

Do Public Schools Disadvantage Students Living in Public Housing?

WORKING PAPER #09-08

July 2009

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Abstract

In the United States, public housing developments are predominantly located in neighborhoods with low median incomes, high rates of poverty and disproportionately high concentrations of minorities. While research consistently shows that public housing developments are located in economically and socially disadvantaged neighborhoods, we know little about the characteristics of the schools serving students in these neighborhoods. In this paper, we examine the characteristics of elementary and middle schools attended by students living in public housing developments in New York City. Using the proportion of public housing students attending each elementary and middle school as our weight, we calculate the weighted average of school characteristics to describe the *typical* school attended by students living in public housing. We then compare these characteristics to those of the typical school attended by other students throughout the city in an effort to assess whether public schools systematically disadvantage students in public housing in New York City. Our results are decidedly mixed. On one hand, we find no large differences between the resources of the schools attended by students living in public housing and the schools attended by their peers living elsewhere in the city; on the other hand, we find significant differences in student characteristics and outcomes. The typical school attended by public housing students has higher poverty rates and lower average performance on standardized exams than the schools attended by others. These school differences, however, fail to fully explain the performance disparities: we find that students living in public housing score lower, on average, on standardized tests than their schoolmates living elsewhere -- even though they attend the same school. These results point to a need for more nuanced analyses of policies and practices in schools, as well as the outside-of-school factors that shape educational success, to identify and address the needs of students in public housing.

Introduction

Public housing developments are typically located in neighborhoods with low median incomes, high rates of poverty and disproportionate concentrations of minorities (Newman and Schnare 1997). These developments were often intentionally built in disadvantaged neighborhoods, especially before the U.S. Department of Housing and Urban Development adopted regulations designed to stop such siting practices in the 1970s (Hirsch 1983; Rohe and Freeman 2001). While a growing literature describes the demographic characteristics of the neighborhoods surrounding subsidized housing developments, few if any studies have systematically examined the characteristics of local schools serving students living in public housing. This absence is noteworthy, as education is a critical determinant of labor market outcomes and good schools are in turn critical to academic success (e.g., see Card and Kreuger 1992; Card 2001).

In this paper, we ask whether the public education system in New York City systematically – intentionally or unintentionally – disadvantages students living public housing developments by providing lower quality education institutions in zones with high concentrations of public housing. Recent studies of public housing and education have had a different focus, relying on individual-level variables to determine whether residency in public housing causes children to perform better or worse in school (Currie and Yelowitz 2000; Newman and Harkness 2000). These studies pay little attention to (and rarely have access to data on) the characteristics of schools attended. Other studies have focused on the educational outcomes of students moving out of public housing, rather than those living in it, and again pay relatively little attention to school

characteristics (e.g., see Kling, Liebman and Katz 2007; Sanbonmatsu et al. 2006; Leventhal and Brooks-Gunn 2004).

In our analysis, we begin by examining whether - and to what extent - students living in public housing perform worse on standardized exams relative to their peers living elsewhere in the city. We find that they do. In an attempt to explain this performance gap, we quickly turn our attention towards the quality of schools serving public housing and non-public housing students. We compile a unique data set to compare the characteristics of the typical schools attended by public housing students with the characteristics of the typical schools attended by other students throughout the city. Our comparisons yield decidedly mixed results. On one hand, the peer group in the typical school attended by public housing students is poorer and performs substantially worse on standardized exams than the peer groups at other schools throughout the city. On the other hand, we find no large differences between the resources and teacher characteristics at the schools attended by students living in public housing and the schools attended by their peers living elsewhere in the city.

Moreover, while students living in public housing score lower on standardized tests than other students, these differences in school characteristics fail to fully explain these performance disparities. In fact, we find that students living in public housing score lower on standardized tests, on average, than their schoolmates who attend the very same school but live outside of public housing. These results point to a need for further analysis of community and home environments that may shape educational success. They also highlight the need for more nuanced analyses of the policies and practices

within schools in order to learn how schools might better serve students living in public housing.

The paper begins with a brief review of the literature describing the characteristics of the neighborhoods where public housing is located. Drawing on existing evidence, we note that public housing developments are disproportionately located in largely minority and high-poverty urban neighborhoods. In the next section, we explain our data and methods, and then we present our results. We conclude with a discussion of the policy and planning implications of our research.

Siting of Public Housing

With the passage of the Housing Act of 1937, the federal government committed to providing subsidies to local public housing authorities to create and manage assisted housing for low-income families. Many local housing authorities constructed large-scale, densely populated housing developments, which soon became a mainstay of the urban landscape. The Housing Act of 1949 later declared as a national goal “a decent home and suitable living environment” for all Americans (e.g., see von Hoffman 2000). Yet, observers have questioned whether public housing itself provides such a ‘suitable living environment.’ Research consistently finds that public housing developments are disproportionately located in neighborhoods with high rates of urban poverty and racial concentration. In an analysis of project-based assisted housing, Newman and Schnare (1997) report that over half of public housing units nationwide are in neighborhoods with over 50 percent minority residents, and over one-third of public housing units are located

in neighborhoods with poverty rates greater than 40 percent (Newman and Schnare 1997: 712-714).

While the Department of Housing and Urban Development (HUD) moved to end the placement of public housing in disadvantaged neighborhoods in the 1970s, public housing residents appear to continue to live in more racially and economically isolated neighborhoods than other poor or minority households (Carter, Schill and Wachter 1998; Newman and Schnare 1997). This is due, in part, to the siting of public housing developments in higher poverty neighborhoods and, in part to the racial homogeneity of public housing developments themselves, which further contributes to the racial isolation experienced by their residents (Massey and Kanaiaupuni 1993). Utilizing HUD data on fifteen cities, Bickford and Massey (1991) confirm high levels of segregation in the public housing developments, although subsequent analysis finds that segregation within public housing developments has declined slightly between 1977 and 1990 (Goering, Kamely and Richardson 1997).

Especially following the publication of Wilson's *The Truly Disadvantaged* (1987), researchers have sought to measure whether living in disadvantaged neighborhoods leads to worse health outcomes, lower levels of educational attainment, and inferior labor market outcomes. Research consistently finds that children growing up in more disadvantaged neighborhoods fare worse across a variety of social and economic outcomes (Ellen and Turner 1997). There is some question about the extent to which neighborhood disadvantage actually causes children to do worse, but research from the Moving to Opportunity (MTO) Program suggests that at least some outcomes are shaped by neighborhood poverty level, especially for female youth. Recent evidence from MTO

reports that female adolescents moving from high poverty neighborhoods experience improved mental health, physical health and educational outcomes, although their male peers do not (Kling, Liebman and Katz 2007). Similarly, moving from a high poverty neighborhood leads to reductions in criminal behavior and delinquency among female youth (Kling, Ludwig and Katz 2005).

One mechanism through which neighborhood poverty and racial isolation may contribute to worse outcomes and fewer opportunities is through access to citywide resources and public services. Studies indicate that high-poverty, segregated neighborhoods have less access to public services, like hospitals (Halfon and Newacheck 1993; Chow et al. 2003), and local institutions, like supermarkets (Zenk et al. 2005). Until now, while the allocation of resources across districts has been well studied, there has been surprisingly little research comparing the allocation of educational resources across neighborhoods within districts. The research that exists on intra-district resource allocation has found that disparities do exist (Rubenstein et al. 2007; Schwartz and Stiefel 2004; Clotfelter, Ladd and Vigdor, 2005; Betts, Rueben and Dannenberg 2000). For example, Rubenstein et al. (2007) find that schools with higher percentages of poor students receive more money and teachers per student, but the teachers at these high poverty schools receive lower pay and have less experience. These disparities are not the direct result of policy decisions, but rather the indirect result of teacher assignment policies. Districts like New York have union contracts with uniform teacher salary schedules, so teachers with more experience choose to work in schools with fewer "harder to educate" students (Lankford et al. 2002).¹ "Harder to educate" students

¹ To ameliorate these effects, the New York City Department of Education (DOE) implemented a new budget allocation method called Fair Student Funding (FSF) during the 2007-08 academic year, committing

include poor students, and may include – as we investigate in this study – poor students who live in public housing.

Our contribution builds on this literature to move beyond decrying the poor quality of schools in low-income neighborhoods. In the research that follows, we address whether the schools serving students in public housing developments in New York City systematically disadvantage their pupils by providing fewer resources, lower quality teachers, or underperforming peers. Further, we look within schools, examining the extent to which student performance in a school varies by public housing residency.

Data and Methods

Data

The project relies on data from the New York City Department of Education (DOE) and the New York City Housing Authority (NYCHA). The Housing Authority data contains information on the characteristics and location of each public housing development in New York City. In total, NYCHA manages 343 separate public housing developments, including scatter-site developments, senior housing, and traditional high-rise public housing. Given our interest in school-aged children, we limit our universe of

\$5.3 of a citywide \$8.7 billion in operating funds to the program. Under FSF – or weighted student funding, as it is more commonly known -- school budgets are based on the number and characteristics of students enrolled in each school. Schools receive a flat per-student allocation that is adjusted (“weighted”) to reflect student needs. For example, students receiving special education or bilingual education services receive greater weight (higher per-capita allocations) than students participating in a regular education program. Students from low-income families or other at-risk categories are also given additional weight. Such systems of student weighting have long been used in allocating state aid to school districts (Duncombe and Yinger 2005), but only recently has the approach been applied at the school district level. In New York City, the 2007-08 formula provides each school with a \$200,000 foundation and a \$3,788 per capita allocation with additional weights for English Language Learners, special education, middle and high school students, and students testing below state standards.

public housing developments to non-senior housing in the NYCHA portfolio.² As a result, our dataset for public housing in New York City includes 286 public housing developments, containing 4,243 buildings and 169,105 units of public housing.

The data from the Department of Education (DOE) enable us to examine both individual student records and school characteristics across the city. We utilize student-level records from the 2002-03 academic year provided by the Department of Education. During the 2002-03 academic year, 736,274 students were enrolled in public elementary and middle schools in New York City. Each student record includes individual test scores, attendance rates, free-lunch eligibility status, basic demographic characteristics (e.g., race, gender, nativity status), and school attended. The individual records are matched to public housing developments from the New York City Housing Authority using information on student addresses. In total, 111,865 students enrolled in the New York City public school system during the 2002-2003 academic year are matched to addresses of New York City Housing Authority developments.³ We focus on the 84,526 of these students who attend elementary or middle schools.

To identify school-level characteristics, we utilize the publicly available Annual School Reports and the School-Based Expenditure Reports from the New York City

²Specifically, we excluded 10,114 units in seventy-eight buildings coded as buildings for senior citizens. If we included these senior-assisted housing units, our universe would rise to nearly 180,000 units in over 4,300 buildings, accounting for all of NYCHA's 343 developments.

³In matching students, we first compared student addresses with building addresses provided by the Housing Authority. This match identified 99,192 students living in public housing – a figure considerably below the 130,000 school-aged children that NYCHA estimates live in public housing. Of course, some of the NYCHA students may attend private schools and would *not* be included in the DOE's student records, although we expect this is only a small number. A detailed examination of the data suggests that this undercounting may be largely attributable to data entry mistakes. For instance, different spacing between words, misspelled street names, and abbreviation of street identifiers seem to be leading to this undercount. As a result, we performed a second match using GIS to identify the distance between each student's address and the closest NYCHA development. We then visually inspected the student records identified as being within 150 feet of a public housing development to determine if their addresses are, in fact, NYCHA developments. This match yielded an additional 13,722 public school students living in public housing.

Department of Education. The school reports supply information on average student performance on city and state standardized exams; student demographics; teacher characteristics; and school- and grade-level enrollment and attendance. The expenditure reports source information on expenditure and funding sources. By combining the Annual School Reports and the School-Based Expenditure Reports, we create a school-level dataset with information on school characteristics and finance expenditures. Our combined dataset includes information on the 825 elementary schools and 219 middle schools in New York City.

In Table 1, we provide descriptive statistics on school characteristics used throughout our analysis. Among all public elementary and middle schools in New York City, the mean percentage of students living in public housing is 14.1 percent. We refer to the students living in public housing as ‘NYCHA students.’ In the average school, slightly more than 15 percent of students are white, nearly 35 percent are black and nearly 38 percent are Hispanic. Table 1 also reports that the mean rate of free lunch eligibility in New York City’s elementary and middle schools is approximately 74 percent.⁴ Significantly, the range in demographic characteristics across schools is considerable. Some schools have few black students, while others are overwhelmingly black. Others have few white students, while others are overwhelmingly white.

Table 1 includes several indicators of average academic performance and resource levels across schools. The measure of Limited English Proficiency is based on students’

⁴ As is typical, the administrative data New York City Department of Education does *not* include information on students’ socio-economic characteristics (e.g., parental income). We therefore use free lunch eligibility as our proxy for poverty throughout the analysis. Students in New York City’s public schools are eligible for free lunch if their families receive Temporary Assistance to Needy Families (TANF) or food stamps, if they are in foster care or are homeless, or if their family income is less than or equal to 130% of the federal poverty line.

scores on the Language Assessment Battery, a set of tests used to assess English proficiency and eligibility for specialized instructional services, and allows us to identify students with varying English skills. The table similarly reports on the mean passing rate on standardized reading and math exams in New York City elementary and middle schools. For mathematics, we rely on the New York State Math Assessment (or the California Achievement Test), and for reading, we use results from the New York State English Language Assessment or the CTB/McGraw Hill Test of Basic Skills. As Table 1 reports, the mean passing rate is slightly below 50 percent for reading exams, while the mean passing rate is slightly above 50 percent for the mathematics assessment.

Table 1 also reports on education expenditures. The overall per-pupil expenditure includes full-time special education *and* general education students; the general education expenditure, on the other hand, includes *only* general education students and *part-time* special education students. We also report the mean teacher salary. The average salary is slightly more than \$50,000, although Table 1 reveals substantial variation in the mean salary range across public schools in the city.

Weighted Averages of School Characteristics

In order to calculate the characteristics of the *typical* elementary or middle school attended by students living in public housing (NYCHA students), we calculate a weighted average of school characteristics using the percentage of all NYCHA students in the city who attend each elementary and middle school as our weight. Specifically, to calculate the weight assigned to an elementary or middle school, we take the number of NYCHA students at that school and divide by the total number of elementary and middle

school students in the City identified as living in NYCHA public housing (which, as noted above, is 84,526). By way of example, imagine that school X has 845 students that live in public housing, and school Y has just 100 students that live in public housing. School X would receive a weight of 0.01 ($845/84,526$) while school Y would receive a weight of 0.0012 ($100/84,526$) in our calculations of a weighted average of school characteristics. A school with no NYCHA students would receive a weight of zero.⁵

We perform the same weighting process for students who are not identified as living in public housing (non-NYCHA students), enabling us to compare the characteristics of the typical school attended by NYCHA students with the typical school attended by non-NYCHA students.⁶

Results

Do Students Living in Public Housing Perform Differently?

Our results show that on average, students living in public housing in New York City perform substantially worse on standardized math and reading exams than their peers living elsewhere in the city. Studying academic performance for the 2002-2003 school year, we find that the average NYCHA 5th grade student scores 0.31 standard deviations below the citywide mean on math tests and 0.33 standard deviations below the citywide mean on reading tests. The typical non-NYCHA 5th grade student, on the other

⁵ There are a total of 105 elementary and middle schools with no public housing students. Of these, 96 are elementary schools (11.6 percent of the total) and 9 are middle schools (4.1 percent of the total).

⁶ We conduct parallel analysis for poor students in public schools, limiting our universe to poor students living in NYCHA and non-NYCHA housing. Throughout the analysis, we use free-lunch eligibility as our indicator of poverty status. To arrive at these estimates of school characteristics, we conduct an analogous weighting process to describe the characteristics of the typical school attended by poor NYCHA students and poor non-NYCHA students. Of 84,526 students identified as living in NYCHA developments, we find that more than 85 percent of them (72,401) are free-lunch eligible; amongst the 651,748 non-NYCHA students, fewer than 70% (453,974) are free-lunch eligible. Results for poor students are available from the authors upon request.

hand, scores about 0.06 standard deviations above the citywide average on both reading and math exams.⁷ In Figure 1, we show average standardized math and reading scores for 5th grade students by public housing residence.

There are numerous factors that might explain the achievement gap between NYCHA and non-NYCHA students. The experience of living in public housing itself could contribute to the disparity if NYCHA students have difficulty finding academic role models in their community, or are heavily surrounded by underperforming peers. Alternatively, unobserved differences in individual- or family-level characteristics between the students who live in public housing and those who do not could be driving differential performance. A third possibility – and the one under examination in the current paper – is that students living in public housing attend worse schools. In the remainder of the paper, we explore whether, as compared to other students, the average public housing student attends schools with fewer resources, lower-performing peers, and/or teachers with less teaching experience.

Do the Typical Schools Attended by NYCHA Students Differ from the Typical Schools Attended by non-NYCHA Students?

Students living in public housing developments are served by a relatively small number of schools in the New York City public school system. Examining the concentration of school-aged children living in public housing developments in the city's elementary and middle schools, we find that half of all students living in public housing are concentrated in just 10 percent of the city's elementary and middle schools, or 83

⁷ We report only results for 5th grade students, but the results for students in grades 3 – 8 are available from the authors upon request.

schools. This concentration results from the combination of locally zoned schools and densely concentrated public housing in New York City. In practice, it means that a fraction of the city's public schools educate the majority of students residing in public housing in New York City. In Figure 2, we present a graph of the cumulative distribution of public housing students in the city's elementary and middle schools.

Although our evidence demonstrates that students living in public housing are not evenly distributed throughout the city's elementary and middle schools, we know little about the differences in school quality between schools attended by students living in public housing and those living elsewhere in the city. Using our weighted average of school characteristics, Table 2a reports basic differences in the demographic characteristics of the *typical* school attended by students living in public housing and those of the *typical* school attended by students living elsewhere in the city.⁸ The typical school attended by students living in public housing has a higher percentage of black and Hispanic students, and a lower proportion of white students. Over 85 percent of students in the typical school attended by public housing students are eligible for free lunch, whereas slightly more than 70 percent of students in the typical school attended by other students are free lunch eligible. If the academic achievement of students is affected by the poverty rate of their school, then the typical NYCHA student could be disadvantaged by their attendance at schools with significantly higher concentrations of free lunch eligible students.

In Table 2b, we report differences in the average academic performance of students in a school on standardized reading and math exams, as well as variation in

⁸ When we limit our analysis to *just* free lunch eligible students – our indicator of poverty – we find analogous patterns to those reported in Tables 2a, 2b and 2c.

attendance between typical schools. We observe very little variation in attendance rates, with attendance hovering around 92 percent in both sets of schools, but our results indicate substantial differences in academic performance. The percentage of students passing standardized exams is lower at the typical schools attended by NYCHA students than at the typical school attended by non-NYCHA students. In the former, about 38 percent of students pass reading test and about 41 percent pass math tests. In the typical school attended by non-NYCHA students, the pass rates for reading and math tests are 50 percent and 51 percent, respectively. This variation suggests that, alongside demographic differences, the academic performance of a student's peer group varies substantially at the typical schools attended by NYCHA and non-NYCHA students.

While differences in demographic characteristics and academic performance are large, Table 2c shows much smaller differences in teacher characteristics and expenditures per pupil. Teachers in schools attended by NYCHA students have slightly less education and experience than the teachers in schools attended by non-NYCHA students, but these disparities are slight. In the former schools, approximately 73 percent of teachers hold advanced degrees, and only 49 percent have more than five years of teaching experience. In the typical school attended by students who do not live in public housing, 77 percent of teachers hold advanced degrees, and 53 percent have more than five years teaching experience. There is a higher percentage of new teachers in the typical school attended by NYCHA students, with nearly 40 percent of teachers having less than two years teaching experience at that particular school, while only slightly more than 36 percent of teachers had less than two years in-school experience at the typical school attended by non-NYCHA students.

Although their teachers are slightly less experienced, it does not appear that schools attended by NYCHA students receive less funding. Indeed, the typical school attended by NYCHA students enjoys slightly higher per-pupil expenditures than other schools. Per-pupil expenditures at the typical school attended by NYCHA students are approximately 12 percent greater than expenditures at other schools, and per-pupil expenditure for general education students is approximately 9 percent greater. Similarly, the schools attended by public housing students have fewer students in the classroom. Their student-to-teacher ratio is 13:1, while the comparable rate in schools attended by non-NYCHA students is 14:1. This may be the result of compensatory funding programs – such as federal Title I – targeted at schools with a high percentage of poor students.

In summary then, our school-level analysis offers mixed results. On the one hand, the availability of resources and the quality of teachers vary little between the typical schools attended by NYCHA and non-NYCHA students. Teachers in the former set of schools have slightly less education and experience, but enjoy slightly higher per pupil expenditures and lower pupil-to-teacher ratios, suggesting more interaction between teachers and their students in these schools. On the other hand, the peer group of students attending the typical NYCHA school are more likely to be poor and less likely to pass standardized reading and math exams than comparable students at the typical school attended by non-NYCHA students. To the extent that peers matter, public housing students are clearly disadvantaged.

Do Differences in School Characteristics Explain Differences in Performance?

In the previous section, we highlight differences in average test scores and demographics between the typical schools serving NYCHA and non-NYCHA students. In this section, we explore whether differences in the characteristics of schools attended help to explain disparities between the performance of students living in public housing and those who do not. Although our analysis captures important characteristics of local schools, it is possible that other unobserved (or unmeasured) school characteristics also contribute to the differentials in academic performance shown in Figure 1. For example, the typical school attended by students living in public housing might have higher levels of in-school violence, or poorer classroom facilities.

Thus, to test whether any school characteristics matter – whether observed or unobserved - we include a dummy variable for a student’s school in individual-level models of academic performance - that is, we use school fixed effects. Although this specification will not identify which school characteristics matter to individual student performance, it allows us to measure the overall impact of differences in schools. Figure 3 shows these results for 5th graders. In the top bar of Figures 3, we show the uncontrolled gap in test score performance on 5th grade reading and math exams for non-poor students by public housing residency. In the next bar, we control for race, sex and nativity status. The magnitude of the achievement gap shrinks, but still persists after accounting for these basic student characteristics. Adding school fixed effects in the subsequent bar, we find that the gap in performance further attenuates, but does not disappear entirely.

In the bottom set of bars, we conduct a parallel analysis for the universe of poor students, revealing similar results. Thus, Figure 3 illustrates that the gap in academic

performance between 5th grade students living in public housing developments and those living elsewhere in the city persists even after controlling for individual attributes (race, sex and nativity status) and even within schools.

The findings in Figure 3 suggest that neither observed individual attributes nor schools attended can alone explain variation in academic performance. After all, this analysis shows that, on average, NYCHA students perform worse on standardized tests than their classmates attending the very same schools. There are several possible explanations for this within school disparity. First, schools (or teachers) might treat NYCHA and non-NYCHA students differently, and school dummies do *not* capture this varied impact of school characteristics. Alternatively, students living in public housing may *respond* differently to a common set of school characteristics. For example, particular school attributes (e.g., incidence of violence, pupil-to-teacher ratio) may impact the academic performance of NYCHA students more than others. A third possibility is that differential within-school performance is due to unmeasured differences in family background. Finally, neighborhood environments outside of school may differ and shape performance, too. Although the current analysis is not equipped to test these alternatives, our finding of persistent within-school variation suggests that policy-makers must look beyond the leveling of school resources to address the achievement gap.

Conclusion

Even as a broad consensus has emerged in the United States that the public housing model is flawed, and subsidized housing policies increasingly focus on subsidies for privately-owned rental housing and tenant-based vouchers, over a million households

remain in public housing. Policy makers should not ignore these residents. While other researchers have shown that the neighborhoods surrounding public housing are disadvantaged, our unique contribution is a rich description of the schools attended by public housing students. This detailed analysis is important because the lives – and life chances – of children living in public housing are powerfully shaped by the education they receive.

Our comparison of the typical school attended by students living in public housing with the typical school attended by other students yields mixed results. We find little difference between the teacher characteristics and per-pupil expenditures in schools attended by public housing students and other schools, but we report notable differences in peer group performance. Schools serving public housing students, that is, have nearly equal monetary and teacher resources as other schools, but contain students who perform worse on standardized exams.

In short, our research suggests that simply equalizing resources across schools will be insufficient to close the achievement gap between students living in public housing and their peers. The achievement gap may run deeper, driven perhaps by unobserved individual- or family-level characteristics associated with households living in public housing, including differences in wealth or parents' employment status. Differences in neighborhood environment may also contribute to performance disparities. NYCHA students, for instance, may have difficulty finding academic role models in their community. Building on our findings, researchers and policymakers should continue to examine the community environments experienced by children and families living in

public housing to identify factors outside of local schools that help to shape the observed performance gap.

Researchers should look to school policies too, however. It may be that additional compensatory spending is required - that is, schools serving students living in public housing may need more resources and/or different services than otherwise similar schools. Clearly, more research is needed to understand the quality of public services received by public housing residents and the ways in which the public sector can improve the quality of life for this population.

Works Cited

- Betts, Julian R., Kim S. Rueben and Anne Danenberg. 2000. Equal Resources, Equal Outcomes? The Distribution of School Resources and Student Achievement in California. The Public Policy Institute of California.
- Bickford, Adam and Douglas S. Massey. 1991. Segregation in the Second Ghetto: Racial and Ethnic Segregation in American Public Housing, 1977. *Social Forces* 69(4): 1011-1036.
- Card, David and Alan B. Krueger. 1992. Does School Quality Matter? Returns to Education and the Characteristics of Public Schools in the United States. *The Journal of Political Economy* 100(1): 1-40.
- Card, David. 2001. Estimating the Return to Schooling: Progress on Some Persistent Econometric Problems. *Econometrica* 69(5): 1127-1160.
- Carter, William H., Michael H. Schill and Susan M. Wachter. 1998. Polarisation, Public Housing and Racial Minorities in US Cities. *Urban Studies* 35(10): 1889-1911.
- Clotfelter, Charles T., Helen F. Ladd and Jacob Vigdor. 2005. Who teaches whom? Race and the distribution of novice teachers. *Economics of Education Review* 24(4): 377-392.
- Chow, Julian Chun-Chung, Kim Jaffee and Lonnie Snowden. 2003. Racial/Ethnic Disparities in the Use of Mental Health Services in Poverty Areas. *American Journal of Public Health* 93(5): 792-797.
- Currie, Janet and Aaron Yelowitz. 2000. Are public housing projects good for kids? *Journal of Public Economics* 75: 99-124.
- Duncombe, William and John Yinger. 2005. How much more does a disadvantaged student cost? *Economics of Education Review* 24(5): 513-532.
- Ellen, Ingrid Gould and Margery Austin Turner. 1997. Does Neighborhood Matter? Assessing Recent Evidence. *Housing Policy Debate* 8(4): 833-866.
- Goering, John, Ali Kamely and Todd Richardson. 1997. Recent Research on Racial Segregation and Poverty Concentration in Public Housing in the United States. *Urban Affairs Review* 32(5): 723-745.
- Halfon, Neal and Paul W. Newacheck. 1993. Childhood Asthma and Poverty: Differential Impacts and Utilization of Health Services. *Pediatrics* 91(1): 56-61.
- Hirsch, Arnold R. 1983. Making the Second Ghetto: Race and Housing in Chicago, 1940-1960. New York: Cambridge University Press.
- Kling, Jeffrey R., Jens Ludwig and Lawrence F. Katz. 2005. Neighborhood Effects on Crime for Female and Male Youth: Evidence from a Randomized Housing Voucher Experiment. *The Quarterly Journal of Economics* 120(1): 87-130.
- Kling, Jeffrey R., Jeffrey B. Liebman and Lawrence F. Katz. 2007. Experimental Analysis of Neighborhood Effects. *Econometrica* 75(1): 83-119.
- Lankford, Hamilton, Susanna Loeb and James Wyckoff. 2002. Teacher Sorting and the Plight of Urban Schools: A Descriptive Analysis. *Educational Evaluation and Policy Analysis* 24(1): 37-62.
- Leventhal, Tama and Jeanne Brooks-Gunn. 2004. A Randomized Study of Neighborhood Effects on Low-Income Children's Educational Outcomes. *Developmental Psychology* 40(4): 488-507.
- Massey, Douglas S. and Shawn M. Kanaiaupuni. 1993. Public Housing and the

- Concentration of Poverty. *Social Science Quarterly* 74(1):
- Newman, Sandra and Joseph Harkness. 2000. Assisted Housing and the Educational Attainment of Children. *Journal of Housing Economics* 9: 40-63.
- Newman, Sandra J. and Ann B. Schnare. 1997. "... And a Suitable Living Environment": The Failure of Housing Programs to Deliver on Neighborhood Quality. *Housing Policy Debate* 8(4): 703-741.
- Rohe, William M. and Lance Freeman. 2001. Assisted Housing and Residential Segregation: The Role of Race and Ethnicity in the Siting of Assisted Housing Developments. *Journal of the American Planning Association* 67(3): 279-292.
- Rubenstein, Ross, Amy Ellen Schwartz, Leanna Stiefel and Hella Bel Hadj Amor. 2007. From Districts to Schools: The distribution of resources across schools in big city school districts. *Economics of Education Review* 26(5): 532-545.
- Sanbonmatsu, Lisa, Jeffrey R. Kling, Gregory J. Duncan, and Jeanne Brooks-Gunn. 2006. Neighborhoods and Academic Achievement: Results from the Moving to Opportunity Experiment. *Journal of Human Resources* 41(4): 649-691.
- Schwartz, Amy Ellen and Leanna Stiefel. 2004. Immigrants and the Distribution of Resources within an Urban School District. *Education Evaluation and Policy Analysis* 26(4): 303-327.
- von Hoffman, Alexander. 2000. A Study in Contradictions: The Origins and Legacy of the Housing Act of 1949. *Housing Policy Debate* 11(2): 299-326.
- Wilson, William Julius. 1987. *The Truly Disadvantaged: the inner city, the underclass, and public policy*. Chicago: University of Chicago Press.
- Zenk, Shannon N., Amy J. Schulz, Barbara A. Israel, Sherman A. James, Shuming Bao and Mark L. Wilson. 2005. Neighborhood Racial Composition, Neighborhood Poverty and the Spatial Accessibility of Supermarkets in Metropolitan Detroit. *American Journal of Public Health* 95(4): 660-667.

Table 1: Descriptive Statistics of the City's Elementary and Middle Schools

	<u>Mean</u>	<u>Min</u>	<u>Max</u>
School Size*	816.22	55	2824
% NYCHA	14.12	0	100
% White	15.39	0	92.60
% Black	34.57	0	96.80
% Hispanic	38.19	2.20	98.30
% Asian	11.85	0	91.10
% Free Lunch Eligible	74.03	7.40	100
% Limited English Proficiency	11.11	0	52.50
Attendance Rate	92.41	84.20	97.90
% passing Reading	48.70	6.80	97.60
% passing Math	50.70	3.30	98.40
Expenditure per pupil (all pupil)	\$11,944.83	\$6,790.97	\$28,325.77
Expenditure per pupil (general education pupil)	\$10,574.03	\$6,790.97	\$24,478.97
Teacher Salaries	\$51,021.97	\$34,263.19	\$72,662.31
Pupil:Teacher ratio	13.71	5.75	25.96
% of Teachers with Masters Degree	76.26	30.00	100
% of Teachers with 5+ years experience	51.47	0	88.90
% of Teachers with < 2 years experience	37.89	0	100

Descriptive statistics are limited to cases without missing data (n=875)

* School Size is measured by the number of students registered as of October 31st, 2002

Figure 1: Mean Standardized Score on Reading and Math Exams, by Public Housing Residency

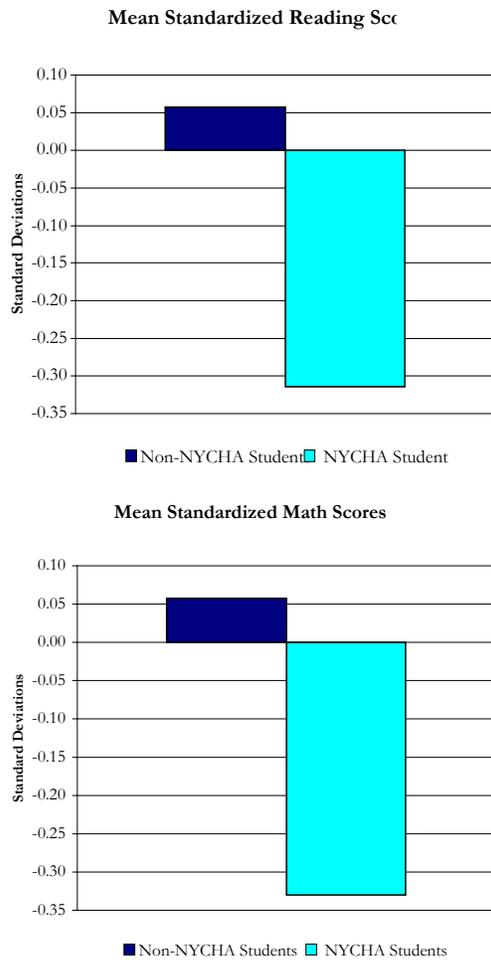


Figure 1 represents the deviation from the mean score on standardized mathematics and reading exams for 5th grade students in the New York City public school system during the 2002-2003 academic year. Deviations are expressed in z-scores. Non-NYCHA students scored 0.06 standard deviations *above* the mean on both reading and math scores. NYCHA students scored 0.31 standard deviations *below* mean on mathematics exams and 0.33 standard deviations *below* the mean on reading exams.

Figure 2: Cumulative Distribution of Public Housing Students in New York City Elementary and Middle Schools, 2002-2003

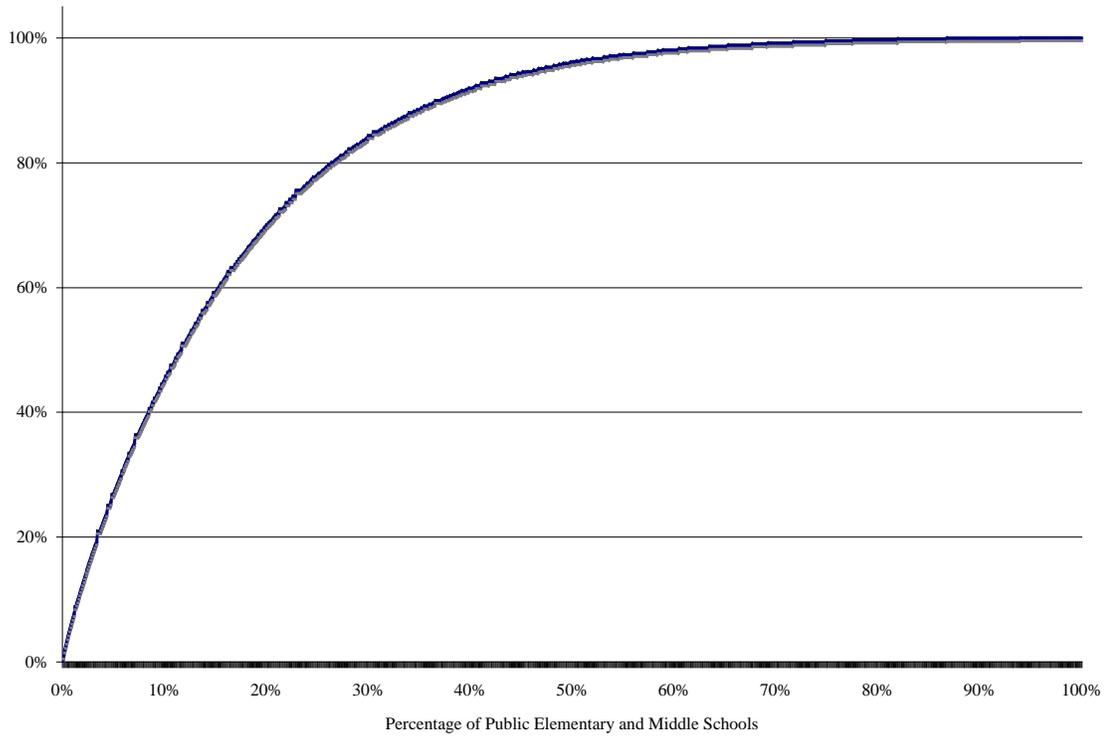


Table 2a: Demographic Characteristics of Elementary and Middle Schools Attended by the Average Student, by NYCHA Residence, 2002-03

	<i>Non- NYCHA</i>	<i>NYCHA</i>
School size	1,019	789
% students living in NYCHA	7.90	37.70
% white	16.41	5.91
% black	30.86	45.12
% Hispanic	38.67	43.18
% Asian	14.05	5.79
% eligible for free lunch	72.27	85.28
% limited English proficient	12.46	9.79

Figures are average school characteristics weighted by the relevant population.

Table 2b: Performance Indicators of Elementary and Middle Schools Attended by the Average Student, by Residence, 2002-03

	<i>Non- NYCHA</i>	<i>NYCHA</i>
Attendance rate	92.70	91.21
% passing Reading	49.97	38.48
% passing Math	51.51	40.94

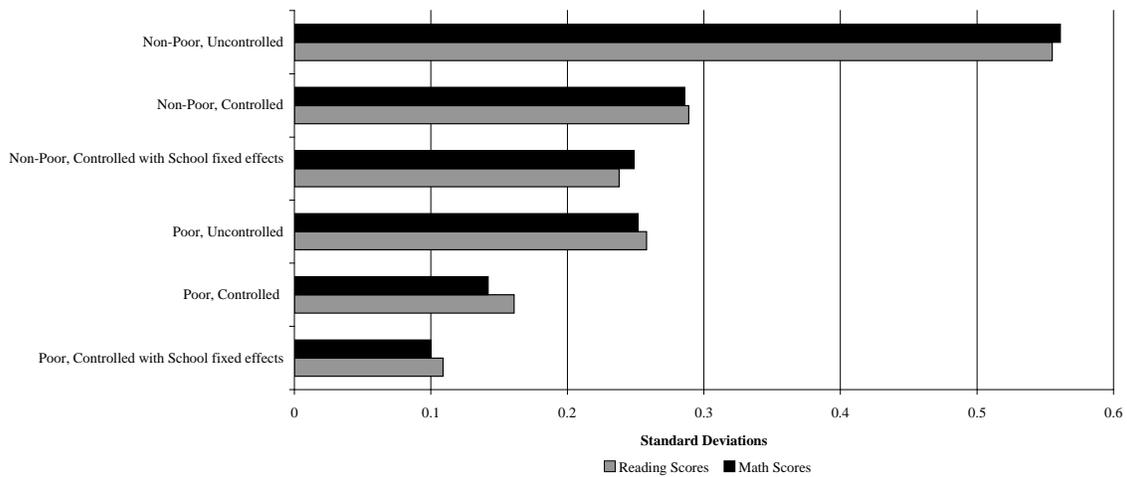
Figures are average school characteristics weighted by the relevant population.

Table 2c: Teacher and Expenditure Characteristics of Elementary and Middle Schools Attended by the Average Student, by Residence, 2002-03

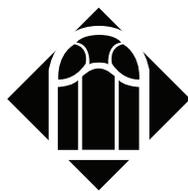
	<i>Non- NYCHA</i>	<i>NYCHA</i>
Expenditures per pupil		
All pupils	11,235	12,629
General Education pupils	9,982	10,883
Teacher salary	51,298	49,334
Pupil-teacher ratio	14.33	12.77
Teacher characteristics		
% with Master's or higher	76.70	72.90
% with 5 or more years experience	52.59	48.88
% with less than 2 years in this school	36.20	39.58

Figures are average school characteristics weighted by the relevant population.

Figure 3: Regression-Adjusted Mean Differences in Standardized Math and Reading Scores



In Figure 3, each bar represents the difference in standardized test scores between non-NYCHA and NYCHA 5th graders during the 2002-2003 academic year. The top three series represent non-poor students (i.e., students *not* eligible for free lunch) and the bottom three series represent poor students (i.e., free lunch eligible students). The bar labeled ‘uncontrolled’ shows the raw differences in scores between non-NYCHA and NYCHA students. The bars labeled ‘controlled’ show the regression-adjusted mean difference in academic performance when we control for the gender, race and nativity status of each public school student. Notably, the magnitude of the difference attenuates when we control for individual-level characteristics, but does *not* disappear entirely. Lastly, the series labeled ‘controlled with school fixed effects’ controls for difference in individual and school characteristics by including a series of dummy variables to control for the schools attended by each student, as well as the aforementioned individual characteristics.



I N S T I T U T E F O R
Education and Social Policy

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