

# Parental Poverty and Neighborhood Conditions as Predictors of Juvenile Crime Rates

Tamaraubibibogha Manfred Gunuboh

Public Administration of Mississippi State University, Starkville, MI, USA

Email: tgunuboh91@gmail.com

**How to cite this paper:** Gunuboh, T. M. (2023). Parental Poverty and Neighborhood Conditions as Predictors of Juvenile Crime Rates. *Open Journal of Social Sciences*, 11, 287-318.  
<https://doi.org/10.4236/jss.2023.117021>

**Received:** May 20, 2023

**Accepted:** July 22, 2023

**Published:** July 25, 2023

Copyright © 2023 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

## Abstract

This paper examines the effect of parental poverty and neighborhood conditions on juvenile crime rates. It employs two distinct regression models: OLS linear regression model and negative binomial regression model to test for several hypotheses. The OLS is used to explore the correlational relationship between the dependent and independent variables, while the negative binomial regression model is used to make prediction about the relationship between the dependents and independent variables. The findings in the first regression (OLS) results indicated a significantly positive relationship between parental poverty and juvenile violent crime rates; it shows that a percent increase in parental poverty in a county will cause juvenile crime rate to increase by about 0.53 percent. Likewise, the incidence rate ratio of the negative binomial regression model (1st NBRM) indicates that if the percentage of families in a county who are living in poverty increases by a unit, the number of juvenile arrest counts for violent crimes is likely to increase by a factor of 1.48, while holding all other variables constant. Hence, this paper directs government officials to see beyond traditional approach to juvenile crime and begin to address specific factors such as parental poverty that have proven to increase the rate of juvenile crime.

## Keywords

Parental Poverty, Juvenile Crime, Racial Disparity, Education, Neighborhood Conditions

## 1. Introduction

The juvenile crime rates in the United States, in recent years, have been fluctuating. The United States in the 1990s witnessed a steep rise in the rates of juvenile crimes or delinquency. Thus, efforts were made at state levels to curb the

increasing rates of juvenile offenses. Many legislations such as boot camps and scared straight both at the state and federal levels were made to get tough on juvenile crimes. However, years after their enactment, the results were proven to be counterproductive; instead of reducing the rates of juvenile delinquency, these legislative programs emboldened the increasing rates of juvenile delinquency. OJJDP, 2015 (Formby & Paynter, 2020) reported that for every 100,000 juveniles from the age of 10 to 17 in the United States, 3008 were arrested. The Office of Juvenile Justice Delinquency prevention also estimated that 856,130 juvenile arrests were made in the United States in 2016 (Harp & Puzanchera, 2018)—some were arrested for nonviolent offenses such as larceny-theft, assaults, drug use violation, liquor law violation etc. It further reported that more than 1.3 million youths are cycled through juvenile courts per year, and 71,000 out of them are incarcerated on daily basis in the United States (Calleja, Dadah, Fisher, & Fernandez, 2016). Nevertheless, the U.S., in recent years, has witnessed an overall decrease in the rates of juvenile crime; though, these rates differ across different classes of juvenile crimes. It is yet one of the nation's serious problems. Juvenile Justice Statistics National Report Series Bulletin in May, 2021 indicated that juvenile arrest rates for murder and aggravated assault fell by 6%, and reached a new low in 2019 (Jones, Scherer, & Puzanchera, 2021). Similarly, it also indicated that juvenile arrest rates for property crimes such as larceny-theft, burglary, and arson hit their all-time lowest level since the 1980s. It reported further a high juvenile arrest rates for motor vehicle theft which was above its 2013 recorded low point. The Juvenile Justice Statistics National Report Series Bulletin in May, 2021 raised concerns for demographic overrepresentation for violent crimes such as murder and robbery (Jones, Scherer, & Puzanchera, 2021). This report indicated that arrest rates for violent crimes tend to be disproportionately higher for Black youth than their white counterparts. The juvenile crime rate used in this paper refers to the number of arrests made for crimes committed by persons under the age of eighteen per year. While juvenile crimes are offenses committed by persons under the age of eighteen years.

Federal, state, and local government officials are concerned about juvenile crime rate (National Research Council, 2001: p. 13). It is becoming overrepresented among children from households that are living below or twice below the national poverty threshold, and among those living in socially and economically disadvantaged counties or neighborhoods with little or no opportunities (Drake & Pandey, 1996; Anderson et al., 2003). Many scholars have attempted to elucidate the impacts of family, parental supervision, quality of parent-child relationship on juvenile crime rates, and how these variables operate within a social context in terms of disadvantaged community living conditions. Juveniles commit fewer crimes when they are attached to their parents emotionally and are constantly under parents' supervision especially when they are involved in prosocial behaviors (Hay, Fortson, Hollist, Altheimer, & Schaible, 2006). Scholars over the years ventured into the failure or inadequacy of government program models to

effectively curb juveniles' involvements and re-entry into the juvenile justice system. However, less research has attempted to investigate the combined effect of parental poverty and neighborhood conditions on the U.S juvenile crime rate. Hence, this research investigates how parental poverty and neighborhood conditions influence juvenile crime rates in the United States. The focus of this study is pegged on parental poverty and how it affects juvenile crime rates; it also seeks to examine how social context or county neighborhood conditions mediate the expected relationship between juvenile crime rate and parental poverty. This study is significant as it seeks to inform the juvenile justice system and policy makers and governments to look beyond the traditional approaches of juvenile crime prevention to address parental economic wellbeing, and neighborhood factors that influence juvenile crimes rate.

Research Question: Why do juvenile crime rates differ across different neighborhoods/county in the US?

## 2. Literature Review

Numerous studies over the years have attributed juvenile's negative life outcomes to myriad risk factors; especially, socioeconomic status, parental poverty, low household income, parental low education attainment level, and other factors such as poor health, substance abuse, and early juvenile justice involvement. Many prior studies have indicated some sorts of relationships between juvenile crime or delinquency and the above-mentioned risk factors. Criminological theories have also been adopted over the years to elucidate how the family variable impacts juvenile crime rates. Hay, Fortson, Hollist, Altheimer, & Schaible (2006) suggested that the family factor never act in a vacuum, it is oftentimes moderated by circumstances prevalent in the community, the school system, and economic and cultural circumstance of cities, counties, regions, and even nations. The assumption is that parent-child relationship does act as a protective factor that impact juvenile's tendency toward antisocial behaviors; however, this perceived protective effect is sometimes disrupted by the backdrop of the community, school system, and the economic and cultural happenings of cities and regions. Simply put, the effect of parent-child attachment as a protective variable is different in communities that are disadvantaged economically relative to other communities that are economically viable.

Agnew (2005) delineated this effect by suggesting that "The cause of crime is more likely to increase crime when other causes are present" (p. 112). Craig, Trulson, DeLisi, & Caudill (2020) argued that juveniles who were exposed to more adverse childhood experiences are more likely than their counterpart to be caught up in the juvenile justice system, and they are more likely to be chronic juvenile offenders. Similarly, they are less likely to have prosocial bonds, and more likely to come from disadvantaged communities. It is suggested that social contexts together with other risk factors such as poor parenting, supervision and family strains reinforce juvenile propensity to criminal activities. Furthermore,

poverty put a strain on family and child relationship, and this negative stressor increases the likelihood of juvenile's indulgence in criminal activities (Jagers, Robison, Rhodes, Guan, & Church, 2016). It is argued that children reared in poor and distressed family circumstances experience abuse and neglect which in turn disposed them to addictive disorders resulting in poor school attendance, academic failure, and eventual school dropout (Jagers, Robison, Rhodes, Guan, & Church, 2016). Jagers, Church II, Tomek, Hooper, Bolland, & Bolland (2014) indicated that children living in poverty experience low level of family support and encouragement because of the stressors that are relative to living in poverty. Let us examine the relationship between parental poverty and juvenile crime rate, and the moderating effect of the neighborhood conditions characterized by communal social cohesion, lack of opportunities, and substance or drug abuse.

### **2.1. Juvenile Crime Rate and Parental Poverty**

Parent's socioeconomic status has been indicated by various scholars as an important predictor for juvenile indulgence in criminal activities. Rekker et al. (2015) indicate that juveniles from families with low socioeconomic status are more likely to be involved in delinquent and criminal activities than children from high socioeconomic status families. Criminological theories such a control theory proposed that parent-child relationship especially when positive produce a social bond that prevent juvenile from indulging in delinquent and criminal activities (Conger, Ge, Elder, Lorenz, & Simons, 1994). Poverty or low socioeconomic status imposes on poor parents some higher levels of stress which in turn disrupt the social bond that would have prevented their children from getting involved in criminal activities (Rekker, Pardini, Keijsers, Branje, Loeber, & Meeus, 2015).

Besides, Nikulina, Widom, & Czaja (2010) reported that juvenile who grew up in a poor household and/or disadvantaged neighborhood are likely to be pre-disposed to traumatic experience: such children because of their parents' low socioeconomic status have fewer or no resources to address those negativities impacted by trauma which at the end results in negative outcome such as mental health, delinquent behavior, involvement in criminal activities, truancy, school dropout, and range of other difficulties. Simply, household poverty influences juvenile delinquency, and other negative outcomes like deficit in academic outcome, and sometimes mental health consequences (Nikulina, Widom, & Czaja, 2010). Though, some scholars posited that the observed relationship between poverty and juveniles' involvement in criminal activities is moderated by the characteristics of the neighborhood. De Coster, Heimer, & Wittrock (2006) also stated that juveniles who grew up in poor neighborhood are more likely than children who grew up in a more affluent neighborhood to perpetrate violent and non-violent crimes. Poverty either at level of individual or at an aggregate assessment in terms of income inequality and/or neighborhood poverty is said to have a positive association with juvenile crime or delinquency (Nikulina, Widom, & Czaja, 2010).

Poor parents tend to live in a poor disadvantaged neighborhood that is characterized by all sorts of social vices. Jarjoura, Triplett, & Brinker (2002) argued that younger people or adolescents who are living and growing up in poverty possess an increased tendency to resort to delinquent and criminal activities to enhance their financial ability to have fun. Furthermore, poverty together with factors such as unemployment, family disruption and informal social control at an aggregate level of assessment has been linked to predict crime and juvenile delinquency (Jarjoura, Triplett, & Brinker, 2002). Early and middle childhood encounters with family economic conditions are noted to play a far more key role in the shaping of juvenile's ability and achievement than were family economic conditions during their age of adolescence.

H1: Juvenile crime rates are more likely to increase among children growing up in households living below the national poverty threshold.

## 2.2. Parental Educational Attainment and Juvenile Crime

The connection between parents' educational attainment and juvenile crime is a grey area. Few literatures have been focused to examine relationship between these two variables. Nevertheless, myriad studies have examined the causal impact of education on crime; these studies tend to examine this relationship by adopting changes in school laws because the potential for endogeneity avails the study of education and crime. Scholars like Lochner and Moretti (2004) adopted this approach in their study; their finding indicated that educational attainment or schooling significantly impacts participation in criminal activities and reduces the probability of incarceration and arrest. Chalfin & Daza (2019) studied the intergenerational effects of parents' education on child's life outcome, and argued that parental educational attainment has a positive external spillover on children's propensity to criminal activities. They argued that education impacts parents' income and provides parents with greater resources that improve children's education and social outcomes. They argued further that increase in parental education may inform parents' choice to live in higher socioeconomic status neighborhood where they meet distinct set of children. Their argument implied that parents' decision of where they live with their children could influence children's later life outcomes. In all, Chalfin & Daza (2019) findings indicated that increased parental educational attainment reduces children's propensity to criminal activities. Though, prior studies examined juvenile educational success and how it reduces their inclination to criminality, but the effect of parent's educational attainment on juvenile involvement in criminal activities is less examined. Ou, Mersky, Reynolds, & Kohler (2007) reported that individual who failed to complete high school education are also unable to become gainfully employed; such individuals are at risk for range of negative outcomes including high school dropout and delinquent activities, and unemployed youths are more likely than other to engage in criminality. People with poor educational attainment are face with the difficulty of achieving wealth and status or securing well

paid employment; they are more likely to use criminal means to achieve these goals which in turn influences juvenile propensity to criminal activities (Nisar, Ullah, Ali, & Alam, 2015). However, education level acts as a protective guide against the likelihood of a person engaging criminal activities. It is reported that increase in education level also increase wage rates, and increases the opportunity cost of crime by reducing post-school tendency to engage in criminal activities (Lochner, 2020). This is oftentimes the case because education teaches people to be patient, and discourages indulgent in criminal activities; people with at least bachelors or higher level of education are most likely forward-looking individuals that tend to weigh expected consequences associated with engagement in criminality (Lochner, 2020). Hence, education is key to reduction of crime at all levels of a society because it makes individuals more risk averse, and discourages criminal activities.

**H2:** *Children from households with no educational attainment are more likely to be involved in delinquent and juvenile crimes, thereby proliferating juvenile crime rates.*

### **2.3. Neighborhood Conditions and Juvenile Crime Rates**

Early studies in criminology and social sciences have adopted various theories to elucidate how social structure and neighborhood conditions impact both adult and juvenile involvement in criminal activities. Social disorganization theory over the years has been adopted to draw the links between crime rate and neighborhoods characterized by various social vices. Lane (2018) while relying on social disorganization theory argues that residents in poor and disadvantaged neighborhoods are less committed to achieving common values or solving commonly shared problems. Such neighborhoods according to social disorganization theory are plagued with issues such as crime, gangs, fear of crime, lower collective efficacy, less mutual trust, and lack of self-will to intervene for the common good of the neighborhood (Lane, 2018).

It is also reported that poorer inner-cities, primarily minority neighborhoods which are now characterized as concentrated disadvantaged communities accounted for disproportionate counts of juvenile crime rates (Sampson, 2011). Parents living in disadvantaged neighborhoods find it difficult to teach respect for life and property especially when children must have to cope with these conditions prevalent in the neighborhood (Lane, 2018). Children's family, school, peers, and community are key forces of social control that influence youths' development from childhood to adulthood. These key socialization forces tend to be weaker and broken down in a disorganized neighborhood which leads to juvenile offending (Jeffrey, 1987). Hence, policies which target crime reduction should look beyond the criminal justice system to support neighborhood development (Jeffrey, 1987). Milam, Furr-Holden, Harrell, Whitaker, & Leaf (2012) in their study of neighborhood disorder and juvenile drug arrests, indicated that juvenile arrests for drug use is significantly correlated with neighborhood dis-

order. Jargowsky (2015) also indicated that approximately one quarter of poor African Americans and Hispanics are living in these disadvantaged neighborhoods, and they are much more likely than poor whites to live in these areas. Hay, Fortson, Hollist, Altheimer, & Schaible (2006) suggested that family problems in disadvantaged communities are predictive of juvenile crime because the juvenile's immediate opportunities and pressure for crime are affected by ugly circumstances prevalent in those neighborhoods (Jarjoura, Triplett, & Brinker, 2002).

H<sub>3</sub>: *Neighborhood condition impacts juvenile crime rates.*

- 1) *Juvenile crime rates would be higher in neighborhoods plagued by lack of cohesion.*
- 2) *Juvenile crime rates would be higher in neighborhoods plagued by drug use.*
- 3) *Juvenile crime rates would be higher in neighborhoods plagued by high unemployment rate.*

#### **2.4. Race and Disparities in Juvenile Crime Rates**

The connection between race and disparities in juvenile crime rates over the years has been explored from various perspectives ranging from racial differentials in social economic status, concentration of minorities in disadvantaged neighborhoods, racial differentials in family contexts, delinquent subcultures, and discriminatory practices within the U.S. criminal justice system (extralegal variables such prosecutorial behavior and juvenile justice processing). To make sense of the link between race and crime, various theoretical models like social disorganization theory (considering family structures and juvenile violent behaviors), general strain theory, cohort theory, and differentials in agency arresting practices have in recent years been adopted to account for the disparities in rates of crimes among different racial groups in the United States. These theoretical expositions all attempt to answer the question of why and how some minorities are consistently overrepresented in the U.S. national crime and incarceration statistics. Race as it relates to crime is multifactorial, and each of such factors in part accounts for the disparities in crime rates among different racial groups; hence, a single factor is insufficient to estimate unitarily the relationship between race and crime. Of concern here, is not about constructing a linear causal relationship between race and juvenile crime, but to examine in part the impact of race on juvenile crime rates. The general strain theory which emanates from strain theory (Merton, 1938) posits that racial minorities tends to be concentrated in a lower income group, and that their overrepresentation in the criminal justice system is because of their lower socioeconomic status (Godinet & Stotzer, 2017). The general strain theory tends to overestimate the connection between racial disparities in crime rates and socioeconomic status. Though, the rationale behind this exposition is that minority groups are concentrated in lower income population. Hence, their families are more likely to live below the national po-

verty threshold, and oftentimes are unable to cater for their families through legitimate channels; such a socioeconomic inability produces stressors which in turn intensify the children's susceptibility to criminality. It suggests that juveniles in economically strained families are likely to indulge in delinquent behaviors (Agnew, Rebellon, & Thaxton, 2000). Federal Bureau of Investigation (FBI, 2018) arrest statistics report a total of 8957 arrests for murder and non-negligent manslaughter; 44.1% of them were whites, Blacks 53.3%, American Indians 2.1%, Asian 1.2%, and others represented 0.2%. Nevertheless, all arrests made (FBI, 2018) show 69% for Whites, Blacks 27.4%. Kalunta-Crumpton & Ejiogu, (2012) reported that Blacks are to an extent are overrepresented, while Whites are underrepresented. Based on arrest and prison statistics, Blacks are disproportionately represented relative to their small share of the population. Though, the drawback on in the analysis of racial disparities in rates of crime is that it is difficult to isolate actual percentages that are representative of African Americans, Black immigrants from the Caribbean and Hispanic. Hence, it is argued that the cumulative overrepresentation could be spurious, since it is not ethnic specific, and it applies also to cumulative underrepresentation (Kalunta-Crumpton & Ejiogu, 2012). Equally, certain racial groups are overrepresented or underrepresented because of some extant governmental policies such as crack cocaine/cocaine powder policy, three strikes policy, and others which impose severe sentences on repeated offenders. Thus, repeat of violent offense serves as base for these policies, and they instigate unfair impact on African Americans because they have disproportionate numbers of repeated offenders (Kalunta-Crumpton & Ejiogu, 2012).

Moreover, Raphael & Rozo (2019) attributed racial disparities in rates of juvenile crime and arrest to differences in agencies practices, police discretion, and the lack of a more objective risk-assessment of juveniles' criminogenic needs. Regarding handling of juvenile offenders, police are afforded and allowed to exercise greater discretion in deciding a course of action to take between booking and issuance of citation, and/or simply adopting informal counseling to resolve incidents. Oftentimes, how juvenile offenders are handled by the police is dependent on the severity of the offense; sometimes, such cases of juvenile delinquency are settled internally, and sometimes citation is issued depending on the severity of the offense committed. Police officers use greater measure of discretion regarding juvenile arrests than they do when it comes to adult offenders, hence, it is estimated that police officers' exercise of discretion at the time of arrests accounts for differences in juveniles' criminal history records which serves as basis for local risk-assessment practices, and which in turn are used to determine pretrial release, mandatory community supervision and criminal sentencing (Raphael & Rozo, 2019). It is because field-officers can query prior criminal records and, based on their judgement, take a particular course of action, and thus makes criminal history a proxy for race (Raphael & Rozo, 2019). Likewise, it was indicated that African American are more likely than their white counter-



part to have extensive criminal histories which are factored in the determination of pretrial processing and sentencing (Raphael & Rozo, 2019). It is noted that 90% of all racial disparities in sentencing between African Americans and Whites processed in federal criminal court are accounted for by differences in criminal histories (Rehavi & Starr, 2014).

However, Raphael & Rozo (2019) further suggest that interagency differentials in practices relative to offenses booking are major risk-factors for racial disparities in juvenile arrest processing. Strom & MacDonald (2007) reported that minority youths are burdened hugely by social and economic disadvantages, and these predictors were positively associated with Black overrepresentation in rates of violence crimes relative to Whites. Strom & MacDonald (2007) oppose the cohort explanation for equating Black overrepresentation in rates of violent crimes as a function of weakened social control because their finding indicate that weakened social control as a predictor of crime rates is not peculiar to Blacks. Scholars report that juvenile crimes are concentrated in disadvantaged counties where economic deprivation, unemployment, family disintegration and racial segregation are visually visible, and such neighborhoods are continuously plagued with high crime rates, unemployment, low educational achievement (Lattimore & Lauria, 2018). Hence, the social organization theory in relation to race and crime suggests that people in disadvantaged areas have reduced self-will to force common values, and to solve common problems prevalent in their residents. These sorts of inabilities promote weakened local institutions, poor schools, and poor local communal cohesion (Strom & MacDonald, 2007), and Black are more likely to be concentrated in disadvantaged communities. It is also indicated that juvenile justice system processing accounts for the overrepresentation of minority juveniles in crime rates. Youths of color are more likely to be treated severely in the juvenile justice system than their White counterparts (Andersen, 2015). Differential treatment of Black youths tends to be more concentrated in communities with small black population, and where black to white ratio regarding socioeconomic competition is higher (Andersen, 2015). Furthermore, racial group and county-level poverty interaction increase the likelihood of petition for Black youths and magnifies the effect of race on juvenile crimes and minority group's overrepresentation in crime rates. Andersen (2015) specifically examined the impact of racial group on juvenile risk of arrest while controlling for delinquency and structural factors; the findings show that approximately 18% of juveniles are arrested prior to their 18<sup>th</sup> birthdays; however, this statistic differs significantly by race and ethnicity. Black youths more likely to be arrested as juveniles relative to Hispanic and white youths (Andersen, 2015).

Similarly, the effect of race on youth arrests varies significantly across counties, however, this county-level variance of the race-effect was not observed for Hispanic youths (Andersen, 2015), and racial disparities in risk of arrest are most visible among black youths in non-Black communities. Moreover, alternative theories such as age-crime theory has also be adopted to explain the crime

disparities by race; this theory opined that increased proportion of youths are more likely than adults to live poverty, and such a socioeconomic disadvantage is what bears the responsibility for high arrest rates among youth; hence, impoverished populations are more likely to be arrested, oftentimes, due to discriminatory policing which targets African and Latino American populations. Minority groups are likely to live in poverty and targeted by governmental policies which adopt repeat offense as a base for future risk-assessment and decision for formal booking (Shelden, Tracy, & Brown, 2001). Racialized socioeconomic status increases arrest and imprisonment rates, however, their effects relative to minority status is more magnified than just low social economic status juveniles (Males & Brown, 2014). Furthermore, race group with concentrated level of poverty experience disproportionate number of violent crime arrests; it is thus assumed that poverty status, not biological or age factors, is the major predictor of race group's proneness to increased rates of arrest (Males & Brown, 2014).

In nutshell, an incredibly significant disparities in crime rates both arrests and incarceration exist among the American race populations. It is reported that African American juveniles are by estimation 5 times more likely, and other minorities are 3 times more likely to be detained or arrested than their White counterparts. Similarly, juveniles from socially and economically disadvantaged neighborhoods experiencing higher risk for arrests or incarceration (Barnert, Perry, Azzi, Shetgiri, Ryan, Dudovitz, Zima, & Chung, 2015), and likewise families living in disadvantaged neighborhoods are more exposed to increased rate of robbery, violence, and homicide, and such exposures result to hopelessness in youth and increase their predisposition to delinquent behaviors, and racial minorities especial Blacks experience negative life outcome frequently than their white counterparts (Bolland, Besnoy, Tomek, & Bolland, 2019; Garo, Allen-Handy, & Lewis, 2018). Scholars have also attributed the higher rates of arrest and incarceration among youths in disadvantaged neighborhoods to poor verbal ability. It reported that verbal ability is central to human development, however, where such ability is lacking or poor, one's capacity to interpret appropriately social phenomena in the social environment becomes less effective and results in poor academic performance and other negative life outcomes (McNulty, Bellaire, & Watts, 2013). Thus, it is assumed that verbal ability acts as protective device against delinquency. However, poor families are more likely to be populated in disadvantaged neighborhoods characterized by reduced institutional resources, libraries, family resource centers, literacy programs and others. The absence or limitedness of these resources negatively impacts youth's verbal ability and intensify their proneness to criminal activities. Black families are more concentrated in such neighborhoods and are thus facing the problem of reduced-verbal ability which in combination with low socioeconomic status heightens the risk of violence (McNulty, Bellaire, & Watts, 2013). Race and its connection to disparities in crime rates is multifactorial, so such a caution is ought to

be taken when contouring a correlational relationship between race and rates of crime.

*H<sub>4</sub>: Minority especially Black juvenile crime rates are more likely to be higher in counties where minority population ratio to White is relatively small.*

### **3. Methodology/Model Specification**

#### **3.1. Study Design**

This study adopts a quantitative research approach to examine the relationship between parental poverty and juvenile crime rate, and how this relationship is moderated by neighborhood conditions. This study employs two distinct regression models: OLS linear regression model and negative binomial regression model. The OLS is adopted to explore the correlational relationship between the dependent and independent variables, while the negative binomial regression model is used to enable me make prediction about the relationship between dependent and independent variables.

#### **3.2. Dependent and Independent Variables**

##### **3.2.1. Dependent Variable**

The dependent variable for this study is juvenile crime rates. Before delving into the question of what juvenile crime rate is, let us briefly discuss juvenile crime. Juvenile crime as I mentioned in the introduction is a national problem that attracts the concerns of many political actors and policy makers in the United States. Most young people are engaging in some sorts of delinquent behaviors, only small numbers are usually arrested by law enforcement officers and processed through the juvenile court. Juveniles engage not only in part I and II index crimes, but also non-index crimes. However, the definition of juvenile crime differs across districts. The word “juvenile” in some jurisdictions is defined as a person between the age of 10 to 18 years. For the sake of this study, Juvenile crimes are defined as those offenses or crimes committed by persons who are under the statutory age of any given state (usually under 18 years of age or less). The measure of juvenile crimes ranges from self-report, juvenile court records, police arrests and/to others. However, as used here in this study, juvenile crime rate is the number of arrests made for crimes committed by persons under 18 for one year. My dependent variable (juvenile crime rate) is at ratio level of measurement. It is operationalized as the total number of juveniles arrests made in a county divided by the number of juveniles population.

##### **3.2.2. Independent Variables**

###### **1) Parental poverty**

In the world today, poverty is social stressors, and many families cope with poverty in diverse ways. Parental poverty, particularly concentrated poverty, significantly endangers children’s lives, especially those children from families struggling to cope with the strain of poverty. According to the United States

Census Bureau (September 14, 2021), 16.1 percent of children under 18 years of age living in poverty, and 4.7 percent of married-couple families are living in poverty, while for families with a female-householder 23.4 percent as of 2020 are in poverty in the United States. Thus, parental poverty is defined as households whose annual income before tax falls below the national poverty threshold, and whose children below the statutory age are growing up in poverty. Since our variables are measured at the county level, parental poverty is operationalized as the number of households in poverty in a county divided by the total population of the county in a year. The variable Parental poverty is at ratio level of measurement.

## **2) Education attainment**

Education over the years has been identified as a crucial factor for preventing individuals from engaging in criminal activities. Educational attainment brings income and tends to raise individual's socioeconomic status in society; likewise, a family or parents with higher socioeconomic status possess financial ability to cater for their children and provide them with resources that encourage appreciable life outcome. However, prior studies have identified issues of endogeneity in their attempt to explore how education impacts juvenile crime; hence, they chose to employ compulsory schooling laws instead to measure the relationship between education and crime. This problem of endogeneity would not be an issue in this study because it examines college educational attainment and how it impacts juvenile crime rate. Educational attainment is defined as the percentage of people in a county who have obtained a college degree. It is operationalized as the number of people in a county with college degree divided by the total population of people in that county. The level of measurement for this variable is ratio.

## **3) Neighborhood conditions**

The impact of neighborhood on child's later life outcomes has been indicated by various literature. [Rowe et al. \(2016\)](#) indicated that neighborhood structural and social environments are fundamental for children's social and mental development. The criminologists established the influence of neighborhood condition on juvenile offending. The traditional criminologists glued neighborhood condition to social disorganization as a predictor for offending; though recent literatures have expanded it to include social inequality and criminogenic factors such as guns, gangs, drugs use. Neighborhoods characterized by poor structural and economic conditions and social capital or cohesion influences children's behavioral problem which in turn pulls them toward criminality.

Thus, for the sake of this study neighborhood conditions refer to the quality of neighborhood characterized by the absence or presence of employment, social cohesion or social capital, and drug use. The neighborhood conditions here would be measured in three ways: rate of unemployment, rate of social capital, rate of drug use. The social cohesion and social capital are used interchangeably as it pertains to this paper. Thus, social capital or cohesion as it is used here re-

fers to the number of social establishments available in a county; specifically, the number of religious organizations, civic and social association, bowling centers, fitness and recreation sports centers, and establishments in sport teams. Putnam (2000) suggested that social capital characterized by voluntary organizations, active participation in communal or civic activities, social and religious organization influences collective efficacy, mutual trust, and the general health of the community. Though, it is not all types of social capital that produce beneficially positive outlook in a community. Social capital embodies its own dark side which sometimes intensifies polarization within community. Kraig & John (2005) reported that bonding social capital is associated with higher community crime rates and bridging social capital is associated with lower community crime rates. Thus, the assumption is that social capital influences both crime reduction and high crime rates in community—the type of social capital available in a community is fundamental in the prediction of neighborhood condition and how its implication on county level juvenile crime rate. Likewise, a race based on existing scholarship on juvenile crime is also a major predictor of an increased number of arrests for minority groups. Though, some scholars argue that race does not promote increased crime rates among people of color because it is only acting as proxy for structural and socioeconomic factors which are the actual predictors of crime. However, the assumption here is not that race causes crime, but that certain racial groups are more likely to be arrested than others, and it so because structurally and socioeconomically they likely to be disadvantaged.

#### 4. Data/Analysis

The data for this study was assembled from different data sources. The data for the two dependent variables are UCR crime index dataset for county-level juvenile arrest count data which were gathered from ICPSR (<https://www.icpsr.umich.edu/web/pages/>). This dataset contains juvenile arrests count for both part I and II index crime for 3147 counties. These are arrests made and reported by law enforcement agencies at the county level and collated by the Federal Bureau of investigation. The data collated for the dependent variable (juvenile crime rate) is an aggregate data that sums up the total number of juveniles arrested for both part I and II index crimes, and non-index crimes. On the other hand, the data collated for the second dependent variable is an aggregate data that sums up the total number of juveniles arrested for Part I index crimes (juvenile violent crime rate). While the dataset for my independent variables were all collected from the U.S. Census Bureau, 2015-19 American Community Survey 5-yr average county-level estimates (<https://www.census.gov/>). Just as mentioned in my discussion of variable, the neighborhood condition variable would be measured in three ways: social capital, drug use, and unemployment rate. The social capital data was collected from Rupasingha, Goetz, & Freshwater (2006) study on “*The production of social capital in US counties.*” The drug use data was collected also from UCR crime index dataset for coun-

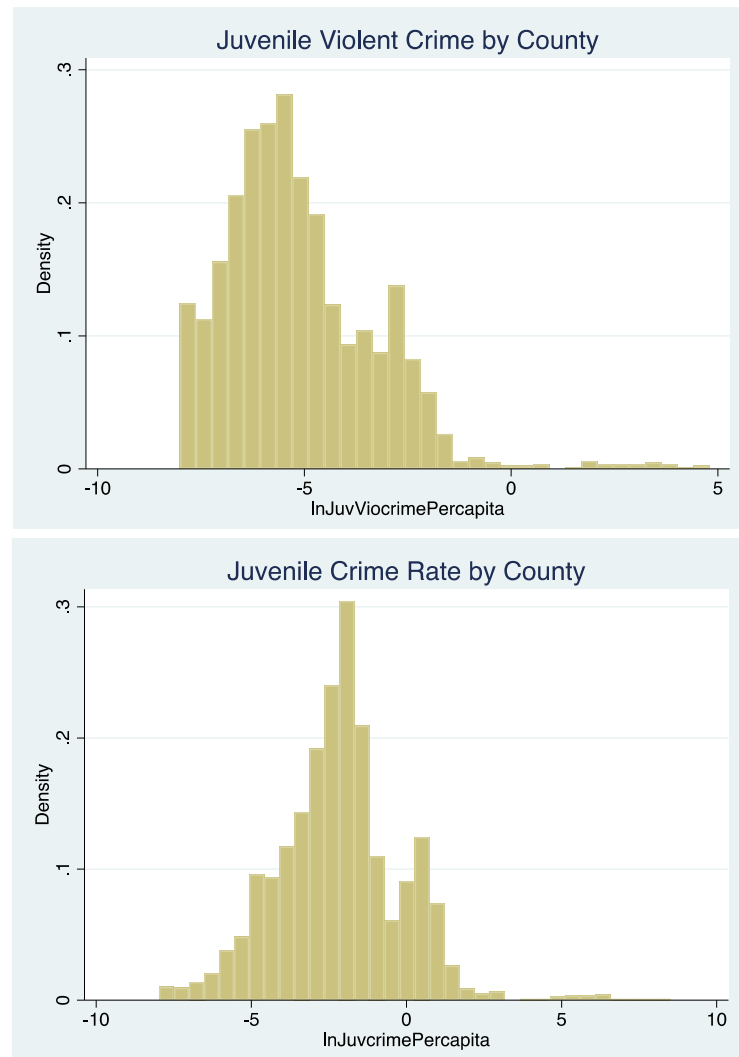
ty-level juvenile arrest count data which were gathered from ICPSR (<https://www.icpsr.umich.edu/web/pages/>).

The population is juvenile offenders in all counties in the United States for all years, while the representative sample is juvenile offenders in all counties for a period of one year. My unit of analysis is the juvenile crime rates for an individual county in a year. The data for my dependent variable (juvenile crime rates) are aggregate data on a county level, and these counties have widely differing populations; it thus increases the potentiality of heteroscedasticity. According to Baum (2006: p. 143) heteroscedasticity is expected to occur when means computed from larger samples are accurate, the disturbance variances for each observation. Hence, to limit the damage of heteroscedasticity, it is expressed as per capita. The aggregate arrest for an individual county was divided by its population to realize the per capita of juvenile crime rate for a county. The same process was adopted to limit the damages of heteroscedasticity in the second dependent variable (Juvenile violent crime rate). Furthermore, the independent variables, especially the Median household income variable, were logged to limit effect of multicollinearity, and I also logged all other independent variables to purge the model of issues of heteroskedasticity. Moreover, since my two dependent variables were aggregate data (count variables), I decided to use negative binomial regression to account for the dispersion of predicted counts for a given value of each independent variable. The negative binomial regression model is defined in terms of parameters  $\alpha$ , and it helps to force the estimate of parameter  $\alpha$  to be positive as required for the assumption of gamma distribution. My data analysis for my count dependent variables shows evidence of overdispersion, so to overcome the problem of overdispersion, I opted for negative binomial regression as an alternative to supplement my primary regression model (OLS). Moreover, I adopted median household income variable as control variables to further moderate the interactional relationship between the dependent and independent variables.

The histogram for juvenile crime rate (violent crimes) shows a mean of  $-5.11$ , max of  $4.80$ , and min of  $-8.01$ . Under juvenile crime rate for violent crimes, Los Angeles County in California recorded the highest rate of juvenile crimes (Part I index crime). Similarly, Los Angeles County in California also recorded the highest rate of juvenile crimes (Part II index crime). Whereas the histogram for Juvenile crime rate (part II index crime) shows a mean of  $-2.16$ , min of  $-7.97$ , and max of  $8.50$ . See **Figure 1**, and **Table 1** in appendix. Under juvenile violent crime rate (part I index crime), 981 counties about 31% recorded zero juvenile arrest for violent crime when compared to all counties in the United States, while 316 counties about 10% recorded zero juvenile arrest for non-violent crimes When compared to all counties in the U.S. “See **Table 1**” and (**Figure 1**).

## 5. Models Estimation

Just as mentioned above, this study adopted ordinary least squares regression



**Figure 1.** Histogram showing the county-sample distribution of juvenile crime rates and Juvenile violent crime rate.

**Table 1.** Descriptive statistics showing number of Obs, Mean, Std. Dev, Min, and Max.

Variables	Obs	Mn	Std. Dev	Min	Max
Juvenile Violent Crimes	2151	-5.11	1.85	-8.01	4.80
Ln Juvenile Crimes	2817	-2.16	2.03	-7.97	8.50
Ln Parental Poverty	3140	2.83	.46	.79	4.00
Ln Bachelor/Higher	3139	3.00	.40	0	4.35
Ln Social Capital	3117	.22	.48	-2.53	1.9
Ln Unemployment	3139	1.32	.32	-.22	3.03
Ln Drug Use	2437	2.49	1.65	0	8.55
Ln Whites Population	3140	4.39	.28	1.41	4.60
Ln Median Income	3140	10.89	.24	10.12	11.93
Ln Blacks Population	3009	.99	1.71	-2.30	4.45

(OLS) to approximate the linear interaction and magnitudes of the relationships between the dependent and independent variables. These variables are all continuous variables. This study tests hypotheses 1, 2, 3, and 4 in the OLS regression model. To satisfy the classical linear regression model assumption for OLS multiple regression which stated that there are no exact linear relationships among the independent variables, I tested for multicollinearity in the model. Though, classical linear regression models, OLS estimators, will still be blue even if perfect collinearity exists in the model. Nevertheless, it is still a concern in this study because multicollinearity is known for inflating the standard error of an OLS estimators, and when this happens, it becomes difficult to approximate the true value of the estimators—this means a fall in the precision of OLS estimators (Gujarati, 2003: p. 252). Hence, I used variance inflation factor (VIF) to test for any possibility of multicollinearity in the model, and the results (mean VIF = 2.11) indicated no sign of multicollinearity. “See **Table A1**”. Likewise, I further adopted Added-Variable plots to examine the linearity of the model. (**Figure A1**). The added-variable plots employ two residual series ( $e_1$  and  $e_2$ ) of the model to determine the linearity assumption of the population regression line. The rule states that if most of the points are clustered around a horizontal line at ordinate zero, then  $x_g$  is irrelevant (Baum, 2006: p. 119). Thus, looking at the added-variable plots, it is evident that most of the points are clustered around a horizontal or straight line as predicted by the model. It is safe to say that the model is free of the problem of multicollinearity (**Figure A1**).

Furthermore, I used residual fitted value graph to also demonstrate if there is a pattern to the residuals. In a well-fitted model, there should be no pattern to the residuals plotted against fitted values. The graphs displaced some shapes in the pattern of the residuals, and suggested violation of the assumption of the PRF that Juvenile crime rate is linear in our independent variables. (**Figure A2**). Thus, this states that there is an issue of constant variance (heteroskedasticity) in the model. Moreover, I used the Breusch-Pagan test to investigate heteroscedasticity in my models since this is usually expected in large data. The data for the dependent variable is an aggregate data for a county level analysis, and the issue of heteroscedasticity is common in such a dataset. Heteroskedasticity is dangerous because if it not detected it might destroy the OLS estimation and hypothesis-testing procedure, and it could render the OLS estimator of my model inefficient, and the lack of efficiency in the model could also make the conventional OLS hypothesis testing of dubious values. I conducted Breusch-Pagan test of heteroscedasticity for the first model, and the results indicated that constant variance exists in the model ( $\chi^2(1) = 108.17$  Prob >  $\chi^2 = 0.00$ ), and the Breusch-Pagan test of heteroskedasticity for the 2<sup>nd</sup> model also indicated signs of constant variance ( $\chi^2(1) = 18.24$  Prob >  $\chi^2 = 0.00$ ). Thus, the null hypothesis of no constant variance was rejected at 0.05 level of significance. The rule is that, if the computed p-value of Breusch-pagan test of heteroscedasticity is less than a given level of significance then we can reject the null hypothesis of hete-



roscedasticity (Gujarati, 2003). To satisfy the normality assumption for ordinary least square errors or asymptotic normality especially for large sample, I confronted the problem of heteroscedasticity with the robust option.

Similarly, regarding my supplementary model, I ran a likelihood ratio (LR) test for overdispersion, and the result shows evidence of overdispersion. The likelihood ratio test for the first dependent variable (juvenile violent crime rate) shows: LR test of  $\alpha = 0$ :  $\text{chibar2} (01) = 3.2e + 04$   $\text{Prob} \geq \text{chibar2} = 0.00$ . Likewise, the likelihood ratio test for second dependent variable shows: LR test of  $\alpha = 0$ :  $\text{chibar2} (01) = 5.3e + 05$   $\text{Prob} \geq \text{chibar2} = 0.00$ . Though I already knew overdispersion exists in my sample distribution from the data analysis, I ran the LR test to enable me chose between poisson regression model and negative binomial regression models. I chose negative binomial regression model instead because it estimates  $\ln(\alpha)$ , rather than  $\alpha$ :  $\ln(\alpha) = 0$ , while  $\alpha = 1$ . To satisfy the assumption of gamma distribution, the parameter  $\alpha$  must be greater than or equal to 0, and the sampling distribution of a predicted parameter  $\alpha$  when  $\alpha = 0$  is only half of a normal distribution because values less than 0 have a probability of 0. NBRM is the most appropriate model in this case because it forces estimates of the parameters  $\alpha$  to be positive and allows us to predict the interactional relationship between dependent and independent variables.

Having realized the above regression results which indicated interactional relationship between the first dependent variable (juvenile violent crime rate) and the independent variables, I decided to run second model to see how the second dependent variable (juvenile crime rate) interacts with the independent variables.

#### OLS Regression Results (1<sup>st</sup> Model)

Juvenile Violent crime rate	Coef.	Robust Std. err.	t	P >  t
Parental Poverty	.53	.13	4.23	.00
Bachelor's degree/Higher	.97	.12	7.75	.00
Social Capital	-.15	.08	-1.99	.04
Unemployment	.14	.10	1.35	.17
Drug use	.67	.03	23.94	.00
Median household Income	.36	.21	1.60	.09
Blacks Population	.09	.03	3.67	.00
Whites Population	-.35	.19	-1.81	.07
_Cons	-14.01	2.70	-5.19	.00

Number of Obs = 2002; Prob > F = .00; F (7, 2012). = 172.59; R-Square = .53.

OLS Regression Results (2<sup>nd</sup> Model)

Juvenile crime rate	Coef.	Robust Std. Err.	T	P >  T
Parental Poverty	-.17	.11	-1.49	.13
Bachelors/Higher	.64	.11	5.77	.00
Social Capital	-.14	.07	-2.19	.02
Unemployment	.23	.09	2.49	.01
DRUG USE	.77	.02	32.29	.00
Median household Income	-.35	.19	-1.90	.05
Blacks Population	-.01	.02	.41	.67
Whites Population	-.19	.15	-1.34	.41
_Cons	-.77	2.34	-.33	.75

Number of Obs = 2377; Prob > F = .00; F (7, 2012). = 267; R-Square = .58.

To ensure the fitness of the models, I conducted an unrestricted F-test to determine whether all the independent variables are equally explaining the changes in the variance of the dependent variables. The assumption for the F-test hypothesis is that the coefficients of the explanatory variables must be equal to 0 for a regression model to be a good one. The results show that the models are good, and all the independent variables are equally explaining the changes in the variance of the dependent variables (see **Table A2**: in Appendix). Moreover, I also ran negative binominal regression model, and its incidence rate ratios which also helps me to estimate the ratios of exponential beta coefficient. Thus, instead of reporting beta coefficients, I reported the incidence rate ratios of exponential beta coefficients. The negative binominal regression outputs are displayed in Appendix. “See **Table A3** & **Table A4**”.

## 6. Findings/Discussion

The regression models were conducted to test how parental poverty, parental education attainment and neighborhood conditions influence the two dependent variables (juvenile violent crime rate and juvenile crime rate). To test for relationship between the independent and dependent variables, I drafted three hypotheses. The first regression (OLS) results indicated a significantly positive relationship between parental poverty and juvenile violent crime rates. The regression result states that a percent increase in parental poverty in a county would cause juvenile crime rate to increase by about 0.53 percent. Moreover, the incidence rate ratio negative binomial regression model (1<sup>st</sup> NBRM) reports that if a unit point increases in the percentage of families living in poverty occurs in a county, the probability in the number of juvenile arrests count for violent crimes in a county increase by a factor of 1.48, holding all other variables constant. “See **Table A3**”. This finding for the first model gives credence to **h1**. Simply put, as

the number of children growing up in parental poverty increases in a county, so are the expected counts for juvenile arrest for crimes per county. Similar finding was reported by [Rekker, Pardini, Keijsers, Branje, Loeber, & Meeus \(2015\)](#); they indicated that juveniles from families with low socioeconomic status are likely to involve in delinquent and criminal activities than children from high socioeconomic status families. However, the 2<sup>nd</sup> regression model (OLS) results indicated a negative relationship between parental poverty and juvenile crime rate per capita. It shows that a percent increase in parental poverty in a county would cause juvenile crime rate to decrease by about 0.17 percent. Similarly, the 2<sup>nd</sup> NBRM shows that a unit increase in the percentage of families living in poverty in a county decreases the probability of juvenile arrest counts for non-violent crimes per county by a factor of 0.89. "See [Table A4](#)". This finding holds no support for hypothesis 1. Though, studies have indicated that poverty imposes a strain on poor families and affects the parent-child relationship and the social bond that would have acted as protective factor against juveniles' indulgence in criminal activities. Poor parents usually work low wage jobs; to meet up with the financial burdens, they work double jobs, and thereby have little or no quality time with their children which in turn impacts the children's later life outcomes. Criminological theories such as control theory indicated that parent-child relationship especially when positive produce a social bond that prevent juvenile from indulging in delinquent and criminal activities ([Conger, Ge, Elder, Lorenz, & Simons, 1994](#)). Similarly, [Rekker, Pardini, Keijsers, Branje, Loeber, & Meeus \(2015\)](#) also reported in their findings that poverty or low socioeconomic status imposes on poor parents some higher levels of stress which in turn disrupt the social bond that would have prevented their children from getting involved in criminal activities.

Moreover, the regression results also indicated a positive relationship between parental educational attainments and juvenile crime rates. The regression results in the 1<sup>st</sup> OLS model suggested that a percent increase in parental educational attainment level in a county would cause juvenile violent crime rates to increase by about 0.96 percent. The 1<sup>st</sup> NBRM reports that if a unit point increase in the percentage of families with bachelor's degree or higher per county occurs, the probability in the number of juvenile arrests counting for violent crimes in a county increase by a factor of 2.85. "See [Table A3](#)". Likewise, the 2<sup>nd</sup> regression model (OLS) indicated that a percent increase in parent educational attainment level in a county would cause juvenile crime rates (Part II index crime) to increase by about 0.63 percent. Comparably, the 2<sup>nd</sup> NBRM reports that a unit point increase in the percentage of families with bachelor's degree or higher per county, increases the probability in number of juvenile arrests count for non-violent crimes in a county by a factor of 2.14. The observed effects of parental educational attainment on juvenile crime rates in both models (OLS and NBRM) are statistically significant; however, they all fail to hold any support for  $h_2$ . It also differs from the findings of [Chalfin & Daza \(2019\)](#); their findings indicated that

increased parental educational attainment reduces children's propensity to criminal activities. Chalfin & Daza (2019) studied the intergenerational effect of parents' educational attainment on children propensity to criminality, but not its immediate and direct effect on children. Indeed, highly educated people earn higher wages and usually have enough resources to cater for their children's needs. However, high-paying jobs are usually associated with rigorous job functions and responsibilities that are highly time consuming. Thus, as parents climb a step up the ladder of educational attainment, they end up having less time to socially bond with their children which in turn impacts the children propensity to criminality; usually, because of the lack of parental supervision. Surprisingly, the changes in the variance of parental education attainment, and the corresponding change in the variance of juvenile crime rate is higher when compared to the effect of poverty on juvenile crime rate. Other previous studies on education attainment and juvenile crime reported negative relationship between education attainment and juvenile crime. Although, these studies focused only on juvenile educational attainment and juvenile conviction rate, but not the education attainment level of parents. Sabates (2008) suggested that increase in education attainment especially between cohorts is associated with a reduction in juvenile conviction rate.

The relationship between juvenile crime rate or juvenile violent crime rate and neighborhood conditions was measured in three ways. I adopt social capital, drug use, and unemployment rate at the county level to measure the social context with the intention to identify whether neighborhood conditions have any effect on juvenile crime rate at the county level. The regression results in the 1<sup>st</sup> model (OLS) demonstrated a significantly negative relationship between social capital and juvenile violent crime rates per capita. It however indicates a positive relationship between juvenile violent crime rates and unemployment, and equally shows a positively significant relationship for drug use. The 1<sup>st</sup> regression model (OLS) results report that a unit increase in percent of social capital in a county would cause juvenile violent crime rate to decrease by about 0.15 percent, and this relationship is significant. It shows also that a percent increase in unemployment rate in a county would cause juvenile violent crime rates in a county to increase by about 0.14 percent. Likewise, drug use was reported to share a statistically significant positive relationship with both juvenile violent crime rate and juvenile non-violent crime rate. It shows that a percent increase in drug use in a county would cause juvenile violent crime rates to increase by about 0.67 percent. Comparably, the 1<sup>st</sup> NBRM results indicate that a unit point increase in the percentage of people unemployed in a county increases the probability in number of juvenile arrests count for violent crimes in that county by a factor of 1.43. It also reports that if a unit point increase in the percentage of social capital occurs in a county, the probability in number of juvenile arrests count for violent crimes in that county decreases by a factor of 0.76. The 1<sup>st</sup> NBRM also shows that a unit point increase in the number of juveniles using drugs occurs in a

county, the probability in number of juvenile arrests counts for violent crimes in that county increases by a factor of 2.00. All the three indicators for neighborhood condition support for  $h_3$ . Similarly, the 2<sup>nd</sup> regression model (OLS) reported that a percent increase in social capital would cause juvenile crime rate to decrease significantly by about 0.14 percent. It also reports that a percent increase in unemployment rate in a county would cause juvenile crime rate to increase by about 0.24 percent; this relationship is significant. It further reports that a percent increase in drug use in a county would cause juvenile crime rate to increase by 0.76 percent.

Furthermore, the 2<sup>nd</sup> NBRM also demonstrated similar directionality in terms of the relationships between the three indicators for neighborhood condition (unemployment, social capital, and drug use) and juvenile crime rates. It reports that if a unit point increase in the percentage of social capital occurs in a county, the probability in number of juvenile arrests count for non-violent crimes in that county decreases by a factor of 0.86. Likewise, if a unit point increase in the percentage of people unemployed occurs in a county, the probability in number of juvenile arrests count for non-violent crimes in that county increases by a factor of 1.20. It reports also that if a unit point increase in the number of juveniles using drug occurs in a county, the probability in number of juvenile arrests count for non-violent crimes in that county increase by a factor of 1.97. The models (OLS, and NBRM) give credence to  $h_3$ . Social capital in recent years has been reported to foster collective efficacy, mutual trust, and the general health of a community (Putnam, 2000). It is also noteworthy that it is not all types of social capital that produce beneficially positive outlook in a community; social capital embodies its own dark side which sometimes intensifies polarization within community, especially in the rural counties. Kraig & John (2005) reports on a positive relationship between bonding social capital and higher community crime rates, and a negative relationship between bridging social capital and lower community crime rates. Thus, the type of social capital matters. Rural areas or counties are the most socially and racially segregated places in the United States, and their social, recreational, and communal organizations tends to be racially homogeneous. Thus, the observed negative relationship between social capital and juvenile crime rate at the neighborhood level could be an outcome of bridging social capital because such interconnectedness promotes heterogeneity and racial tolerance.

Furthermore, the observed impacts of the three indicators of neighborhood condition on juvenile crime rates all provide credence for  $h_3$ . Thus, given these observed relationships, it is safe to assume that neighborhoods plagued with drug use, high unemployment rates, and the lack of bridging social capital will experience high juvenile arrest counts for both violent and non-violent crimes. This assumption resonates with the social disorganization theory which stated that neighborhood plagued with crime, drug use, gangs, fear of crime, lower collective efficacy, less mutual trust, and lack of self-will to intervene for the common

good of the neighborhood (Lane, 2018) which in turn drive juvenile crime rates. In nutshell, parental poverty alone does not influence juvenile crime rates, however the relationship is moderated by the social context; especially, socio-economically disadvantaged neighborhoods.

Finally, I account for racial make-up of the county because previous studies indicated that racial minority youths are more likely to caught up with juvenile justice system than their other counterparts. The 1<sup>st</sup> model (OLS) shows significantly positive relationship between Blacks population and juvenile violent crime rates; it however indicates a negative connection between Whites population and juvenile violent crime rates. It reports that a unity increase in Blacks' population in a county would increase juvenile violent crime rates by 0.09 percent, and this effect was significant. While a unit increase in Whites population in county would reduce juvenile violent crime rate by about 0.35 percent. Comparatively, the 1<sup>st</sup> NBRM reports that if a unit point increase in the percentage of blacks' population in a county occurs, the probability in the number of juvenile arrests counts for violent crimes increases by a factor of 1.19, while a unit point increase in whites' population, decreases the probability in number of juvenile arrests counts for violent crime in a county by a factor of 0.59. Similarly, the 2<sup>nd</sup> model (OLS) also shows a positive correlation for Blacks' population and juvenile crime rates (non-violent offenses), however, indicates a negative connection between the population of whites in county and juvenile crime rate for non-violent offense. The 2<sup>nd</sup> NBRM also reports similar output; it shows that a unit point increase in the percentage of Blacks' population would increase the probability in the number of juvenile arrests count for non-violent crimes per county by a factor of 1.06, while a unit point increase in the percentage of Whites' population decreases the probability by a factor of 0.66. These observed results support the assumption in part that juvenile crime rates (both part I, II) for minority groups especially Blacks are more likely to be higher in counties where minority population ratio to White is relatively small. Andersen (2015) reports in his findings that differential treatment of Black youths tends to be more concentrated in communities with small black population, and where black to white ratio regarding socioeconomic competition is higher. Furthermore, racial group and county-level poverty's interaction increases the likelihood of petition for Black youths and magnifies the effect of race on juvenile crimes and minority group's overrepresentation in crime rates (Andersen, 2015). This finding indicates that race does account for the increased minority groups' juvenile crime rates, however, such effects become magnified when the race-factor is combined with socioeconomic and structural factors. I also control for median household income to moderate the effect of my primary independent variables on the dependent variables. The 1<sup>st</sup> regression model (OLS) does not show any significant connection between median household income and juvenile violent crime rate, while the 2<sup>nd</sup> regression model (OLS) indicates significantly negative relationship between median household income and juvenile crime rate (Part II offense). The

1<sup>st</sup> NBRM shows that a unit point increase in the percentage of the median household-income in a county, increases the probability in the number of juvenile arrests counts for violent crime in that county by a factor of 1.04; while 2<sup>nd</sup> NBRM indicates that a unit point increase in the percentage of median household income in a county decreases the probability in the number of juvenile arrests counts for non-violent offense (Part II) by a factor of 0.69. The results indicated positive correlation between median household income and juvenile violent crime rates, though I expected negative correlation, but I think the observed positive correlation could be because of higher income inequality that is prevalent at the count levels. That is, if a section of a county population's median household income is higher relative to the other sections of the population, it is like to increase arrest counts for violent crime.

## 7. Conclusion/Recommendation

Since the spike in juvenile crime rates in the late 1990s, federal, state, local policy makers have approached it from different policy schemes. Some proved counterproductive while some yielded positive results. Over the years, spike in the juvenile crime rates has been confronted through enactment of laws that blur the line between juvenile courts and adult courts; States were enacting laws to get tough on juvenile crimes by making juvenile sentencing more punitive, and allowing transfer of juvenile offenders to criminal adult courts (National Research Council, 2001). Juvenile crime policies in the United States were moving toward treating juveniles as adult. However, in recent years, the objectives of government policies shifted to rehabilitative means by educating and supporting both children and young adolescents who engage in criminality in their development and growth process (National Research Council, 2001). The rationale is that a society that depends on only punitive approaches as response to its younger people who engage in delinquent behaviors is not contributing to a sustainable future for its younger people or the society at large (Welsh, 2005). Moreover, because of the iatrogenic effect of the punitive approaches such as incarceration and its inability to reduce reoffending rate and improve public safety, less punitive methods such as probation, residential community treatment or house arrest are to be exhausted before considerations are made for secure confinement (Welsh, 2005). The United States government thus recognizes juvenile crime as a public health problem by making efforts through the public health system to prevent violent behaviors before they become evident. They collaborate with the public health system to identify and confront early risk factors for delinquent behaviors, and such early risk factors include poor parental supervision, harsh or inconsistent discipline, and low socioeconomic status and poor performance in school (Welsh, 2005). Some scholars have attempted to elucidate the impacts of family, parental supervision, quality of parent-child relationship on juvenile crime rates, and how these variables operate within a social context in terms of disadvantaged community living conditions. For instance, it is reported that criminal values and traditions

that develop in a socially disorganized areas are self-preserving, and they are manifested in such criminal acts of homicides and assault as part of general subculture of values and norms that legitimate use of violence in such socially disorganized areas (Fiala & LaFree, 1988). It thus indicates that juvenile's exposure to culture of violence in their regions influences their predisposition to indulge in criminal activities.

Though, some scholars ventured into the failure or inadequacy of government intervention program model to effectively curb juveniles' involvements and re-entry into the juvenile justice system in their bid to understanding the factors that are responsible for juvenile crime rates. The risk factors of juvenile crime at the time were thought to be juvenile' home, lack of socializing experiences, lack of job opportunities, and juvenile contact with the juvenile justice system. Hence, residential training schools, industrial schools, summer camps, job programs and diversion programs were adopted and promoted as preventive strategies for juvenile crime, but these strategies were consistently ineffective (Greenwood, 2008). However, governments in recent years adopted community-based interventions programs that situated within the community settings, and these programs are used to divert younger people out of the juvenile justice system and return to the community after a residential placement where they receive intensive family therapy and services. For instance, Functional Family Therapy (FFT) and Multisystemic Therapy (MST) are some of such community-based intervention programs that government uses to target youths facing problems of delinquency, substance abuse, and violence. These programs alter interactions between family members by improving the functioning of the family unit and improving family problem-solving skills, promoting emotional connection, and enhancing parents' ability to provide appropriate structure for their children (Greenwood, 2008). Likewise, other programs like Intensive Protective Supervision (IPS) have also proven effective in preventing juvenile crime; the IPS is used to target non-serious status offenders who are assigned to the program to be closely monitored by counselors who makes frequent home visits to provide supports for parents by providing individualized service plans and therapeutic services when needed (Greenwood, 2008).

This current study examined how parental poverty impact juvenile crime rate at the county level, and how this relationship is moderated by social context or the condition of the neighborhood. I used OLS regression model, and negative binominal regression (NBRM) to measure the relationship between the dependent and independent variables. The result show that parental poverty positively influence juvenile crime rates at the county level; it indicates that a unit point increases in the percentage of families living in poverty occurs in a county, the probability in the number of juvenile arrests count for violent crimes in a county will increase by a factor of 1.48, holding all other variables constant. Moreover, results in this study also indicate that as parental education level increases so as the propensity of their children to indulge in delinquent activities increases. This finding about the relationship between parents' education level and juvenile



crime rate stands apart from what has been reported in some previous studies. It is most likely that highly educated people earn higher wages and have enough resources to cater for their children's needs. However, high-paying jobs are usually associated with rigorous job functions and responsibilities that are highly time consuming. Thus, as parents climb a step up the ladder of educational attainment, they end up having less time to socially bond with their children which in turn impacts the children propensity to criminality; usually, because of the lack of parental supervision. Though, this finding requires further investigation as it tends to oppose what has been held in previous studies. For Instance, [Chalfin & Daza \(2019\)](#) in their findings indicated that increased parental educational attainment reduces children's propensity to criminal activities. Nevertheless, it is indicated in this study that parental poverty influences juvenile crime rate at the county level. Therefore, it is recommended that federal, state, and local government should invest more on social safety nets that would target families in the rural counties that are facing severe poverty and develop programs to encourage equal access to education at the county level to alleviate the effect of these variables on juvenile crime rate.

Moreover, the regression results also indicate that neighborhood conditions are associated with juvenile crime rate at the county level. Poor and disadvantaged neighborhoods with high rate of unemployment, drug use, and high rate of bonding social capital influence juvenile crime rate in the rural counties. Thus, the government should invest more in therapeutical programs to address the problem of drug use in the rural counties and should also develop programs that would create more job opportunities for residents of the rural counties. This study is significant because it directs government officials to see beyond traditional approaches to juvenile crime and begin to address specific factors such as parental poverty that have proven to increase the rate of juvenile crime. This study is not without its limitations. It is limited by the fact that the data for the dependent variables are juvenile arrests counts data for a given year; thus, such data may not truly represent juvenile crime rate because some persons could be arrested falsely when no crime is committed. Furthermore, the findings demonstrated a positive correlation between median household income and juvenile arrests counts for violent crimes, which was very much unexpected; though, no statistically significant relationship was observed, but it still calls for concerns. Thus, future studies should investigate how median household income at the county level impacts juvenile crime rates (Juvenile arrests count for both Part I, and II offenses).

### Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

### References

- Agnew, R. (2005). *Why Do Criminals Offend? A General Theory of Crime and Delinquency*. Oxford University Press.

- Agnew, R., Rebellon, C. J., & Thaxton, S. (2000). A General Strain Theory Approach to Families and Delinquency. *Contemporary Perspectives in Family Research*, 2, 113-138. [https://doi.org/10.1016/S1530-3535\(00\)80009-6](https://doi.org/10.1016/S1530-3535(00)80009-6)
- Andersen, T. S. (2015). Race, Ethnicity, and Structural Variations in Youth Risk of Arrest: Evidence from a National Longitudinal Sample. *Criminal Justice and Behavior*, 42, 900-916. <https://doi.org/10.1177/0093854815570963>
- Anderson, L. M., Charles, J. S., Fullilove, M. T., Scrimshaw, S. C., Fielding, J. E., Normand, J., & Task Force on Community Preventive Services (2003). Providing Affordable Family Housing and Reducing Residential Segregation by Income: A Systematic Review. *American Journal of Preventive Medicine*, 24, 47-67. [https://doi.org/10.1016/S0749-3797\(02\)00656-6](https://doi.org/10.1016/S0749-3797(02)00656-6)
- Barnert, E. S., Perry, R., Azzi, V. F., Shetgiri, R., Ryan, G., Dudovitz, R., Zima, B., & Chung, P. J. (2015). Incarcerated Youths' Perspectives on Protective Factors and Risk Factors for Juvenile Offending: A Qualitative Analysis. *American Journal of Public Health*, 105, 1365-1371. <https://doi.org/10.2105/AJPH.2014.302228>
- Baum, C. F. (2006). *An Introduction to Modern Econometrics Using Stata*. Stata Press.
- Bolland, A. C., Besnoy, K. D., Tomek, S., & Bolland, J. M. (2019). The Effects of Academic Giftedness and Gender on Developmental Trajectories of Hopelessness among Students Living in Economically Disadvantaged Neighborhoods. *Gifted Child Quarterly*, 63, 225-242. <https://doi.org/10.1177/0016986219839205>
- Calleja, N. G., Dadah, A. M., Fisher, J., & Fernandez, M. (2016). Reducing Juvenile Recidivism through Specialized Reentry Services: A Second Chance Act Project. *Journal of Juvenile Justice*, 5, No. 2.
- Chalfin, A., & Daza, M. (2019). The Intergenerational Effects of Education on Delinquency. *Journal of Economic Behavior and Organization*, 159, 553-571. <https://doi.org/10.1016/j.jebo.2017.07.034>
- Conger, R. D., Ge, X., Elder G. H., Lorenz, F. O., & Simons, R. L. (1994). Economic Stress, Coercive Family Process, and Developmental Problems of Adolescents. *Child Development*, 65, 541-561. <https://doi.org/10.1111/j.1467-8624.1994.tb00768.x>
- Craig, J. M., Trulson, C. R., DeLisi, M., & Caudill, J. W. (2020). Toward an Understanding of the Impact of Adverse Childhood Experiences on the Recidivism of Serious Juvenile Offenders. *American Journal of Criminal Justice*, 45, 1024-1039. <https://doi.org/10.1007/s12103-020-09524-6>
- De Coster, S., Heimer, K., & Wittrock, S. M. (2006). Neighborhood Disadvantage, Social Capital, Street Context, and Youth Violence. *The Sociological Quarterly*, 47, 723-753. <https://doi.org/10.1111/j.1533-8525.2006.00064.x>
- Drake, B., & Pandey, S. (1996). Understanding the Relationship between Neighborhood Poverty and Specific Types of Child Maltreatment. *Child Abuse & Neglect*, 20, 1003-1018. [https://doi.org/10.1016/0145-2134\(96\)00091-9](https://doi.org/10.1016/0145-2134(96)00091-9)
- FBI Arrests Statistics (2018). <https://ucr.fbi.gov/crime-in-the-u.s/2018/crime-in-the-u.s.-2018/tables/table-43>
- Fiala, R., & LaFree, G. (1988). Cross-National Determinants of Child Homicide. *American Sociological Review*, 53, 432-445. <https://doi.org/10.2307/2095650>
- Formby, A. E., & Paynter, K. (2020). The Potential of a Library Media Program on Reducing Recidivism Rates among Juvenile Offenders. *National Youth-at-Risk Journal*, 4, 14-21. <https://doi.org/10.20429/nyarj.2020.040103>
- Garo, L., Allen-Handy, A., & Lewis, C. W. (2018). Race, Poverty, and Violence Exposure: A Critical Spatial Analysis of African American Trauma Vulnerability and Educational

- Outcomes in Charlotte, North Carolina. *The Journal of Negro Education*, 87, 246-269.  
<https://www.jstor.org/stable/10.7709/jnegroeducation.87.3.0246>  
<https://doi.org/10.7709/jnegroeducation.87.3.0246>
- Godinet, M. T., & Stotzer, R. (2017). Juvenile Perpetrators of Race/Ethnicity-Based Bias Crimes. *Journal of Ethnicity in Criminal Justice*, 15, 21-35.  
<https://doi.org/10.1080/15377938.2016.1261060>
- Greenwood, P. (2008). Prevention and Intervention Programs for Juvenile Offenders. *The Future of Children*, 18, 185-210. <https://www.jstor.org/stable/20179984>  
<https://doi.org/10.1353/foc.0.0018>
- Gujarati, D. (2003). *Basic Econometrics* (4th ed., pp. 638-640). McGraw Hill.
- Harp, C., & Puzzanchera, C. (2018, December). *National Report Series Bulletin*. Ojp.gov.  
<https://ojjdp.ojp.gov/sites/g/files/xyckuh176/files/pubs/251861.pdf>
- Hay, C., Fortson, E. N., Hollist, D. R., Altheimer, I., & Schaible, L. M. (2006). The Impact of Community Disadvantage on the Relationship between the Family and Juvenile Crime. *Journal of Research in Crime and Delinquency*, 43, 326-356.  
<https://doi.org/10.1177/0022427806291262>
- Jagers, J. W., Church II, W. T., Tomek, S., Hooper, L. M., Bolland, K. A., & Bolland, J. M. (2014). Adolescent Development as a Determinant of Family Cohesion: A Longitudinal Analysis of Adolescents in the Mobile Youth Survey. *Journal of Child and Family Studies*, 24, 1625-1637. <https://doi.org/10.1007/s10826-014-9966-8>
- Jagers, J. W., Robison, S. B., Rhodes, J. L., Guan, X., & Church, W. T. (2016). Predicting Adult Criminality among Louisiana's Urban Youth: Poverty, Academic Risk, and Delinquency. *Journal of the Society for Social Work and Research*, 7, 89-116.  
<https://doi.org/10.1086/685089>
- Jargowsky, P. (2015). *Architecture of Segregation: Civil Unrest, Concentration of Poverty, and Public Policy* (p. 7). The Century Foundation.
- Jarjoura, G. R., Triplett, R. A., & Brinker, G. P. (2002). Growing Up Poor: Examining the Link between Persistent Childhood Poverty and Delinquency. *Journal of Quantitative Criminology*, 18, 159-187. <https://doi.org/10.1023/A:1015206715838>
- Jeffrey, F. (1987). Neighborhood Education, Mobilization, and Organization for Juvenile Crime Prevention. *The Annals of the American Academy of Political and Social Science*, 494, 54-70. <https://doi.org/10.1177/0002716287494001006>
- Jones, C., Scherer, J., & Puzzanchera, C. (2021, May). *National Report Series Bulletin*. Ojp.gov. <https://ojjdp.ojp.gov/publications/juvenile-arrests-2019.pdf>
- Kalunta-Crumpton, A., & Ejiogu, K. (2012). Race, Ethnicity, Crime and Criminal Justice in the United States. In A. Kalunta-Crumpton (Ed.), *Race, Ethnicity, Crime and Criminal Justice in the Americas* (pp. 41-63). Springer.  
[https://doi.org/10.1057/9780230355866\\_3](https://doi.org/10.1057/9780230355866_3)
- Kraig, B., & John, R. H. (2005). Social Capital, Too Much of a Good Thing? American Religious Traditions and Community Crime. *Social Forces*, 84, 995-1013.  
<https://doi.org/10.1353/sof.2006.0004>
- Lane, J. (2018). Addressing Juvenile Crime. What Have We Learned and How Should We Proceed? *Criminology & Public Policy*, 17, 283-307.  
<https://doi.org/10.1111/1745-9133.12362>
- Lattimore, J., & Lauria, M. (2018). Collective Efficacy in Disadvantaged Neighborhoods: The Influence of Habitat for Humanity. *Journal of Urban Affairs*, 40, 782-804.  
<https://doi.org/10.1080/07352166.2017.1392829>
- Lochner, L. (2020). Education and Crime. In S. Bradley, & C. Green (Eds.), *The Econom-*

- ics of Education* (pp. 109-117). Academic Press.  
<https://doi.org/10.1016/B978-0-12-815391-8.00009-4>
- Lochner, L., & Moretti, E. (2004). The Effect of Education on Crime: Evidence from Prison Inmates, Arrests and Self-Reports. *American Economic Review*, *94*, 155-189.  
<https://doi.org/10.1257/000282804322970751>
- Males, M. A., & Brown, E. A. (2014). Teenagers' High Arrest Rates: Features of Young Age or Youth Poverty? *Journal of Adolescent Research*, *29*, 3-24.  
<https://doi.org/10.1177/0743558413493004>
- McNulty, T. L., Bellair, P. E., & Watts, S. J. (2013). Neighborhood Disadvantage and Verbal Ability as Explanations of the Black-White Difference in Adolescent Violence: Toward an Integrated Model. *Crime and Delinquency*, *59*, 140-160.  
<https://doi.org/10.1177/0011128712461472>
- Merton, R. K. (1938). Social Structure and Anomie. *American Sociological Review*, *3*, 672-682. <https://doi.org/10.2307/2084686>
- Milam, A. J., Furr-Holden, C. D. M., Harrell, P. T., Whitaker, D. E., & Leaf, P. J. (2012). Neighborhood Disorder and Juvenile Drug Arrests: A Preliminary Investigation Using the NIfETy Instrument. *American Journal of Drug & Alcohol Abuse*, *38*, 598-602.  
<https://doi.org/10.3109/00952990.2012.701357>
- National Research Council (2001). *Juvenile Crime, Juvenile Justice*. National Academies Press.
- Nikulina, V., Widom, C. S., & Czaja, S. (2010). The Role of Childhood Neglect and Child Poverty in Predicting Mental Health, Academic Achievement and Crime in Adulthood. *American Journal of Community Psychology*, *48*, 309-321.  
<https://doi.org/10.1007/s10464-010-9385-y>
- Nisar, M., Ullah, S., Ali, M., & Alam, S. (2015). Juvenile Delinquency: The Influence of Family, Peer and Economic Factors on Juvenile Delinquents. *Scientia Agriculturae*, *9*, 37-48. <https://doi.org/10.15192/PSCP.ASR.2015.9.1.3748>
- Ou, S.-R., Mersky, J. P., Reynolds, A. J., & Kohler, K. M. (2007). Alterable Predictors of Educational Attainment, Income, and Crime: Findings from an Inner-City Cohort. *Social Service Review*, *81*, 85-128. <https://doi.org/10.1086/510783>
- Putnam, R. D. (2000). *Bowling Alone: The Collapse and Revival of American Community*. Simon and Schuster.
- Raphael, S., & Roza, S. V. (2019). Racial Disparities in the Acquisition of Juvenile Arrest Records. *Journal of Labor Economics*, *37*, S125-S159. <https://doi.org/10.1086/701068>
- Rehavi, M. M., & Starr, S. B. (2014). Racial Disparity in Federal Criminal Sentences. *Journal of Political Economy*, *122*, 1320-1354. <https://doi.org/10.1086/677255>
- Rekker, R., Pardini, D., Keijsers, L., Branje, S., Loeber, R. et al. (2015). Moving in and out of Poverty: The Within-Individual Association between Socioeconomic Status and Juvenile Delinquency. *PLOS ONE*, *10*, e0136461.  
<https://doi.org/10.1371/journal.pone.0136461>
- Rekker, R., Pardini, D., Keijsers, L., Branje, S., Loeber, R., & Meeus, W. (2015). Moving in and Out of Poverty: The Within-Individual Association between Socioeconomic Status and juvenile Delinquency. *PLOS ONE*, *10*, e0136461.
- Rowe, S. L., Zimmer-Gembeck, M. J., & Hood, M. (2016). From the Child to the Neighborhood: Longitudinal Ecological Correlates of Young Adolescents' Emotional, Social, Conduct, and Academic Difficulties. *Journal of Adolescence*, *49*, 218-231.  
<https://doi.org/10.1016/j.adolescence.2016.04.001>
- Rupasingha, A., Goetz, S. J., & Freshwater, D. (2006). The Production of Social Capital in

- US Counties. *Journal of Socioeconomics*, 35, 83-101.  
<https://doi.org/10.1016/j.socec.2005.11.001>
- Sabates, R. (2008). Educational Attainment and Juvenile Crime: Area-Level Evidence Using Three Cohorts of Young People. *British Journal of Criminology*, 48, 395-409.  
<https://doi.org/10.1093/bjc/azn003>
- Sampson, R. J. (2011). The Community. In J. Q. Wilson, & J. Petersilia (Eds.), *Crime and Public Policy* (pp. 193-216). Oxford University Press.
- Shelden, R. G., Tracy, S. K., & Brown, W. B. (2001). *Youth Gangs in American Society* (2nd ed.). Wadsworth.
- Strom, K. J., & MacDonald, J. M. (2007). The Influence of Social and Economic Disadvantage on Racial Patterns in Youth Homicide over Time. *Homicide Studies*, 11, 50-69.  
<https://doi.org/10.1177/1088767906296199>
- Welsh, B. C. (2005). Public Health and the Prevention of Juvenile Criminal Violence. *Youth Violence and Juvenile Justice*, 3, 23-40.  
<https://doi.org/10.1177/1541204004270911>

## Appendix

**Table A1.** Showing the results of Variance Inflation Factor test of multicollinearity for the first model.

Variable	VIF	1/VIF
Ln Parental Poverty	3.77	.26
Ln Bachelor's/Higher	2.34	.42
Ln Median Income	2.79	.35
Ln Social Capital	1.2	.83
Ln Unemployment	1.59	.63
Ln Drug Use	1.70	.59
Ln Blacks population	1.73	.58
Ln Whites population	1.81	.55

Mean VIF 2.11.

**Table A2.** Showing the results of an unrestricted F-test for the two models.

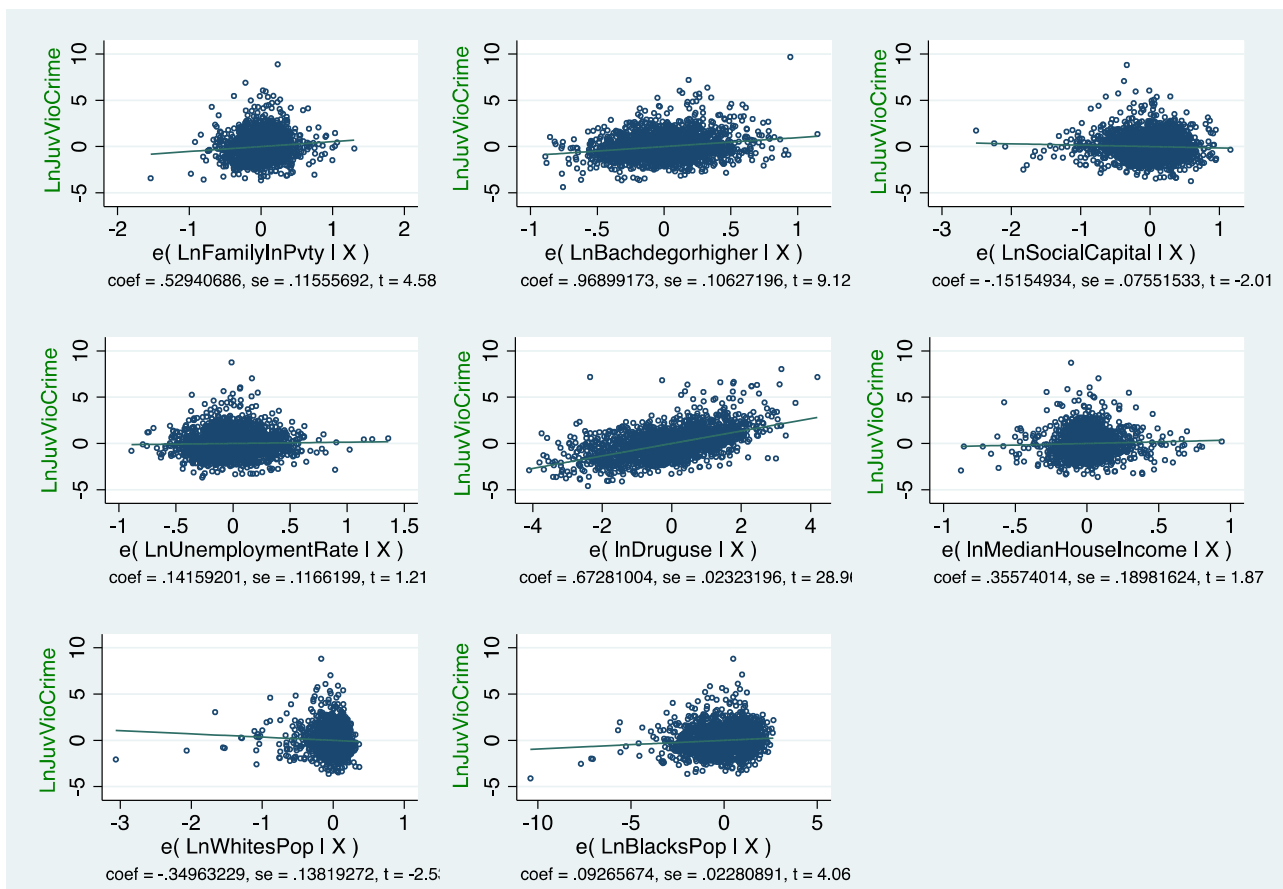
F-test for 1 <sup>st</sup> Regression Model	F-test for 2 <sup>nd</sup> Regression Model
Ln parental Poverty = 0	Ln Parental Poverty = 0
Ln Bachelors/higher = 0	Ln Bachelors/higher = 0
Ln Social Capital = 0	Ln Social Capital = 0
Ln Unemployment = 0	Ln Unemployment = 0
Ln Drug use = 0	Ln Drug use = 0
Ln Median Household Income = 0	Ln Median Household Income = 0
Ln Blacks Population = 0	Ln Blacks Population = 0
Ln Whites Population = 0	Ln Whites Population = 0
F (7, 2418) = 281.40	F (7, 2012) = 413.64
Prob > F = .0000	Prob > F = .0000

**Table A3.** Negative binomial regression model, incidence rate ratios (1<sup>st</sup> NBRM).

Number of Obs = 2332				
LR chi2(8) = 3563.89				
Prob > chi2 = .00				
Dispersion: mean, Log Likelihood = -7494.03 Pseudo R2 = .192				
Juvenile Violent Crime	IRR	Std. err	Z.	P >  z
Parental poverty	1.48	.13	4.46	.00
Bachelor's degree/higher	2.85	.22	13.74	.00
Unemployment	1.43	.13	4.02	.00
Social Capital	.76	.04	-5.83	.00
Drug use	2.00	.03	44.79	.00
Blacks Population	1.19	.02	9.70	.00
Whites Population	.59	.07	-4.60	.00
Median household Income	1.04	.15	.24	.81
_Cons	.09	.16	-1.34	.18
/ln alpha	-.24	.04		
alpha	.78	.03		

**Table A4.** Negative binomial regression model, incidence rate ratios (2<sup>nd</sup> NBRM).

Number of Obs = 2332				
LR chi2(8) = 3563.89				
Prob > chi2 = .00				
Dispersion: mean, Log Likelihood = -7494.03 Pseudo R2 = .192				
Juvenile Crime rate (non-violent crimes)	IRR	Std. err	Z.	P >  z
Parental poverty	.89	.06	-1.75	.08
Bachelors/higher	2.16	.12	13.42	.00
Unemployment	1.21	.08	2.97	.00
Social Capital	.86	.03	-4.78	.00
Drug use	1.97	.02	59.64	.00
Blacks Population	1.06	.02	4.75	.00
Whites Population	.66	.06	-4.68	.00
Median household income	.69	.07	-3.47	.00
_Cons	2136.69	2925.99	5.60	.00
/ln alpha	-.59	.03		
alpha	.55	.02		



**Figure A1.** Added-variable plot.

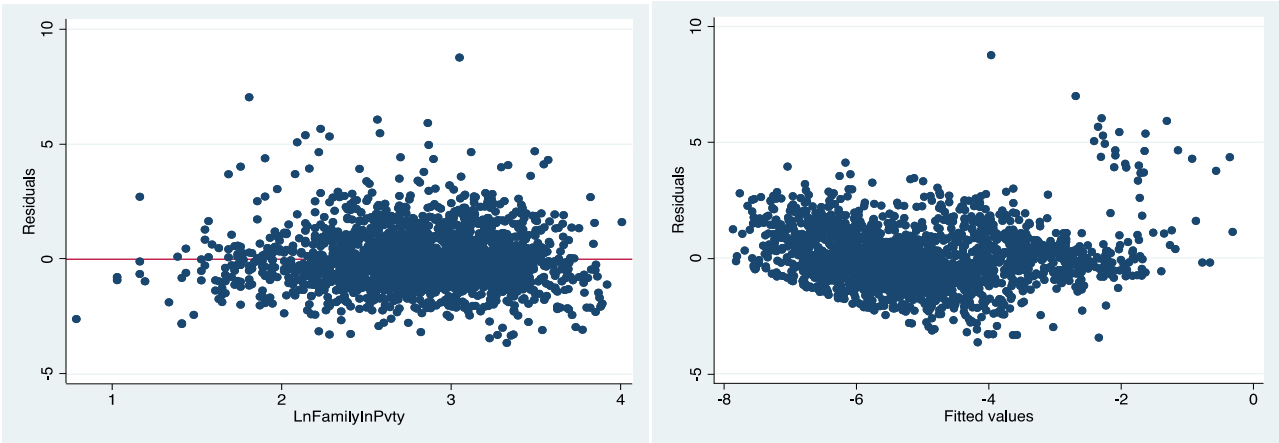


Figure A2. Graph showing residual fitted values, indicating signs of heteroskedasticity.