

POLICY BRIEF

AUGUST 2021 | No. UH 007

The Effect of Neighborhood Incarceration Rates on the Schooling Outcomes of Elementary-Aged Children

By Elizabeth Luh, University of Houston

Executive Summary

Some tough-on-crime policymakers have warned that if the justice system doesn't incarcerate people for drug crimes, there could be harmful effects on society. Some assert that high rates of incarceration could actually lead to better educational outcomes for children—a claim that is not only a concern for social scientists but a key question in public policy debate. In recent years, observational studies have documented significant negative effects of high incarceration rates on neighborhoods, including a widening of neighborhood inequality, disproportionate racial impact, and decrease in neighborhood quality through increasing crime rates (Turney, 2017; Geller et al., 2012; Andersen, 2016). A negative intergenerational impact has also been observed in the children of incarcerated people, and children residing in areas with high incarceration rates have been shown to have worse negative outcomes than children in other neighborhoods (Fryer & Katz., 2013; Apel, 2016; Andersen, 2016). However, few quantitative studies exist researching the effect of neighborhood incarceration on children's schooling outcomes.

Using a research design that addresses the problem of non-random neighborhood choice, this research is the first to test the relationship between neighborhood incarceration rates and children's outcomes in school. This study analyzes the effect of neighborhood incarceration on elementary-aged children's schooling outcomes by using the

KEY TAKEAWAYS

A decrease in neighborhood incarceration rates did not lead to any observable change in elementary student outcomes in the short run, including attendance rate, disciplinary instances, standardized reading scores, and standardized math scores.

The fears articulated by some about a reduction in drug incarceration having harmful effects on society appear to be unfounded, at least when considering students' outcomes.

More future work must be conducted to identify long-term effects of neighborhood incarceration on children's schooling outcomes.

The ‘trace case’ policy lasted from 2010 to 2012 and **downgraded the punishment for being caught with a trace amount of drugs (less than 1/100th of a gram) from a felony to a misdemeanor—which meant fewer people were incarcerated for the crime.**

“trace case” policy in Houston, Texas, as a point of reference.¹ This policy lasted from 2010 to 2012 and downgraded the punishment for being caught with a “trace” amount of drugs (less than 1/100th of a gram) from a felony to a misdemeanor—which meant fewer people were incarcerated for the crime. To identify the effects on children, this study compares the outcomes of students who attended schools in neighborhoods with high rates of drug incarceration prior to 2010 to students who attended schools in neighborhoods with low rates of drug incarceration using a difference-in-difference (DID) design. The study concludes that a decrease in neighborhood incarceration did not lead to any observable change in student outcomes, including attendance rate, disciplinary instances, standardized reading scores, and standardized math scores.

These findings suggest that many fears about the reduction in drug incarceration having harmful effects on society were unfounded, at least when considering students’ outcomes. These results find no effects: Students in neighborhoods with the greatest decrease in incarceration trended similarly when compared with students in neighborhoods with little to no change. Further research, however, needs to be conducted to understand the long-term effects of this policy. The work is highly relevant given that in 2017 the current Harris County district attorney, Kim Ogg, reinstated the trace case policy (Flynn, 2017). Over time, further long-term student outcomes can be examined us-

¹ This analysis is focused on elementary-aged children because middle and high school students have more opportunities to attend schools outside of their neighborhoods, which would confound the research design.

ing this natural experiment.

Background

Prior to the 2010 Houston elections, the district attorney of Harris County, Chuck Rosenthal, resigned after the exposure of inappropriate emails and improper behavior (Rogers, 2008). In November 2008, Pat Lykos became Harris County’s new district attorney, pledging to reduce the incarceration rate and implement “innovative” sentencing laws to include community service and restitution (Hart, 2011). She formalized this pledge by announcing the trace case policy in late 2009. The policy went into effect in January 2010.

The trace case policy was part of a larger effort by Houston’s local government to reduce the high levels of incarceration that result from moral and financial circumstances. The public and other branches of government, however, were divided on the policy. One of the concerns was that the decrease in incarceration would lead to higher rates of crime and negative spillover effects. The policy was short-lived as Lykos lost her bid for reelection in 2012 (Martin, 2013), and the new district attorney, Mike Anderson, immediately discontinued it (Rogers, 2013). It was estimated that Lykos’s policy cut felony drug incarcerations by half (DePrang, 2013).

Brief Summary of the Literature

Evidence on the effect of incarceration on children’s outcomes is historically focused on parental incarceration, and most studies find a negative effect. The length of a parent’s incarceration has been shown to have a positive relationship with the frequency of a child’s behavioral issues (Ander-

sen, 2016). But one possible issue with these studies is that single parenthood increases with paternal incarceration, which affects parental investment in children, causing an upward bias in the findings (Apel, 2016; Geller et al., 2012; Wildeman & Turney, 2014).

While research that analyzes the intergenerational effect of incarceration on children through parental incarceration is important, incarceration can also affect children through other types of relationships facilitated by geographic proximity. This is supported by research from Damm and Dustmann (2014), which found that childhood neighborhood quality has a long-term effect on a child's future propensity to commit crime, regardless of the parent's criminal behavior. Thus, disentangling the parental effect and the neighborhood effect is important in understanding the long-term implications of incarceration for children.

On one hand, some believe that increasing the rate of incarceration can improve neighborhood quality by removing those convicted of crimes from the rest of the population. On the other hand, overzealously incarcerating adults may harm the children left behind by removing caretakers and parents.

Brief Summary of the Research Design

To analyze the effect of incarceration on children's test scores and behavior in elementary school, an identification strategy was used that is similar to a standard DID model, where the exogenous shock in incarceration due to the district attorney's policy change is instrumented by time. One difficulty is that the policy affects all school neighborhoods at the same time, not allowing for a clear distinction between the treated and untreated groups. The treated group in this study is identified as neighborhoods that had high levels of drug incarcerations prior to the policy, and the untreated group is identified as neighborhoods that had low levels of drug incarceration. By exploiting the time and spatial variation of the policy, the effect of the change in incarceration on children's educational outcomes can be estimated. This study can expect a differential impact between high drug crime neighborhoods and low drug crime neighborhoods. The

Disentangling the parental effect and the neighborhood effect is important in understanding the long-term implications of incarceration for children.

study's model of interest is:

$$y_{igst} = \alpha + \delta_i + \delta_g + \delta_s + \delta_t + \sum_{t=2003}^{t=2012} (\delta_t \times Inc_s) \beta_t + X_{it} + \varepsilon_{igst}$$

where y_{igst} is one of the outcomes (test scores, attendance record, or disciplinary action) of child i in grade g in attendance area s for the school year beginning in year t , where t stands for the starting school year (e.g., the 2003-2004 school year would be $t = 2003$). δ_i are student fixed effects. This controls for time invariant student characteristics such as gender, race/ethnicity, ability, and immigration status along with other unobservable, time invariant characteristics. These individual fixed effects will also control for the student's prior test score performance (Ashenfelter & Krueger, 1994; Ashenfelter & Rouse, 1998). X_{it} is a vector of controls for time varying student characteristics, such as whether the student is on free and reduced lunch or identified as Limited English Language Proficiency. δ_g and δ_t are grade and year fixed effects. Standard errors are clustered by school attendance area, allowing for correlation of errors within each attendance area. Inc_s is a measure indicating if a school neighborhood s had high incarceration rates prior to the policy.² In this study, high incarceration is defined as a school district having more than five arrests for drugs in a year.³

2 School neighborhoods are elementary school neighborhoods defined by Houston Independent School District (HISD) in the 2009-2010 school year.

3 This study also tried alternative specifications using the normalized level and rate of drug crimes, total incarcerations two standard deviations above the mean, having more than four or six arrests for drugs in a year, and others with no change in results. Data on incarceration by school neighborhood is from the Texas Department of Criminal Justice.

FIGURE 1

Attendance Rate

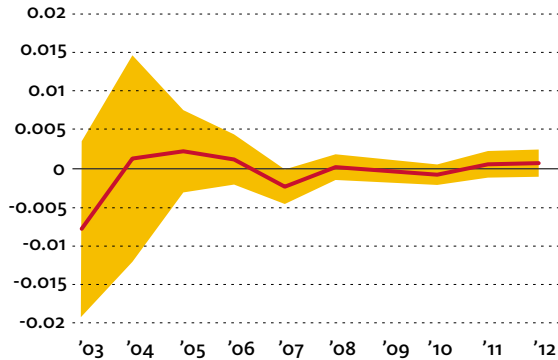
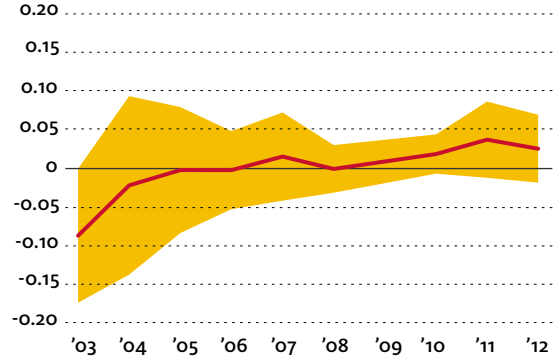


FIGURE 2

Disciplinary Instances



In the years prior to the policy, the treated versus untreated schools had similar trends in the outcomes of interest.

The set of coefficients of interest are β_t , which for $t > 2009$ shows the differential change between time t and the last period before the policy was in effect relative to the same change over time among unaffected neighborhoods. Thus, β_{2010} would give the effect of the policy on student outcomes one year after the policy, and β_{2011} would give the two-year effect of the policy on student outcomes. This estimation strategy relies on the parallel trend assumptions. Thus, as long as the untreated neighborhoods and the treated neighborhoods have parallel trends prior to the district attorney's policy becoming effective, $\beta_{t < 2009}$ will flexibly capture the effect of the policy (linear and nonlinear). Estimates of $\beta_{t < 2009}$ allow the study to test for common trends prior to treatment in the outcome variables. If $\beta_{t < 2009}$ are close to zero and insignificant, this would mean that there are common pre-trends between treated and untreated schools prior to the adoption of the policy.

Findings

In order for this analysis to have any causal interpretation, the following assumptions must be met: The first is that given that the timing of the policy

is the exogenous shock in the research design, this means that no other coincidentally timed policy change or shock can explain the results. Fortunately for this research, there are no coincidentally timed policies enacted during this time that could affect the results.⁴ The second is that in the absence of the trace case policy, the trend of the outcomes for treated schools would have followed the same trend of the untreated schools; in other words, the parallel trends assumption. Since the study cannot observe outcomes in the absence of the change in policy, it examines the pre-trends to determine whether this assumption is met.

Equation 1 formally tests this assumption. If the identifying assumption is met, then the coefficients of these interactions, $\beta_{2003} - \beta_{2008}$ for the years before the policy, should be close to zero and insignificant. Figures 1 through 4 show a line graph of these coefficients with 95% confidence

4 The study found no observable change in arrest patterns of the Houston Police Department, changes in HISD policy, or prosecution rates of nondrug crimes.

intervals. The school year 2009-2010, which is the year prior to the enactment of the trace case policy, is excluded. In the years prior to the policy, the treated versus untreated schools had similar trends in the outcomes of interest. For math scores, while there are insignificant differences in the pre-trend, there is high variability in the average difference.⁵

Given that these identifying assumptions are met, the study now examines the coefficients from β_{2010} to β_{2012} . It finds mostly null effects for the outcomes of interest. Specifically, no change in the difference in the average attendance rate and total number of disciplinary instances between treated and untreated schools is observed. The study also observes no significant changes in standardized test scores. Furthermore, the estimated coefficient is quite small, implying a null effect. This implies that the change in neighborhood incarceration rate had no observable effect on elementary-age children's outcomes.⁶

5 Both math and reading scores are standardized within grade and year with mean 0 and a standard deviation of 1.

6 As an alternative specification, the study also ran Equation 1 using student level controls rather than student fixed effects with no change in the results.

FIGURE 3

Reading Scores

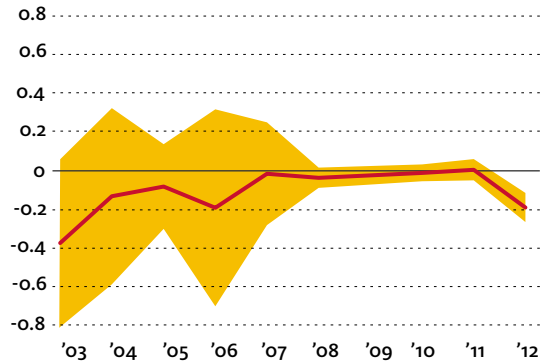
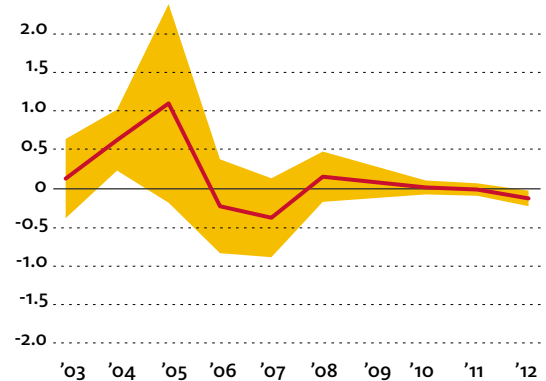


FIGURE 4

Math Scores



References

- Andersen, L. H. (2016). How children's educational outcomes and criminality vary by duration and frequency of paternal incarceration. *The Annals of the American Academy of Political and Social Science*, 665(1), 149–170.
- Apel, R. (2016). The effects of jail and prison confinement on cohabitation and marriage. *The Annals of the American Academy of Political and Social Science*, 665(1), 103–126.
- Ashenfelter, O., & Krueger, A. (1994). Estimates of the economic return to schooling from a new sample of twins. *The American Economic Review*, 84(5), 1157–1173.
- Ashenfelter, O., & Rouse, C. (1998). Income, schooling, and ability: Evidence from a new sample of identical twins. *The Quarterly Journal of Economics*, 113(1), 253–284.
- Damm, A. P., & Dustmann, C. (2014). Does growing up in a high crime neighborhood affect youth criminal behavior? *American Economic Review*, 104(6), 1806–1832.
- DePrang, E. (2013, February 15). Houston's new DA brings back 'trace' felonies, the eighties. *The Texas Observer*.
- Flynn, M. (2017, September 27). Harris County DA stops prosecuting drug cases involving minuscule amounts. *Houston Press*.
- Fryer, R. G. (2013). Achieving escape velocity: Neighborhood and school interventions to reduce persistent inequality. *American Economic Review*, 103(3), 232–237.
- Geller, A., Cooper, C. E., Garfinkel, I., Schwartz-Soicher, O., & Mincy, R. B. (2012). Beyond absenteeism: Father incarceration and child development. *Demography*, 49(1), 49–76.
- Hart, P. K. (2011, December 3). Lykos' drug policy recognizes failed system. *Houston Chronicle*.
- Martin, W. (2013, May 5). The policy and politics of drug sentencing. *Texas Monthly*.
- Rogers, B., & O'Hare, P. (2008, February 15). Rosenthal cites prescription drugs in resignation as DA. *Houston Chronicle*.
- Rogers, B. (2013, January 24). DA Anderson reverses 'trace case' policy. *Houston Chronicle*.
- Turney, K. (2017). The unequal consequences of mass incarceration for children. *Demography*, 54(1), 361–389.
- Wildeman, C., & Turney, K. (2014). Positive, negative, or null? The effects of maternal incarceration on children's behavioral problems. *Demography*, 51(3), 1041–1068.

Disclaimer: This policy brief is a result of approved research conducted using data through the University of Houston Education Research Center (UH ERC). Results, opinions, recommendations or points of view expressed in this policy brief represent the work and consensus of the authors and do not necessarily represent the official position or policies of the University of Houston, the UH ERC and/or its funding organizations.