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The Role of Geographic Area on Juvenile Delinquency: Evidence from the 2023 National Survey on Drug Use and Health

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ABSTRACT

This study explores the relationship between geographic area and juvenile delinquency, with particular attention to how this relationship varies across the following settings: large metropolitan areas, small metropolitan areas, and rural areas. Using nationally representative data from the 2023 National Survey on Drug Use and Health (NSDUH), the analysis focuses on youth under the age of 18 and incorporates additional social factors such as parental involvement, gender, grade level, and race/ethnicity. Results from my negative binomial regression models demonstrate that geographic area did not play significant role in delinquency overall. Income showed notable variation by geographic setting: in rural areas, even modest increases in household income were associated with significantly lower delinquency, while no such pattern was observed in large or small metropolitan areas. Findings indicate that higher levels of parental involvement are consistently associated with lower rates of juvenile delinquency across all geographic areas. Gender also played a significant role, with female youth less likely to report engaging in delinquent behavior, particularly in large metro and rural areas. These findings suggest that while some protective factors, like parental involvement, are universally effective, the impact of structural factors like income may be more context-specific. As a result, prevention strategies should consider both the social and geographic contexts in which youth live to more effectively address and reduce juvenile delinquency.

INTRODUCTION

Juvenile delinquency has long been a pressing question for researchers and remains a significant societal concern for communities in the United States. Juvenile delinquency, including any “violation of a law of the United States committed by a person prior to his eighteenth birthday which would have been a crime if committed by an adult” (U.S. Department of Justice, 2024), has drawn considerable media attention in recent years for both its prevalence and the resulting debate about justice policies to prevent and control it (Spicker & Frolik, 2023).

Throughout American history, the response to juvenile delinquency and the evolution of the juvenile justice system have taken many different forms. Interest in juvenile crime escalated in the 1960s, particularly after President John F. Kennedy signed the Juvenile Delinquency and Youth Offenses Control Act in 1961. This act "provided federal resources to local communities for initiatives to reduce juvenile delinquency" (U.S. Department of Justice, 2024), with the primary goal of curbing the rising rates of juvenile crime. However, between 1960 and 1968, the "number of juvenile court cases increased by 74.6 percent" (Gemignani, 2024), and urban courts saw an 11.5% increase while rural courts experienced an 8.9% rise (Gemignani, 2024).

During this period, children were often placed in either adult or juvenile correctional facilities, many of which were under-resourced. In addition, many juveniles were treated as adults, regardless of the severity of their offenses. To address the rising juvenile crime rates and the inadequate conditions within these facilities, President Gerald Ford signed the Juvenile Justice and Delinquency Prevention Act in 1974. This act, which has been amended several times, was most recently updated in 2018 by President Donald J. Trump (Department of Justice, 2018). The continued modification of this legislation underscores the ongoing prevalence of juvenile crime in the U.S. Notably, the total delinquency case rate increased by 43% between 1985 and 1996, only to decline by 79% through 2021 (Beigal & Hockenberry, 2024). While

these declining trends are encouraging, juvenile crime remains a significant concern due to a range of complex and interconnected factors. Understanding and addressing these factors may allow for more targeted and less punitive responses to juvenile delinquency in the future.

Juvenile delinquency can manifest across diverse settings, cultures, socioeconomic backgrounds, and law enforcement contexts. Delinquency can include offenses such as vandalism, drug use, assault, truancy, and theft (Cutler, 2024). Considerable research has examined drivers of delinquency and points to factors like socioeconomic disadvantage, mental health, peer pressure, poor education, and violence in the home (Meadows & McPherson, 2024).

Efforts to understand drivers of juvenile delinquency and to provide strategies and solutions to prevent it are extremely important in maintaining social cohesion and in limiting potential negative impacts on youth, their families, and the larger community. Central to these efforts is identifying additional mechanisms that might shape juvenile delinquency, including whether and how different geographic contexts—such as urban versus rural environments—influence juvenile delinquency patterns.

LITERATURE REVIEW

Although most scholarship on juvenile delinquency centers on urban youth, some research highlights a growing need to address rural juvenile crime (Evans et al., 1999). Due to limited rural-focused studies, many researchers rely on findings derived from urban populations; however, evidence suggests potential similarities in delinquency rates across both contexts. Osgood and Chambers (2003) identify factors such as residential instability, ethnic diversity, family disruption, economic status, and population density as predictors of juvenile delinquency. They propose that these factors, documented in urban settings, may also apply to rural communities. For instance, rising rates of juvenile violence in rural areas may track with

increasing instability, while higher family disruption—which correlates with higher delinquency in urban contexts—could similarly influence rural youth (Osgood & Chambers, 2003). These findings underscore the importance of expanding research to more thoroughly examine rural juvenile delinquency.

Although there are certain similarities in juvenile delinquency rates between urban and rural areas, emerging evidence suggests there may also be notable differences. For instance, a study by Blackman et al. (2016) spanning multiple rural and urban contexts linked various demographic factors—such as race, age, poverty, and school-related variables—to juvenile offending. Contrary to much of the existing literature, this study found that urban youth were significantly less likely to encounter the juvenile justice system than their rural counterparts, challenging earlier conclusions that urban youth face higher delinquency risks (Anderson, 2014).

One of the most common findings across numerous studies is the connection between economic disadvantage and juvenile delinquency. However, the extent of this relationship can differ between urban and rural areas. Prior research suggests that neighborhoods with persistent structural disadvantage often exhibit higher rates of juvenile crime. In urban contexts, concentrated poverty is linked to increases in neighborhood disorder, residential instability, and low social cohesion—all of which can contribute to elevated rates of juvenile offending (Cheng & Steinberg, 2006). Moreover, high-poverty urban areas tend to report more violent crime but less property crime on average (Ludwig et al., 2001). These studies indicate that poverty plays a significant role in urban juvenile crime, yet other evidence suggests that poverty may not show the same correlation in rural settings, or if it does, the effect is statistically insignificant.

For example, Cheng and Steinberg (2006) found no direct association between poverty and delinquency in rural areas, diverging from the standard urban findings. They concluded that poverty alone might not drive rural juvenile delinquency; instead, it could be the interplay of

poverty with other variables. This aligns with classic work by Shaw and McKay (1942), which noted that when poverty combines with additional risk factors, social relationships in a community may weaken, resulting in increased juvenile offending. Overall, existing literature underscores that multiple contributors shape delinquency in both urban and rural regions, with economic disadvantage often being one of several critical factors. Consequently, determining whether poverty is indeed associated with juvenile delinquency in rural versus urban contexts is vital for developing targeted strategies to address and prevent these behaviors.

THE CURRENT STUDY

The purpose of this study is to examine the relationship between poverty and juvenile delinquency, with particular attention to how this relationship varies across geographic contexts, specifically, large metropolitan, small metropolitan, and nonmetropolitan (rural) areas. This study utilizes data from the 2023 National Survey on Drug Use and Health (NSDUH), which provides self-reported information from a nationally representative sample of U.S. youth.

Using this dataset, the study explores whether household income levels predict juvenile delinquent behavior, and whether these patterns differ by place. Additional factors such as race, gender, grade level, and parental involvement are included as controls. The ultimate goal is to better understand how structural and familial factors intersect with geographic setting to influence youth behavior and outcomes.

DATA

Sample

This study utilizes data from the pooled 2023 National Survey on Drug Use and Health (NSDUH), a nationally representative survey of U.S. civilians aged 12 and older residing in non-institutionalized settings. Conducted annually across all 50 states and the District of Columbia,

the NSDUH collects data through both in-person and web-based interviews. Participants respond to comprehensive questionnaires covering demographics, substance use, and related behavioral factors.

For this analysis, the sample was restricted to individuals under the age of 18. Non-respondents within this age group were also excluded to ensure data completeness. After applying these criteria, the final analytical sample consists of 9,376 individuals.

Measures

Delinquency

Delinquency was assessed through self-reported engagement in various behaviors over the past 12 months. They reported the frequency of six specific behaviors: physical altercations (serious fights, group fights), carrying a handgun, selling illegal drugs, theft of items valued at $50 or more, and violent aggression with intent to harm. Each behavior was measured on a five-point scale, where 1 = never, 2 = 1–2 times, 3 = 3–5 times, 4 = 6–9 times, and 5 = 10 or more times. A cumulative delinquency score 0- 20 was calculated by summing responses across all six behaviors, with higher scores indicating greater involvement in delinquent activities.

Urban/Rural

Participants' geographic location was categorized using the 2013 Rural/Urban Continuum Codes, which classify counties into three levels: (0) Large Metro, (1) Small Metro, and (2) non-metro. Large Metro areas are highly urbanized with dense populations (over a million), while Small Metro areas are less densely populated but still maintain urban characteristics. Non-Metro areas are classified as rural regions with low population density.

Income

Income was measured using self-reported responses regarding total household income for the given year. Participants were originally categorized into seven income brackets. However, for the purposes of this study, categories 1, 2, and 3 were combined into a single category representing incomes of $29,999 or less. The remaining categories were as follows: (4) $30,000–$39,999, (5) $40,000–$49,999, (6) $50,000–$74,999, and (7) $75,000 or more.

Parental Involvement

Parental involvement was assessed using self-reported measures of parental engagement in various aspects of the participants' lives over the past 12 months. Participants responded to six questions related to both academic support and daily supervision. The academic items asked whether parents checked if homework was completed and whether they helped with homework when needed. The daily activity questions included whether parents required the participant to do chores, limited television time, restricted time out with friends on school nights, and acknowledged when the participant had done a good job. Each item was measured on a four-point scale: 1 = Always, 2 = Sometimes, 3 = Seldom, and 4 = Never. Higher scores reflect lower levels of parental involvement.

Gender

Gender was measured using self-reported responses regarding sex assigned at birth. Beginning in 2023, several changes were made to the questionnaire that impacted how this variable was recorded. Initially respondents were asked to record their gender assigned at birth which was later confirmed through an additional question. If respondents indicated their response was incorrect, they were given another opportunity to report their sex assigned at birth,

with this final response replacing the original. Additionally, starting in 2023, all questions related to sex assigned at birth were self-administered, whereas previously, the initial question was interviewer-administered for in-person interviews. Responses were recorded as 1= Male or 2=Female.

Race and Ethnicity

Race and ethnicity were measured using self-reported responses, categorizing participants into seven distinct groups based on their racial and ethnic identity: (1) White, (2) Black/African American, (3) Native American/Alaska Native, (4) Native Hawaiian/Other Pacific Islander, (5) Asian, (6) More than one race, and (7) Hispanic.

Analytic Strategy

We begin by presenting descriptive statistics, including means and standard deviations, for all variables included in the analysis. This provides a general understanding of the sample composition and the distribution of key variables, including the outcome—juvenile delinquency.

Given that juvenile delinquency is operationalized as a count variable based on the frequency of self-reported delinquent behaviors, and preliminary analysis indicated that the variance of this measure substantially exceeds the mean (i.e., the outcome is overdispersed), we employed negative binomial regression models. Negative binomial regression is the most appropriate approach for modeling overdispersed count data, as it relaxes the assumption of equal mean and variance required by the Poisson model and includes an additional parameter to account for dispersion.

With respect to the modeling strategy, I first examined the overall association between geographic context and juvenile delinquency, net of controls. Next, to better assess whether these

associations vary by geographic context, I stratified the models by urbanicity: large metro, small metro, and rural counties. This allows us to explore whether the relationship between child poverty and juvenile delinquency is conditioned by place and to identify possible context-specific drivers of youth behavior. All models were estimated using Stata 17.

Results

Table 1 provides means and standard deviations for my dependent variables, independent variables, and control variables. The mean delinquency score among participants was 0.65, with scores ranging from 0 to 20. Higher scores indicate greater engagement in delinquent behaviors, while lower scores reflect less involvement. This relatively low mean suggests that most participants engaged in little to no delinquent activities. Parental involvement had a mean score of 10.99, with scores ranging from 0 to 18. In this measure, higher scores indicate lower levels of parental involvement, meaning less frequent parental engagement in the participant's life. This suggests that, on average, participants experienced moderate to low levels of parental involvement in their daily activities.

Table 1. Descriptive Statistics (*N*=9376)

	Mean	S.D.
Outcome		
Delinquency	0.65	1.64
Parental Involvement	10.99	3.83
Urban/Rural		
Large Metro	0.46	0.50
Small Metro	0.38	0.49
Nonmetro	0.16	0.36
Controls		
Age		
12 to 13	0.31	0.46
14 to 15	0.35	0.48
16 to 17	0.33	0.47
Gender		

Female	0.48	0.50
Grade level		
5th-8th Grade	0.66	0.47
9th-12th Grade	0.34	0.47
Race/Ethnicity		
White	0.44	0.50
Black/African American	0.13	0.33
Native American/ AK Native	0.04	0.19
Asian/ Native HI/ Other Pacific Islander	0.05	0.22
More than one race	0.07	0.26
Hispanic	0.27	0.44
Household income		
>$29,000	0.23	0.42
$30,000-$39,999	0.10	0.30
$40,000-$49,999	0.09	0.28
$50,000-$74,999	0.14	0.34
<$75,000	0.45	0.50

With respect to place, participants were distributed across three levels of urbanization: large metropolitan areas, small metropolitan areas, and nonmetropolitan areas. Forty-six percent of participants resided in large metropolitan areas, which are highly urbanized with dense populations. Thirty-eight percent lived in small metropolitan areas, which, while still urban, are less densely populated than large metro areas but retain urban characteristics. The remaining sixteen percent resided in non-metro areas, which are rural regions with lower population density. This distribution indicates that the majority of the sample lived in metropolitan areas, with a smaller proportion residing in rural settings.

Within this sample, household income levels among participants varied. Twenty-three percent of respondents reported a total family income of $29,000 or less, 10% had an income between $30,000 and $39,999, 9% reported an income between $40,000 and $49,999, and 14% had an income between $50,000 and $74,999. The largest proportion of the sample (45%) reported a household income of $75,000 or more. Moreover, 48% of participants identified as

female. Regarding education level, 66% were in grades 5 through 8, making up the majority of the sample, while the remaining 34% were in grades 9 through 12. In terms of race and ethnicity, the largest proportion of participants (44%) identified as White. The remaining participants identified as Black or African American (13%), Native American or Alaska Native (4%), Asian, Native Hawaiian, or Other Pacific Islander (5%), more than one race (7%), and Hispanic (27%).

Table 2. present the regression estimates examining the relationship between geographic area and delinquent behavior, along with the estimates stratified by geographic area. In column 1 on Table 2, results demonstrate geographic area did not play a significant role in delinquent behavior overall.

Across the full sample, participants who reported being in the $30,000–$39,000 income bracket were not statistically more or less likely to engage in delinquent behavior compared to those in the lowest income bracket of $29,000 or less ($b = -0.13$, $p > .05$). This pattern remains consistent in both large metropolitan areas ($b = 0.03$, $p > .05$) and small metropolitan areas ($b = -0.01$, $p > .05$). Within small metropolitan areas, the relationship between this income level and delinquency is negative, but it is not statistically significant. However, in rural areas, participants within the $30,000–$39,000 income bracket were significantly less likely to engage in delinquent behavior than those in the lowest income bracket ($b = -0.73$, $p < .01$). These results suggest that in rural areas, being in a slightly higher income bracket may help protect youth from engaging in delinquent behavior.

Overall, participants who reported being in the $40,000–$49,000 income bracket were not significantly more or less likely to engage in delinquent behavior compared to those in the lowest income group of $29,000 or less ($b = -0.15$, $p > .05$). This non-significant relationship was consistent across all geographic contexts, including large metropolitan areas ($b = 0.01$, $p > .05$), small metropolitan areas ($b = -0.28$, $p > .05$), and rural areas ($b = -0.32$, $p > .05$). These

findings suggest that, across geographic settings, being in the $40,000–$49,000 income bracket does not significantly predict delinquent behavior among youth.

Another key focus of this thesis was the role of economic disadvantage on delinquency. Results demonstrate complex relationships between income, geographic areas, and delinquent behavior. For instance, within the full sample, participants in the $50,000–$59,000 income bracket were significantly less likely to engage in delinquent behavior compared to those in the lowest income group of $29,000 or less ($b = -0.30$, $p < .05$). This pattern is also observed in rural areas, where youth in this income bracket were significantly less likely to report delinquent behavior ($b = -0.88$, $p < .001$). However, in large metropolitan areas ($b = -0.10$, $p > .05$) and small metropolitan areas ($b = -0.23$, $p > .05$), this income level was not a statistically significant predictor of delinquency. These results suggest that, specifically in rural areas, youth from households earning $50,000–$59,000 may experience protective factors that reduce their likelihood of engaging in delinquent behavior.

In all four models, youth within the <$75,000 income bracket were significantly less likely to engage in delinquent behavior compared to those in the lowest income group of $29,000 or less ($b = -0.39$, $p < .001$). This pattern holds true in both small metropolitan areas ($b = -0.38$, $p < .05$) and rural areas ($b = -0.68$, $p < .001$), where youth in this income bracket were also significantly less likely to engage in delinquent behavior. However, in large metropolitan areas, the relationship was not statistically significant ($b = -0.27$, $p > .05$). These findings suggest that youth who reside in small metropolitan and rural areas and are in the <$75,000 income bracket may experience protective factors that reduce the likelihood of engaging in delinquency.

I also find other key mechanisms were significantly associated with delinquency. Across the full sample, females were significantly less likely to engage in delinquent behavior compared to males ($b = -0.38$, $p < .001$). This pattern remained consistent in both large metropolitan areas

(b = -0.38, p < .001) and rural areas (b = -0.67, p < .001), where gender was also a statistically significant predictor of lower delinquency. In contrast, within small metropolitan areas, the relationship between gender and delinquent behavior was not statistically significant (b = -0.26, p > .05), suggesting that gender may play a less prominent role in shaping delinquency outcomes in these settings.

Table 2. Regression estimates

	Model 1 *Overall Results*	Model 2 *Large Urban*	Model 3 *Small Urban*	Model 4 *Rural*
Geographic location				
Small urban	.01(.09)			
Rural	.09(.11)			
Age				
14 to 15	.32(.10) ***	.34(.14) *	.35(.17) *	.18(.22)
16 to 17	.35(.19)	.58(.34)	.46(.30)	-.33(.42)
Gender				
Female	-.38(.08) ***	-.38(.11) ***	-.26(.14)	-.67(.17) ***
Parental involvement	-.10(.01) ***	-.11(.01) ***	-.10(.02) ***	-.06(.02) *
Grade level				
9th-12th grade	-.44(.18) *	-.71(.32) *	-.49(.27)	.22(.41)
Race and ethnicity				
Black	.31(.11) **	.25(.14)	.46(.20) *	-.02(.23)
Native/American Indian	.10(.19)	.07(.29)	.24(.35)	-.08(.30)
Asian/Pacific Islander	-.60(.20) **	-.81(.25) ***	-.24(.43)	.60(.59)
Multiracial	.16(.15)	-.10(.22)	.43(.24)	.08(.29)
Hispanic	-.18(.11)	-.14(.16)	-.39(.15) *	-.00(.19)
Household income				
$30,000-$39,000	-.13(.15)	.03(.21)	-.01(.25)	-.73(.28) **
$40,000-$49,000	-.15(.14)	.01(.20)	-.28(.22)	-.32(.22)
$50,000-$59,000	-.30(.13) *	-.10(.21)	-.23(.21)	-.88(.24) ***
<$75,000	-.39(.10) ***	-.27(.15)	-38(.18) *	-.68(.21) ***
	N=9376	N=4,309	N=3,563	N=1,501

Overall, within the entire sample, geographic area did not play a statistically significant role in predicting overall delinquent behavior. While no significant differences were observed between large metro, small metro, and rural areas, variations in other factors such as income and race, became more pronounced when considering geographic location. These findings suggest

that although geographic context does not directly influence delinquency rates, it can shape how other factors contribute to juvenile delinquency.

In all four models, parental involvement plays a statistically significant role in predicting delinquent behavior. In the full sample, greater parental involvement is associated with lower levels of delinquency ($b = -0.10$, $p < .001$), and this relationship holds in large metro areas ($b = -0.11$, $p < .001$), small metro areas ($b = -0.10$, $p < .001$), and rural areas ($b = -0.06$, $p < .05$). These results suggest that as parental involvement increases, delinquent behavior decreases. Regardless of where the juvenile resides, higher levels of parental involvement appear to protect against delinquent behavior.

Across the full sample, females were significantly less likely to engage in delinquent behavior compared to males ($b = -0.38$, $p < .001$). This pattern remained consistent in both large metropolitan areas ($b = -0.38$, $p < .001$) and rural areas ($b = -0.67$, $p < .001$), where gender was also a statistically significant predictor of lower delinquency. In contrast, within small metropolitan areas, the relationship between gender and delinquent behavior was not statistically significant ($b = -0.26$, $p > .05$), suggesting that gender may play a less prominent role in shaping delinquency outcomes in these settings.

Across the full sample, youth in 9th–12th grade are less likely to engage in delinquent behaviors compared to those in 5th–8th grade ($b = -0.44$, $p < .05$). However, grade level does not appear to be a statistically significant factor in predicting delinquency in either small metropolitan areas ($b = -0.49$, $p > .05$) or rural areas ($b = 0.22$, $p > .05$). In contrast, within large metropolitan areas, grade level does play a significant role—9th–12th graders are significantly less likely to report delinquent behavior than their younger peers ($b = -0.71$, $p < .05$).

Within the full sample, Black youth were significantly more likely to engage in delinquent behavior compared to White youth ($b = 0.31$, $p < .01$). This pattern held in small

metropolitan areas, where the relationship between race and delinquency was also statistically significant ($b = 0.46$, $p < .05$). In contrast, the relationship was not statistically significant in large metropolitan areas ($b = 0.25$, $p > .05$) or rural areas ($b = -0.02$, $p > .05$). These results suggest that racial disparities in delinquent behavior are more pronounced in small urban settings.

In all four models, Native American/Indian youth were not significantly more likely to engage in delinquent behavior compared to White youth. This finding holds true across all geographic locations. In the full sample, the relationship between Native American/Indian identity and delinquency was not statistically significant ($b = 0.10$, $p > .05$). Similarly, this pattern remained non-significant in large metropolitan areas ($b = 0.07$, $p > .05$), small metropolitan areas ($b = 0.24$, $p > .05$), and rural areas ($b = -0.08$, $p > .05$). These results suggest that identifying as Native American/Indian does not significantly predict delinquent behavior, regardless of geographic context.

In the full sample, Asian/Pacific Islander youth were significantly less likely to engage in delinquent behavior compared to White youth ($b = -0.60$, $p < .01$). This association was even stronger and more statistically significant in large metropolitan areas ($b = -0.81$, $p < .001$). In contrast, the relationship was not statistically significant in small metropolitan areas ($b = -0.24$, $p > .05$) or rural areas ($b = 0.60$, $p > .05$). These findings suggest that in urban contexts, particularly in large metro areas, Asian/Pacific Islander youth are less likely to engage in delinquency than their White counterparts.

Overall, identifying as multiracial was not a statistically significant predictor of delinquent behavior when compared to White youth. In the full sample, the relationship was positive but not significant ($b = 0.16$, $p > .05$). This pattern held across all geographic contexts, including large metropolitan areas ($b = -0.10$, $p > .05$), small metropolitan areas ($b = 0.43$, $p >$

.05), and rural areas (b = 0.08, p > .05). These findings suggest that identifying as multiracial does not significantly predict higher or lower levels of delinquent behavior in any of the areas examined.

Overall, identifying as Hispanic was not a statistically significant predictor of delinquent behavior when compared to White youth in most geographic contexts. In the full sample, the relationship was negative but not statistically significant (b = -0.18, p > .05). This non-significant pattern was also observed in large metropolitan areas (b = -0.14, p > .05) and rural areas (b = -0.00, p > .05). However, in small metropolitan areas, Hispanic youth were significantly less likely to engage in delinquent behavior compared to their White counterparts (b = -0.39, p < .05). These findings suggest that geographic context may influence the relationship between Hispanic identity and delinquency, with a notable protective effect observed in small metro areas.

DISCUSSION

This study analyzed the relationship between household income and juvenile delinquency using nationally representative data from the 2023 National Survey on Drug Use and Health (NSDUH). A central focus of this study was to explore whether this relationship differed depending on geographic location, specifically large metropolitan areas, small metropolitan areas, and rural areas. Moreover, I also examined whether income played a role in these relationships – all while accounting for important factors such as parental involvement, gender, grade level, and race/ethnicity.

A key finding within this study is that geographical context did not play a statistically significant role in predicting overall delinquency. However, when the data was broken down by geographic area, some important differences appeared. For example, income played a stronger protective role in rural areas than it did in large metro and small metro areas. Continuing, Black

youth were more likely to engage in delinquent behavior in small metro areas than in large metro or rural settings. These findings demonstrate that while geographical area may not be playing as direct of a role as previously expected, the factors that contribute to delinquency can vary significantly depending on geographic context.

Income patterns across different geographical contexts was one of the most striking and consistent findings within my study. One of the most notable findings in this study was the relationship between income and delinquency in rural areas. In rural areas, youth from households earning $50,000–$74,999 were significantly less likely to engage in delinquency compared to those earning $29,000 or less. Even those in the $30,000–$39,000 range were less likely to engage in delinquent acts in rural settings. This suggests that in rural communities, even a small increase in income might provide more stability or resources that help protect youth from getting involved in delinquency.

An interesting finding within this study is that parental involvement was significantly associated with lower levels of delinquent behavior across all geographic areas. This suggests that no matter where a juvenile lives, higher levels of parental involvement appear to act as a protective factor against engaging in delinquent acts. Gender also showed a clear pattern; female youth were significantly less likely to engage in delinquent behavior compared to male youth. This was especially true in large metro areas and rural regions. As for grade level, youth in grades 9–12 were generally less likely to engage in delinquency than those in grades 5–8, although this was only statistically significant in large metropolitan areas.

There were also differences across race and ethnicity depending on the geographic context. Black youth were significantly more likely to report delinquent behavior compared to White youth, particularly in small metro areas. Asian/Pacific Islander youth were significantly less likely to engage in delinquency, especially in large metro areas. Overall, multiracial, Native

American, and Hispanic youth did not differ significantly from White youth in most areas. However, Hispanic youth in small metro areas were significantly less likely to report delinquent behavior, indicating a potential protective effect in that setting.

On the other hand, in large metropolitan areas, household income was not significantly associated with delinquency. This could mean that other urban-related stressors, like overcrowding, limited school support, or neighborhood violence, may outweigh the protective effects of modest income gains. Similarly, income was not a strong predictor in small metro areas, but other factors like race and parental involvement seemed to play a larger role. Since small metros often share characteristics of both urban and rural spaces, these findings make sense and highlight the complex nature of these communities.

Taking all these findings together, it's clear that strategies aimed at reducing juvenile delinquency need to be shaped by the context in which youth live. What works in a rural area may not work in an urban or small metro setting. That said, increasing parental involvement should be a priority in all regions, since it consistently shows a protective effect. Income-based support might be particularly impactful in rural areas, while urban and small metro interventions might benefit more from focusing on family engagement, school support, or targeted community programs.

In short, this study shows that geographic context matters, especially when it comes to structural factors like income. Tailoring intervention strategies based on place may be one of the most effective ways to reduce juvenile delinquency and promote better outcomes for youth.

LIMITATIONS

Several limitations of this study should be considered when interpreting the results. First, this study relies on cross-sectional data from the 2023 National Survey on Drug Use and Health

(NSDUH), which prevents establishing causal relationships between geographic area, socioeconomic factors, parental involvement, and juvenile delinquency. While significant associations have been identified, the directionality of these relationships cannot be conclusively determined. Longitudinal studies would be better suited to explore how these variables interact over time.

Second, delinquency was measured using self-reported data, which may introduce reporting bias. Respondents might underreport delinquent behaviors due to concerns about privacy or social desirability, resulting in underestimated delinquency rates. Additionally, self-reported income may also suffer from inaccuracies, potentially due to respondents' limited knowledge of household financial information, which could lead to measurement errors influencing the observed relationships.

Third, the use of aggregated rural-urban continuum codes limits the ability to capture nuanced variations within geographic categories. Rural areas, for example, can differ substantially in terms of social, economic, and community resources, potentially obscuring important intra-category differences. More granular geographic measures or qualitative methods might yield deeper insights into community-level processes shaping juvenile delinquency. Finally, despite including important control variables, the analysis did not account for all potential confounding factors, such as peer influence, neighborhood safety, school quality, or community programs aimed at reducing delinquency. The absence of these variables could result in omitted variable bias, influencing the precision of the findings. Despite these limitations, this study contributes valuable insights into how geographic context interacts with socioeconomic and familial factors to shape juvenile delinquency. Future research should address these limitations to enhance understanding and inform targeted, effective delinquency prevention strategies.

CONCLUSION

In conclusion, this study examined how household income and other social factors influence juvenile delinquency across different geographical contexts—large urban, small urban, and rural—using nationally representative data from the 2023 NSDUH. The findings revealed that parental involvement consistently predicted lower levels of delinquency across all settings. Other factors such as gender, grade level, race/ethnicity, and income varied in significance depending on geographic location. Most notably, income appeared to have a stronger protective effect in rural areas, where even modest financial increases were associated with reduced delinquent behavior—an effect not observed in large or small metropolitan areas. These results suggest that both income and place matter in understanding juvenile delinquency, and that prevention strategies should be tailored to the specific needs of large urban, small urban, and rural communities.

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