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### Diversity Still Matters: School-Level Racial Diversity, Poverty and Performance of New York City Public Schools

Byunghwa Kim

*The Graduate Center, City University of New York*

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DIVERSITY STILL MATTERS :  
SCHOOL-LEVEL RACIAL DIVERSITY, POVERTY AND  
PERFORMANCE OF NEW YORK CITY PUBLIC SCHOOLS

by

Byunghwa Kim

A master's thesis submitted to the Graduate Faculty in Liberal Studies in partial fulfillment of  
the requirements for the degree of Master of Arts, The City University of New York

2023

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Diversity Still Matters: School-level Racial Diversity, Poverty and  
Performance of New York City Public Schools

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Byunghwa Kim

This manuscript has been read and accepted for the Graduate Faculty in Liberal  
Studies in satisfaction of the thesis requirement for the degree of Master of Arts.

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Date

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Dr. David T. Humphries  
Thesis Advisor

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Date

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Dr. David T. Humphries  
Acting Executive Officer

## ABSTRACT

### Diversity Still Matters: School-level Racial Diversity, Poverty and Performance of New York City Public Schools

by

Byunghwa Kim

Advisor: Dr. David T. Humphries

During the last few decades, schools in New York City (NYC) have experienced great demographic changes due to the massive influx of various ethnic and racial groups. Although the race and ethnicity makeup of NYC is 42% white, 29% Hispanic or Latino, 24% Black or African American and 14% Asian, 74% of Black and Hispanic students attend a school with less than 10 percent white students, while 34% of white students attend a school with more than half white peers. Also, more than 60% of Hispanic and Black students are attending schools where more than 75% of peer students experience poverty compared to their white counterparts around 20%. Such severe school segregation and economic gap could be due to various social problems, including strengthening economic stratification of students, low academic achievement of students of color, a loss of opportunity to receive better education and racial conflict. This project aims to identify the effects of racial segregation of NYC education and concentrated poverty in the schools on student academic performance. Calculating an R score in order to display the results of the project statistically, the conclusion of this project displays that there is a strong correlation between poverty and school level performance, and the percent of white students in school has the second strongest impact on school-level performance. Finally, the high racial representative school – Black

students and Hispanic students accounting for more than 90% – shows the worst performance compared to the schools with low and medium level racial representations. This project also takes the form of an TISTORY – a digital platform that blends text with a variety of visual content – in order to provide a comprehensive, multi-media account of the effects of racial segregation of NYC education and concentrated poverty on student academic performance.

## ACKNOWLEDGMENTS

First of all, I would like to thank my wife, SangMi, for her support and encouragement whenever I felt like giving up. Without her support, I couldn't have finished this project. Also, special thanks to my parents for their advice and guidance during the time I studied. You are the best parents in my life!

I really appreciate all the MALS program staffs and especially Katherine Koutsis. Although I have never met her in person because of the pandemic, she was so kind to respond to all the questions I had to finish this program.

I would like to thank my advisor David Humphries for working with me and allowing me to submit this capstone. I will never forget his caring heart, knowledge, and guidance for this project.

Without his advice for this project, I couldn't have done this program. Thanks professor!

Most importantly, I dedicate this capstone project to my God, Jesus with my loving heart.

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## DIGITAL MANIFEST

I. Capstone Whitepaper (PDF)

II. Project Website

TISTORY can be accessed at the following URL address:

<https://byunghwakim.tistory.com/1>

III. Archived version of the project website (WARC)

## A NOTE ON TECHNICAL SPECIFICATIONS

The technical specifications for this project are simple. The project was created using TISTORY, which is a South Korean blog-publishing service that allows private or multi-user blogs. It was first started by “Tatter and Company,” a blogging platform developing company that developed the software ‘Tattertools,’ with Daum Communications, the major web portal in South Korea in 2006. TISTORY has several templates to choose from; this project uses the Letter template. The interface is extremely user friendly and includes built-in instructions to guide users as they create their stories.

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## I. Introduction

New York City (NYC) has one of the most segregated school districts in the country (Chen, 2014). Given the heterogeneity and diversity of NYC, such severe school segregation could be due to various social problems. During the last few decades, schools in NYC have experienced great demographic changes due to the massive influx of various ethnic and racial groups. In NYC public schools, notably, Hispanic students became the major racial group while the proportion of Asian students almost caught up with white students (New York City Council, 2020). In terms of segregation policy, NYC withdrew from its previous endeavor for racial integration since the late 1990s (Kucsera & Orfield, 2014). In this regard, NYC has the most segregated public schools that failed to reflect the pluralistic city's hyper-diversity in terms of racial makeup. Moreover, racial segregation is closely interconnected with poverty. Since a public school often reflects neighborhoods' socioeconomic status (SES) and racial composition, the impact of school segregation on individual students is hard to disentangle from the issue of neighborhood poverty.

With this backdrop, this study aims to identify the effects of racial segregation of NYC education and concentrated poverty in the schools on student academic performance. There have been many other studies that try to investigate a relationship between poverty and student academic performance, but not many with racial diversity related to student academic performance. Also, there have been relatively few studies that specifically explore NYC student academic performance according to their races. What my research adds to previous studies are to confirm whether previous studies' results related to student academic performance affected by poverty and racial diversity are facts or not statistically and to know if those facts apply to the specific region, NYC and also in the particular time, 2017-2018. This study's sample dataset

encompasses about 1,200 NYC public elementary and middle schools across 32 Community School Districts (CSD). Data for this study was collected by the NYC Department of Education (DOE). NYC open data provides 2017-2018 quality data report for elementary, middle, and K-8 schools online.

### ***Social Context and Educational Inequality***

According to *Brown v. Board of Education of Topeka*, which was decided by the U.S. Supreme Court in 1954, racial segregation in public schools is unconstitutional, regardless of their quality. As a result of the decision, the Court partially overruled *Plessy v. Ferguson*, which held that segregation laws did not violate the U.S. Constitution if the facilities for all races were of equal quality, a doctrine that became known as “separate but equal” (*C. Vann, 1964*). It was a major victory for the civil rights movement and a model for many future impact litigation cases as the *Brown* decision paved the way for integration.

During the decade after the *Brown* decision, school desegregation movements were raised across the nation. Among them, the Chicago Public Schools boycott was a mass boycott and demonstration against the segregationist policies of Superintendent Benjamin Willison on October 22, 1963 (*Washington Post, 2013*). More than 200,000 students did not attend their schools, and at least 20,000 Chicagoans marched on the streets of Chicago (*Dickson, 2022*). After this massive demonstration against public school policies, the next biggest boycott took place in NYC. The NYC school boycott on February 3, 1964, referred to as Freedom Day, was one of the largest boycotts and demonstrations against segregation in the NYC public school system to show their support for racial integration in the city's public schools. *Sanchez (2020)* mentions that nearly half of all students and many teachers involved in the boycott demanding

school integration and changes of the lamentable conditions at their public schools. With this spirit of resistance against segregation in public schools, the Civil Rights Act was enacted on July 2, 1964. It prohibited racial segregation in schools and directed the Commissioner of Education to survey inequalities in educational opportunities for major racial, ethnic, and religious groups in the United States (Pfautz, 1967).

### ***Educational Elements Affecting Student Achievement***

There are some educational elements that may affect students' academic performances. Based on the assumption that the level of school resources would have the potentially deleterious impact on the quality of communal services such as public education, the group of educational researchers looked into the relationship between the level of school resources invested and the achievement of students. Paco Martorell et al. (2016) claims that “little is known about the nature of school facility investments, whether it actually changes the physical condition of public schools, and the subsequent causal impacts on student achievement” (p.2). As they studied the achievement effects of nearly 1400 capital campaigns initiated and financed by local school districts, comparing districts where school capital bonds were either narrowly approved or defeated by district voters, they found only little evidence that these school capital campaigns improve student achievement. Moreover, event-study analysis focused on the students actually affected by large campus renovations also generates very precise zero estimates of achievement effects. Otherwise, Rona Bušljeta (2013) emphasizes that diverse teaching and learning resources can change the results of students' academic performances, claiming that “the purpose and role of teaching and learning resources do not only consist of making the educational process more attractive and interesting, but also of encouraging active learning, the development of different

skills and the adoption of desirable values and attitudes in students” (p.55). Piopiunik et al. (2014) points out that teacher quality can create differences in students’ academic performances. As they implemented their research through new international data from the Program for the International Assessment of Adult Competencies (PIAAC) survey of adult skills, they found a one-standard-deviation increase in subject-specific teacher skills raises student performance by 7 percent of a standard deviation in math and 6 percent in reading.

Jan-Eric Gustafsson (2003) asserts that “the earliest attempts to understand effects of school resources on educational achievement were inspired by research on so-called industry production functions, which have been used in economic research for a long time” (p.79). Inputs such as labor and capital are transformed into products and services by technology. Profit maximization requires efficient use of inputs, and estimating functions that relate input factors to output can be helpful in determining the optimal use of resources. Teachers, facilities, and support personnel are also used in schools to produce output, such as student achievement. Therefore, statistical methods, such as multiple regression analysis, that determine the relationship between input factors and outputs should be able to estimate educational production functions.

Coleman et al. (1966)’s ground-breaking research entitled “Study of Equality and Education Opportunity” (EEO), or the “Coleman report,” is widely recognized for revealing the determining factors on student’s achievement and shapes the sociology of education (Borman & Dowling, 2010). Their research indicates that schools with more white students perform better than ones with more Black students. This finding provides important insights into the relationship between school-level diversity and student performance, claiming that school-level diversity is not the most significant factor on students’ performance. Coleman and his colleagues



find that a student's family background, coupled with various socioeconomic mix in the classroom, appear to be the biggest determinants of how well a child would learn (Gamoran et al. 2000). Also, the EEO study reveals that the peer network outside of school reinforces students' attitudes toward education which emphasize the importance of cultural and family background rather than the school as a social organization. Also, Jencks et al. (1990) poses that the school-level diversity and resources have no significant effect on student's educational performance. They claim that children from affluent families do better than children from poor families no matter where they live. Such a rationale has negatively impacted the policy regarding school desegregation due to the unintended outcomes such as low relationship between school-related-factors (e.g., budget, racial diversity) and student performance vis-à-vis individual attribution of student.

However, not every scholar has accepted these conclusions about the seeming lack of benefits of diversity. Among them, there is a group of researchers arguing that “long-term benefits exist for students of all races in terms of collegiate attendance, interracial relationships, business networking, attitudes toward other races, and overall social development” (Clayton 2011, p.672). Well et al. (2016) argues that students in socioeconomically and racially diverse schools — regardless of a student's own economic status — have stronger academic outcomes than students in schools with concentrated poverty. On the 2011 National Assessment of Educational Progress (NAEP) given to fourth graders in math, for example, low-income students attending more affluent schools scored roughly two years of learning ahead of low-income students in high-poverty schools. Also, Palardy (2013) argues that students in integrated schools are more likely to enroll in college. Page (2008) claims that integrated classrooms encourage critical thinking, problem solving, and creativity because students learning cooperatively

alongside those whose perspectives and backgrounds are different from their own can acquire problem-solving skills. The Century Foundation (2016) points out that numerous middle-class families now want to send their children to diverse schools for some reasons. Because a majority of public school K–12 students in the United States are now students of color for the first time since the founding of the republic, middle-class parents realize that their children are being raised in a very different society, demographically, than previous generations. They think their children can learn better in increasingly diverse society—a skill that employers value—if they study in diverse schools. The Century Foundation (2016) says that ninety-six percent of major employers emphasizes that employees should be comfortable working with colleagues, customers, and/or clients from diverse cultural backgrounds.

Meanwhile, because many white students are currently attending racially segregated public schools in NYC, these claims are widely accepted among the Black and Hispanic communities rather than the white community. Today, 83% of Black students and 73% of Latinx students in the NYC public school system attend a school that is 90% nonwhite, while 34% of white students attend a school that is over half-white (Lefty, 2021).

### ***School Segregation, Desegregation, and Integration***

Other scholars have studied the changing racial and ethnic landscape of public schools. Since the historical court decision *Brown v. Board of Education of Topeka, Kansas* of 1954 laid the foundation of racial integration in schools, U.S. school communities have been experiencing dramatic increases of ethnic and racial diversity. According to Orfield and Frankenberg (2014), between 1989 and 2011, the public school enrollment percent of white students in the United States significantly dropped by -16.3%, followed by black students

(-0.8%) while the percent of Asian students (2.3%) and especially Latino students (12.8%) increased by larger margins. The overall racial composition of the U.S. public school in 2011 was 51% white, the biggest group, followed by Latinos (24%), Black (16%) and Asian (5%) which reflects the transformed racial composition of US society due to the 1965 Immigration Act (US Department of Education, 2016).

Some scholars studied the effect of segregation on educational attainment by delving into the multiple dimensions of racial context of the school. According to Frankenberg (2007), evolving legal decisions on the case of racial segregation after the 1954 Brown v. Board of Education decision suggest that the definition of segregation and desegregation (or integration), and the trend of resegregation have been changing based on the overall racial composition of society. For example, “in 1968 Green v School Board of New Kent County decision, the Court defined six separate indicators of desegregation such as facilities, staff, faculty, extracurricular activities, transportation, and student assignments” (Frankenberg 2007, p.538). However, in the later decision, the remedy for segregation became to remove “racial identifiability” from the schools. As schools were getting more diverse and multiracial, in order not to exceed ten percent of one racial group among total school enrollment, the desegregation remedy had to take inclusion of more than two racial groups into consideration. Also, the researcher is concerned about the strong likelihood of “resegregation” of the South, implying “the racial composition of the schools differs substantially from the surrounding districts” (p.582).

### ***Current Trend on School Segregation and Integration Efforts in NYC***

Eliza Shapiro (2019) claims that while NYC has changed significantly since 50 years ago, one aspect has barely changed: Its public schools remain highly segregated. According to

her claim, only seven black students were offered admission to Stuyvesant High School's freshman class in 2019, which demonstrates that NYC schools remain segregated. As a former mayor De Blasio ruled out using busing to achieve integration in 2018, attempts to integrate middle-class neighborhoods have sparked fierce opposition from mostly white parents, who object to their children attending schools even a few city blocks from where they live. In 2016, a plan to send some Upper West Side children to a lower-performing, mostly black and Hispanic students, low-income school about ten minutes' walk away was met with anger (Shapiro, 2019). David R. Jones (2018) argues that he sees “a clear dynamic of opportunity hoarding, whereby groups of (largely white) parents with resources utilize existing mechanisms like school choice and specialized programming to create segregated environments for their children” (para. 2). He points out that for their own purposes, white parents can turn public schools into private schools. Particularly, gated communities, which are forms of residential community or housing estate containing strictly controlled entrances for pedestrians, bicycles, and automobiles, and often characterized by a closed perimeter of walls and fences, are bad enough to create school segregation. He claims there are a range of benefits students who attend schools near gated communities enjoy, including better resources, more active parents, and other benefits that are hard to quantify, but are evident in their test scores.

### ***Poverty and Student Achievement***

Why then does school segregation matter in educational attainment? To answer this question, we need to look into the poverty dimension entrenched in the school segregation. Orfield and Lee (2004) aptly summarize the multi-dimensional aspects of segregation: “segregation by race is systemically linked to other forms of segregation, including segregation

by socioeconomic status, by residential location, and increasingly by language” (p.14). This statement articulates how school segregation not only reflects but also reinforces the racial stratification in society. Similarly, Rumberger and Palardy (2005)’s research on the relationship between Social Economic Status (SES) of a school and student achievement reveals that school level SES has more significant impact than racial diversity on performance. As students are required by their governments to attend neighborhood schools rather than far but desirable schools by busing, the chance of a minority student from a poor neighborhood to go to school with unfavorable conditions in terms of investment, resources, peer culture, teacher expectation, etc., is much higher than middle class white students. As Clayton (2011) aptly summarizes, “minority students face the triple challenges characterized by individual poverty, school-level poverty, and school-level segregation” (p.676). In terms of the effect of SES on student performance, it is not easy to separate the effect of school-level poverty from other conditions such as classroom experience, teacher’s quality and expectation. As Borman and Dowling (2010) describe, school-level effects are “mediated by processes occurring at multiple levels of school system organization” (p.1204). To identify schooling effects apart from various mediating factors, many scholars use the nested layers approach, which means a way of analysis of diverse variables' educational impact at the regional, federal and national level (Bidwell and Kasarda 1980).

## II. Background of Research

This research is predicated on the assumption that NYC school-level poverty and racial segregation affect student performance. NYC Department of Education (DOE) aims that “all students benefit from diverse and inclusive schools and classrooms (... in line with) our vision of

Equity and Excellence for all NYC students” (NYC DOE, 2017, p. 2). Such a statement is specified with three aspects related to school quality: racial diversity, economic stratification (or poverty), and inclusiveness in relation to English language learners (ELL) and student with disabilities. According to the statistics of the NYC DOE, about 30% of NYC schools are Racially Representative (RR) schools. That means that the percent of combined Hispanic and Black children maintains between 50% and 90%, given the ratio (70%) of entire students from these two racial groups citywide (Hill et al., 2020). They set the goal to increase the number of students in a RR schools by 50,000 by 2024 (NYC DOE, 2017, p. 4).

In terms of school-level poverty, NYC developed the Economic Need Index (ENI) for the schools to determine the level of economic stratifications. The index is calculated based on several factors, including the percentage of families in the census tract with school-age-children which fall under poverty line, live in temporary housing, and are eligible for free lunch, which are estimated by the American Community Survey (ACS) 5-Year Estimate. NYC defines the economically stratified school if its ENI is more than 10% higher than the citywide average. According to the statistics, about 70% of NYC schools are economically stratified (NYC DOE, 2017, p. 4).

According to the Kucsera and Orfield’s comprehensive analysis on the school segregation in New York State, the level of segregation of New York in 2009 was the most dismal in the country (2014). Especially, in 2010, 19 out of 32 Community School Districts (CSDs) in NYC had less than 10% white students, which falls under the category of segregated school. Given such a backdrop, NYC has been endeavoring to integrate public schools through various measures. For instance, NYC aims to increase the number of Racial Representative schools across the 32 CSDs toward the direction of reflecting racial makeup of the

neighborhoods. Also, former mayor Bill de Blasio called on the city to evaluate public schools not only based on students' academic achievement, but also on the racial diversity rate from 2019 (Shapiro, 2019). The criteria have changed to how schools match district averages in race, class, and student ability.

However, NYC still falls behind in terms of desegregation and integration of public schools. NYC test results showed wide academic gaps for Hispanic and Black students: the math exam pass rate of white students and Asian students was 67% and 74% respectively, while only 28% for Black students in 2019 (Shapiro, 2019). Disparities still remained between white and Asian American students compared with their Black and Latino peers in 2022. About 70.5% of Asian American and 67% of white students passed reading exams, compared with 35.8% of students who are Black and 36.8% who are Latino (Amin, 2022). For math, 68.3% of Asian American students and 58.5% of white students passed compared with 20.6% of Black children and 23.3% of Latino students (Amin, 2022). According to the DOE of NYC, students across all demographic subgroups experienced a drop in math proficiency in 2022, when compared to 2019. The largest drop in math proficiency was among Hispanic students, who scored 9.9% points lower in 2022 (23.3%) than in 2019 (33.2%) (Knudson, 2022). Also, the ratio of students attending a school with high poverty-concentration shows big discrepancies between white and minority students. According to the NYC council statistics, 74% of Black and Hispanic students attend a school with less than 10% white students, while 34% of white students attend a school with more than half white peers. And more than 60% of Hispanic and Black students are attending schools where more than 75% of peer students experience poverty compared to their white counterpart around 20% (New York City Council, 2020). Such racial and poverty dimensions of NYC public schools represent that school segregation is strongly interconnected

with the issues of race and students' academic performance.

### III. Methods

#### *Research Design*

This study uses various methods such as correlational analysis, regression and t-test to determine the relationships and predictability of racial composition and poverty on students' performance in NYC public schools. Quantitative methods include the reporting and analysis of descriptive statistics. The multiple regression analysis used school-level performance as the dependent variable and racial diversity and economic need index, which is an indicator of school-level poverty, as the independent variables. A t-test was employed to measure the effect of segregation and racial representation on performance respectively.

#### *Sample*

Data for this study was collected by the NYC DOE. NYC open data provides 2017-2018 quality data report for elementary, middle, and K-8 schools online. Private schools and public high schools are not included in the dataset. With this dataset, I obtained statistical information of racial composition and economic need index of entire schools in 32 NYC school districts. In addition to that, I used the 2017 "school quality review" dataset released by NYC DOE, which includes school-level performance, the dependent variable. In total there were 1,213 schools in the cleaned dataset. I created a separate district level dataset to compare variables across 32 NYC community school districts.



## *Variables*

School-level performance is the dependent variable. Annual school performance is measured by combining multiple student achievement outcomes such as math and English scores in state exams, although there was no available information on the exact equation or calculation of the performance indicator. A higher performance index (close to 1) indicates higher achievement of the student at the school-level.

The analysis includes racial compositions and economic status as independent variables. I created three different measurements for racial composition to see the various aspect of racial diversity in NYC schools. First, each school's "Racial Diversity" was calculated based on the number of students from different racial groups using the Simpson's Diversity Index.<sup>1</sup> As a continuous variable, a high score (close to 1) indicates high racial diversity, while a low score (close to 0) indicates low racial diversity. Second, 'Segregation Level' was calculated based on the criteria of the NYC DOE segregation definition. A school is considered highly segregated if it includes less than 10 percent of white students regardless of other racial composition. I coded the "Segregation" variable as binary (highly segregated vs. moderately segregated) one. Third, based on the definition of the "Racial Representation Index," a categorical variable reflecting racial makeup of the NYC, a school with percent of Hispanic and Black students spans between 50 and 90 was coded as "medium" RR, while less than 50 was coded as "low," and more than "90" was coded as high.

Economic Need Index (ENI), a continuous variable ranging between 0 and 1, was used as it was provided in the school quality review dataset. The index is calculated based on the percent of students in families eligible for Health Reimbursement Arrangement (HRA) assistance and

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<sup>1</sup> The formula of Simpson's diversity index is as following:  $1 - \sum_{i=1}^k \frac{n_i(n_i-1)}{n(n-1)}$

below the federal poverty level, combined with the percent of students in temporary housing during the past four years. Thus, the ENI may reflect the level of poverty of students at the school level. Higher ENI (close to 1) indicates a higher level of poverty concentration in the school. In addition, I included the ENI as a dependent variable in the T-test and ANOVA to look at the relationship between schools with different racial compositions and poverty.

#### IV. Result

##### *Descriptive Statistics*

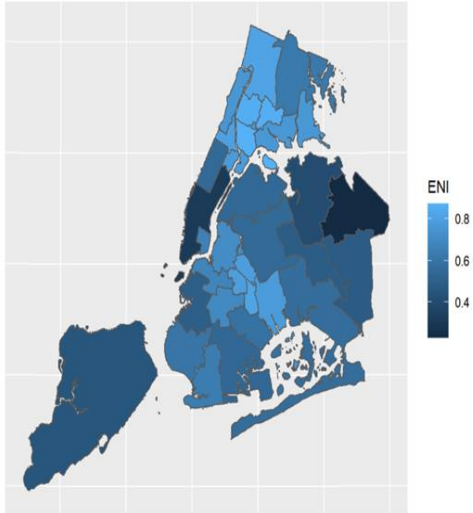
##### *Racial and Economic Composition of NYC Public Schools and Community School Districts*

To examine the racial diversity and economic status of NYC schools, I first combined 32 school districts into a single dataset. Figure 1 shows the representation of diversity, the ENI, and performance by each district level. The map of the ENI and the map of performance show a somewhat inversely related color distribution. It means that a district with a lower average of ENI is more likely to perform better. District 2 (mid-lower Manhattan), District 15 (Brooklyn), District 20 (Brooklyn), District 25 (Flushing), and District 26 (Bayside) are the top-five districts above 0.5 performance index.

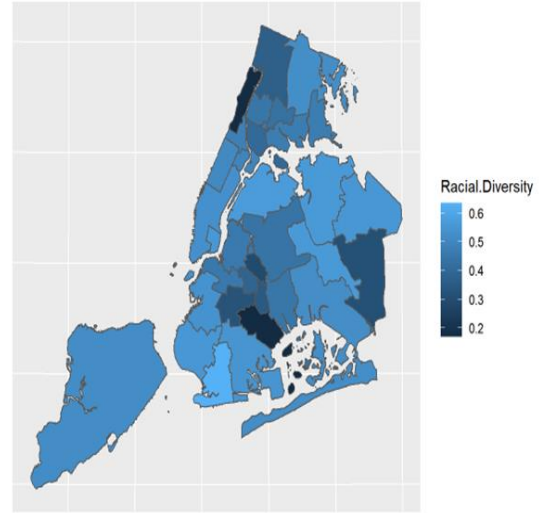
Figure 1. Variables Characteristics across 32 NYC School Districts

### Independent Variables

NYC School District-ENI



NYC School District-Racial Diversity



### Dependent Variable

NYC School District-Performance

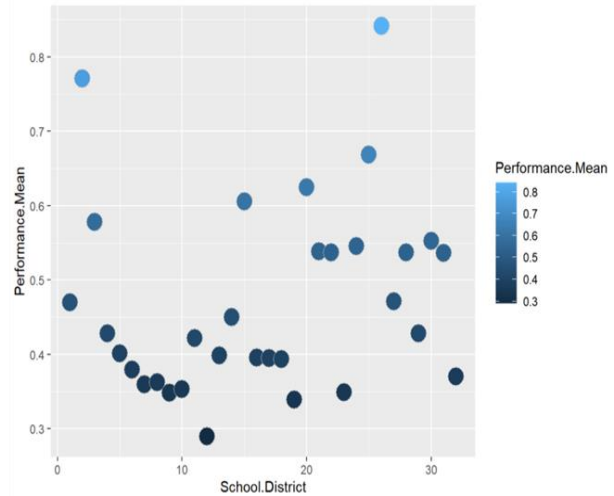
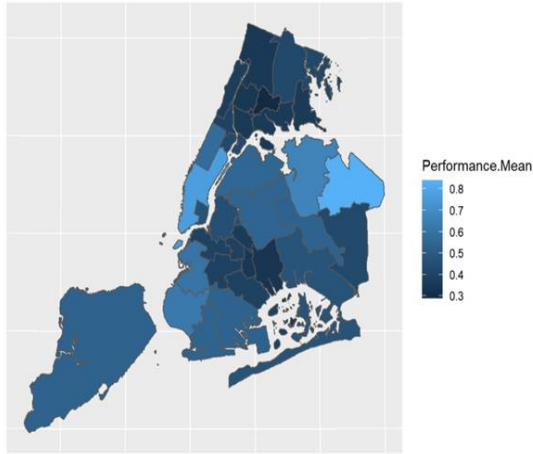


Table 1 represents the overall racial composition of NYC schools and the means of each variable, respectively. In terms of overall racial composition, NYC schools have similar proportions among white (12%) and Asian (12%) students, while Hispanic students account for the plurality (41%), followed by Black students (31%).

Table 1. Descriptive Statistics of Variables (racial compositions/performance/racial diversity/ENI means, 2017-2018)

<b>Variable</b>	<b>% of NYC Students</b>	<b>Variable</b>	<b>Mean</b>
White	13.34	Performance Mean	0.47
Black	31.10	Racial Diversity Mean	0.46
Hispanic	41.27	Econ Need Index(ENI) Mean	0.64
Asian	12.00		

Table 2 describes segregation and racial representation levels: about 68% of NYC schools are classified as “intensely segregated,” according to the criteria of less than 10% white student inclusion. In terms of racial representation, about 24% NYC schools have the Black and Hispanic student ratio somewhere between 50-90% of total enrollment. More than two-thirds of NYC schools have a highly segregated racial composition with more than 90% of Hispanic and Black students combined, given that the entire proportion of two racial groups were above 72%.

Table 2. Percent of NYC Schools by Level of Segregation and Racial Representation (2017-2018)

<b>Variable</b>	<b>Percent of NYC Schools</b>
Intensely Segregated	68.67
Not Intensely Segregated	31.33
Low Racial Representation (RR)	25.89
Medium RR	24.73
High RR	49.38

## Correlations

The correlation analyses results indicate that there is a significant relationship between the racial compositions, poverty and performance at the school level. Table 3 indicates that the proportion of each racial group has different, but all statistically significant relationships, with student achievement. First, the percent of whites and Asians have a positive correlation with performance while the Black students and Hispanic students have a negative relationship.

Table3. Correlations between % Race and Performance

<b>Variables</b>	<b>Correlation</b>	<b>Sig</b>
Performance ~ %White	0.61	***
Performance ~ %Black	-0.38	***
Performance ~ %Hispanic	-0.42	•
Performance ~ %Aisan	0.48	•

In Table 4 and 5, we can find the positive correlation between the racial diversity and performance (correlation = 0.25), whereas the ENI is negatively correlated with the performance score (correlation = -0.78).

Table 4. Correlation: Performance by Racial Diversity

<b>Variables</b>	<b>Correlation</b>	<b>Sig</b>
Performance ~ Racial Diversity	0.25	***

Table 5. Correlation: Performance by Poverty

Variables	Correlation	Sig
Performance ~ ENI	-0.78	***

This is further highlighted in Figure 2 and Figure 3 by the flat linear fit line associated with the variation in performance related to the variation in the racial diversity index and the ENI respectively. The results suggest that the schools with higher racial diversity (i.e., more evenly distributed racial compositions) and with lower poverty concentration demonstrate higher student achievement in general. Among the variables, the strongest correlations were the ENI (-0.78) and the percent of white (0.61). It seems that the effects of two variables (poverty and racial diversity) on performance are somewhat entangled and hard to separate since the highly diverse school also demonstrated the higher ENI score.

Figure 2. Correlations between Racial Diversity, Economic Need Index (ENI), and Performance

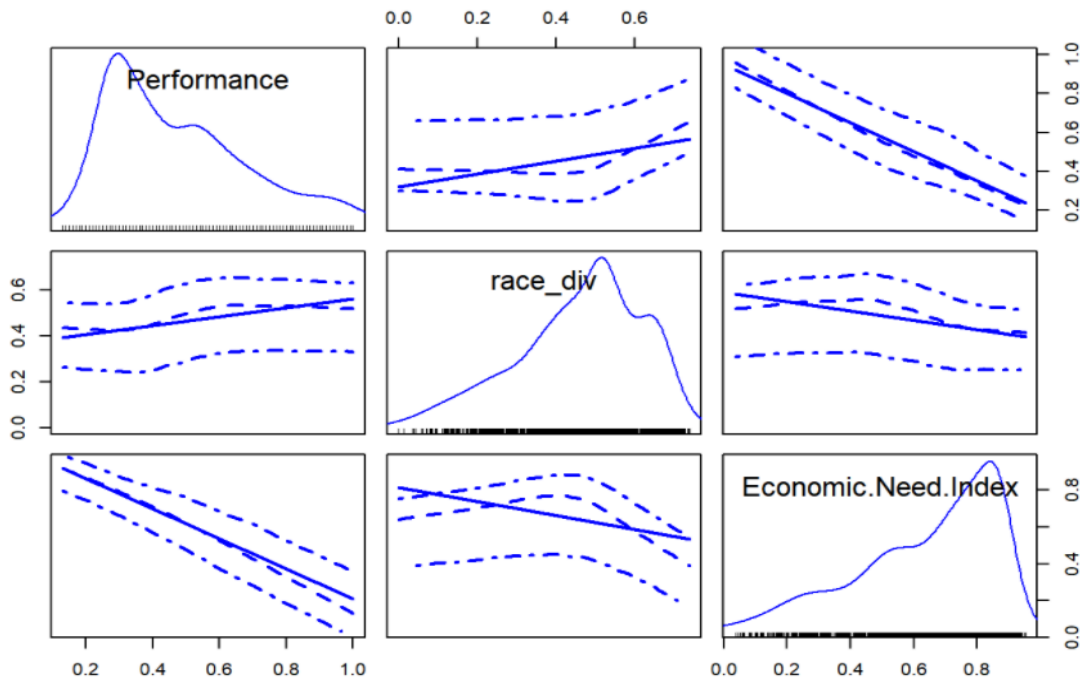


Figure 3. Correlation: Performance by Racial Diversity

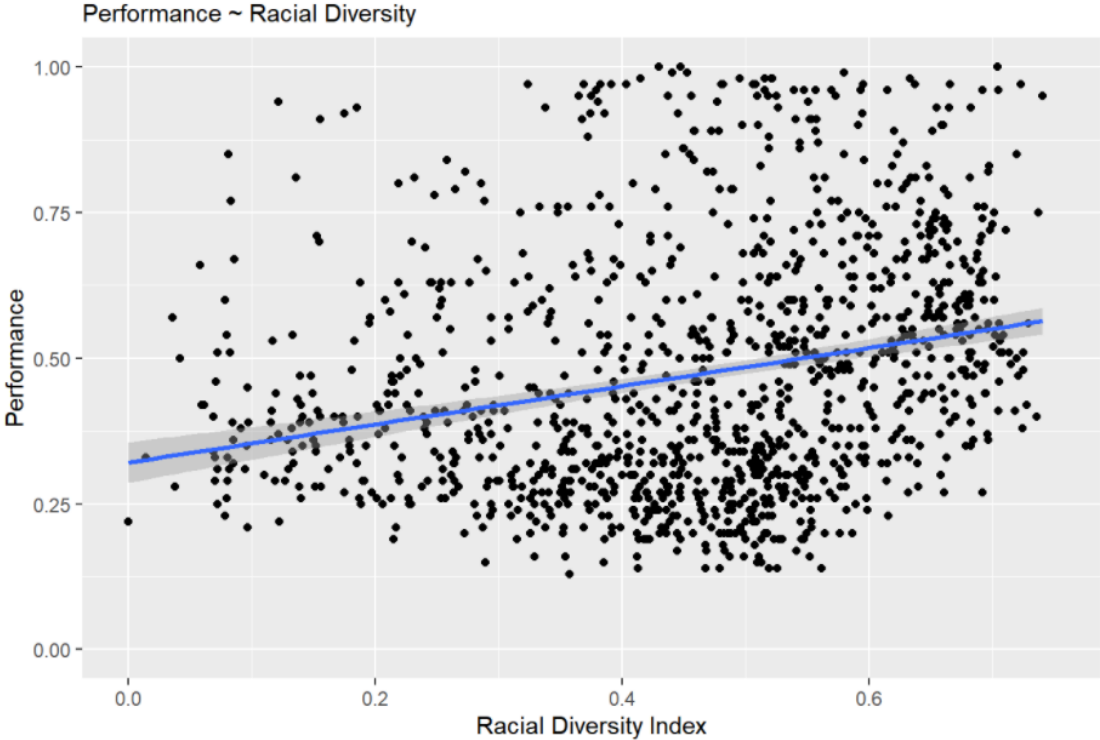
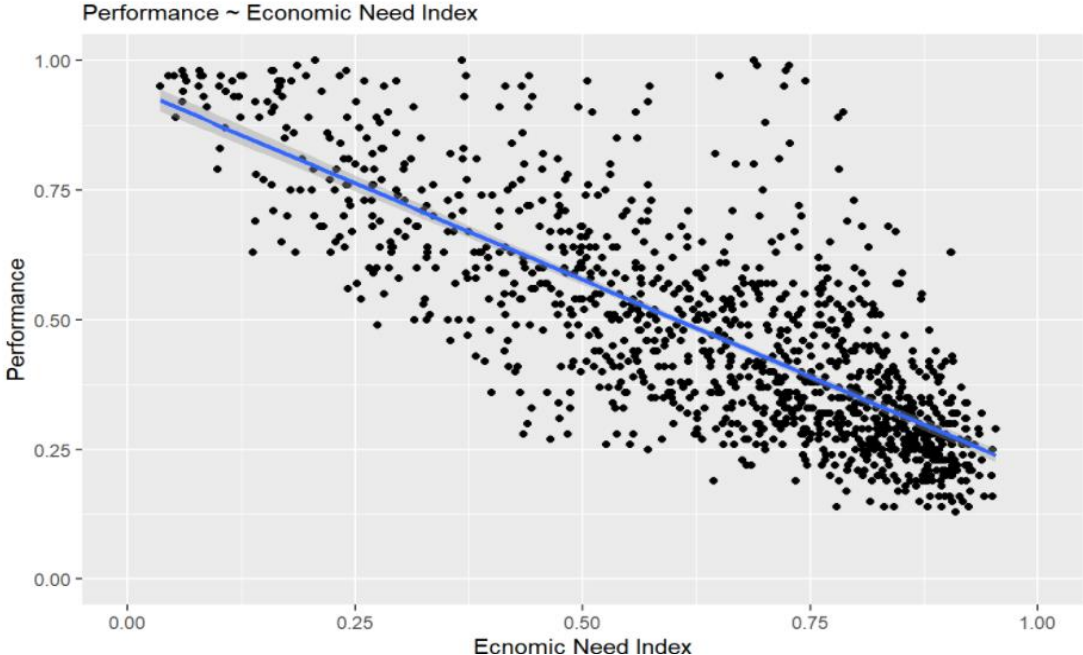


Figure 4. Correlation: Performance by Poverty



## Multiple Regression Analysis

To examine the predictability of relationship between the independent variables (ENI and racial diversity) and school-level performance, multiple regression analysis was conducted. The hypothesis for analysis is as following: *“Do School level poverty and racial diversity predict academic performance?”*

The final set of results in Table 6 indicates that the relationships between performance and the ENI and racial diversity are statistically significant because the p-values are less than the significance level of 0.05. The model explains 60.7% (r-square=0.607) of the variation indicating that the model provides a good fit to the data. The result indicates that one unit increase in the observed ENI score is associated with a decrease in the observed performance of 0.735. Also, one unit increase in the observed racial diversity is associated with an increase in the observed performance score of 0.049 scores when all other variables remain constant. The regression result suggests that a school with the lower ENI and higher racial diversity is more likely to have a higher academic performance.

Table 6. Result for Multiple Regression Analysis

	<i>Dependent variable:</i>
	Performance
Economic.Need.Index	-0.735 <sup>***</sup> (0.018)
race_div	0.049 <sup>**</sup> (0.025)
Constant	0.921 <sup>***</sup> (0.019)
Observations	1,213
R <sup>2</sup>	0.607
Adjusted R <sup>2</sup>	0.606
Residual Std. Error	0.132 (df = 1210)
F Statistic	934.676 <sup>***</sup> (df = 2; 1210)
Note:	<i>p</i> <0.1; <i>p</i> <0.05; <i>p</i> <0.01



## V. Discussion and Implications

Overall, the findings indicate that there are significant relationships between the racial composition, segregation, poverty concentration, and school-level performance. Even though the study confirms widespread perception on the relationship between race, poverty and academic achievement, there are many other factors that could have impact on student's performance unexamined in this research. For instance, presumable determinants include the effect of teacher quality and expectation, school leadership effectiveness, school budget and parents' SES. Also, due to the availability and accessibility of dataset, poverty and performance were measured at the school level rather than individual level in this research. Therefore, it was not possible to identify the precise impact of the school-level segregation on the individual student's academic achievement. Nevertheless, this empirical study on NYC public schools provides several implications not only for policies but also for future research.

First, there is a strong correlation between poverty and school level performance. In this study, the poverty index (ENI) was measured as a combined score reflecting the percentage of students with free lunch eligibility, temporary housing and neighborhood poverty level. In future research, it is recommended to look at the separated impact of each factor related to economic status of each child to evaluate the impact of current education policy which aims to reduce economic stratification of NYC public schools. Second, the percent of white students in school, which is also reflected in measuring the "segregation" variable, has the second strongest impact on school-level performance. In this study, however, it was not clear whether the increased ratio of white students has a positive impact not only for the overall school level performance but also for all other racial students. To examine the effect of white student ratio in relation to the segregation problem, the future study needs to look at the relationship between the ratio of white

students and individual achievement by different racial groups. This approach will provide enough legitimacy for currently reactivated desegregation and integration movement across the nation. Finally, the high racial representative school - Black students and Hispanic students accounting for more than 90 percent – shows the worst performance compared to the schools with low and medium level racial representations. Reversely, the study revealed that a school with more Black students and Hispanic students is more likely to be concentrated with poverty (measured by the ENI). This tendency suggests that the school desegregation policy needs to be implemented in tandem with community poverty reduction measures.

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