ Income} = \alpha + \beta_1(\text{Arrested}) + \beta_2(\text{Convicted}) + \beta_3(\text{Poverty Ratio}) + \beta_4(\text{Female}) + \beta_5(\text{Black}) + \beta_6(\text{Hispanic}) + \beta_7(\text{Education}) + u$$

IV. Results

**Table 2: Results for Model 1**

	B	Absolute t values
Constant	38663.425***	37.733
<b>Arrested</b>	<b>-5826.884***</b>	<b>3.748</b>
<b>Convicted</b>	<b>-465.785</b>	<b>0.13</b>
Poverty Ratio	2485.225***	13.892
Female	-10769.053***	11.514
Black	-7587.113***	6.456
Hispanic	-2761.381**	2.198
Adjusted R Square: .106		
Standard Error: 28920.682		
Dependent Variable: Total Income from Wages and Salary in Year 2013		
*** Statistically Significant at the 99% Level		
** Statistically Significant at the 95% Level		

Table 2. above shows the results for model 1, when Education was not included. The most surprising result was the complete insignificance of the Convicted variable. It may be that the tiny fraction of the population of the sample that was effected by the Convicted variable were not enough to show a significant correlation.

The Arrested variable behaved more as predicted; it was strongly correlated with income and had a large, negative impact. Having been arrested as a minor reduces future income by almost \$6,000. Because the variable is a dummy for whether or not the individual had ever been arrested, it fails to take into account the effects of multiple arrests. If enough individuals who fall into the arrested category had been arrested more than once, the variable may be showing the effect of more than one arrest, while in reality only having one arrest may reduce income to a

lesser degree. Or, if most of the individuals who were counted in Arrested had only been arrested one time, the variable would not be able to demonstrate the effect of being arrested multiple times, which may be higher.

The results for the controls were all true to theory. The wealthier the children were as they were growing up, the higher their incomes. At the same time, women and minorities reported lower incomes, although the effect was substantially greater for Black participants than Hispanic participants. Also, the correlation between being Hispanic and having lower income, while still significant, was not as strong as the other controls.

**Table 3: Results for Model 2**

	B	Absolute t values
Constant	-1418.928	0.582
<b>Arrested</b>	<b>-1181.443</b>	<b>0.768</b>
<b>Convicted</b>	<b>1559.897</b>	<b>0.442</b>
<b>Education</b>	<b>3019.900***</b>	<b>17.908</b>
Poverty Ratio	1620.251***	9.036
Female	-13203.674***	14.465
Black	-6376.425***	5.607
Hispanic	-866.587	0.713
Adjusted R Square: .174		
Standard Error: 27775.651		
Dependent Variable: Total Income from Wages and Salary in Year 2013		
*** Statistically Significant at the 99% Level		

Table 3. reports the results from the second model analyzed, where Education was included. The most dramatic change is that Arrested loses all significance and the association weakens. When Education is included, the interactions with the legal systems measured here do not matter. Unsurprisingly, Education is strongly and significantly correlated with income, with an additional year of education increasing participants' incomes by about \$3,000. This matches up exactly with the descriptive statistics. Individuals who were not arrested attended on average 2 more years of schooling than those who were, which would result in a \$6,000 increase in income. In the previous model, those who were arrested made an average of \$6,000 less than their peers. This suggests that Education and Arrest have a high degree of collinearity. It also suggests the possibility that the important causation of Arrest on income is indirect.

The convicted variable switched from being negative to positive, however it remains totally insignificant. The inclusion of Education also made Hispanic no longer statistically significant. The rest of the controls remained similar in significance and

magnitude to when Education was not included.

**Table 4: Results for Model 3**

	B	Absolute t values
Constant	38816.274***	86.943
Arrested	-4725.481***	3.328
Convicted	-1887.11	0.559

Adjusted R Square: .002  
 Standard Error: 30358.904  
 Dependent Variable: Total Income from Wages and Salary in Year 2013  
 \*\*\* Statistically Significant at the 99% Level

To examine if being convicted had any impact on income, another regression was ran without any controls, using just the Arrested and Convicted variables to explain difference in income. As Table 4. above shows, even without any other controls, Convicted is still not at all significant.

### V. Conclusion and Policy Discussion

The hypothesis, that youths who are caught and formally punished for delinquent behavior significantly negatively impacts income, was only partially supported. Being caught for delinquent behavior, and subsequently being arrested, does significantly impact future income but only when education is not controlled for. Being convicted of a crime as a youth, a requirement for incarceration, does not appear impact future income significantly.

According to my results, youths who have been convicted do not show any changes in income relative to their peers who had been arrested but not convicted. Because of this, it stands to reason that the juvenile correctional system does an adequate job rehabilitating youths, or at least minimizing human capital losses while the youths are serving their time. I had suggested that the system did not work optimally, but the data analysis shows that the system does, in fact, work to some extent. Theory suggests that the social programs or other educational and job training services available to the youths provide about the same amount of human capital as if they had not been convicted in the first place. It is important to consider, though, that one reason my data does not show a strong correlation between conviction and income may be because there were only about 200 youths who were convicted of a crime out of the 5,225. The selection may have been too small to be statistically significant.

With the Conviction variable being insignifi-

cant, it follows that future policy and further study should be aimed at the arrest variable. There is little need to focus on the policies surrounding the part of the system that already works. My data aligns with the literature in that Education and Arrest were highly correlated; the literature established that more education makes an individual less likely to be arrested and being arrested tends to reduce an individual's educational attainment.

To improve the future economic outlook of the nation's youths more research should be done to examine why the correlations exist and how they can be leveraged or weakened in order to keep youths in schools longer. Politicians could use education as a strong tool to reduce crime. According to the descriptive statistics, provided in Table 1., the average amount of schooling achieved by youths who were arrested was that of a high school junior. In the United States the high school dropout age varies from 16 to 18 years old, which would be around junior year of high school. By raising the voluntary dropout age or by making completion of high school compulsory, crime may be reduced. The literature also suggests that starting education earlier reduces crime in the future. Another way policy makers could increase the future incomes of youths starts by identifying the reason why being arrested reduces future income. If the correlation could be explained, policies could be enacted attempting to weaken it. Future research on exactly how being arrested impacts education could have great potential benefits.

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