

THE ROLE OF THE ECONOMY IN CHANGING THE ACHIEVEMENT GAP  
BETWEEN DIFFERENT RACIAL AND ETHNIC 8th GRADE STUDENTS'  
ENGLISH LANGUAGE ARTS TEST SCORES

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by

Dominique Limprevil-Divers

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Dominique Limprevil-Divers

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Dr. Michael Sampson

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## **ABSTRACT**

### **THE ROLE OF THE ECONOMY IN CHANGING THE ACHIEVEMENT GAP BETWEEN DIFFERENT RACIAL AND ETHNIC 8th GRADE STUDENTS' ENGLISH LANGUAGE ARTS TEST SCORES**

Dominique L'imprevil-Divers

There is a large achievement gap in literacy between Black and White students in the United States that has been found to be mostly due to both differing learning opportunities as well as to income levels. Meanwhile, much of the research on academic performance has focused on race with less attention on the income of the school neighborhood zip code as a mediating factor in test outcomes for racial/ethnic students. This research investigated trends in English Language Arts (ELA) test scores compared to income in the surrounding communities among New York City schools' racial/ethnic groups of middle school students; also, whether income discrepancies predict a gap in test scores of these groups. This study looked at ELA test scores for 8th grade middle school students from 2013 through 2019, grouped by demographics such as race/ethnicity, and income status. Disability status, English language skills, and gender were also described. The method employed was a non-experimental quantitative design with the generalized estimating equations (GEE) models. Sample size includes approximately 403 New York City schools per year. Publicly available data from the New York State Education Department were used for Grade 8 ELA Assessment Data for seven years. GEE was utilized to test the relationships and hypothesis. Generalized estimating equations were fit with the mean scores as the dependent variable, and test year, student race, an indicator

variable to distinguish between the 2013-2017 and 2018-2019 periods and a race by test year interaction term as covariates. The findings showed that all three variables were significantly associated with the 8th grade classroom ELA test score means. A GEE approach was also used to capture the effect of schools on ELA test scores. These analyses showed that race/ethnicity, year, income, and the indicator variable described above are significantly associated with the ELA test scores.

## **DEDICATION**

Cette thèse is dedicated to my grandfather, Devilker Dejinska Delabrierre Limprevil, who always said, “Titite, tu es très intelligente and that is why you will be a great teacher.” Well, papa Debout, it seems like you knew. I indeed became a teacher and am trying hard to be great at it so I can fulfill your oracle. While I wish you could be here to see it, I know you are beaming with pride and dancing in heaven.

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Remember: “Qui va lentement, arrive sûrement.”

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## CHAPTER 1: INTRODUCTION

In today's society, particularly in the educational sector, "equal opportunity for all" is the mantra. However, to what extent does this ideal hold true in reality to minority students in New York City Public Schools (NYC)? Major disparities have been noted in the American school system which is comprised of many racial and ethnic groups of students. Racial/ethnic student groups have constantly experienced several challenges over the years, with educational disparities being among the issues often encountered. Based on Kyere, Adedoyin, & Stephanie, (2019) A Meta-Theoretical Framework for Understanding Educational Disparities Affecting Black Youth in the United States: Implications for Social Work, Black students, for instance, in the US's public schools continue to underperform compared to their White counterparts because of educational disadvantages (Kyere et al., 2019).

Meanwhile, numerous approaches have been adopted to explain the gap in academic achievement among students from minority groups. Factors such as race, religion, and sociocultural differences explain the educational disparities affecting minority groups in different communities across the United States (U.S.) (Boddie et al., 2019). Analysis of the underlying disparities in ethnic groups goes a long way towards explaining the low scores on standardized assessment tests, the low enrollment in higher education institutions, and the high rate of dropouts among such populations (Orfield, 2004; Lofstrom, 2007; Greene, 2001; Lavin-Loucks, 2006).

Before delving into the nuances of the minority achievement gap particularly “Black & White” 8th grade students in NYC public schools, it is important to present more broadly why such achievement gaps need to be solved. Awé and Bauman (2010) demonstrated that there is an underrepresentation of minority groups in various academic programs, leading to limited interest in pursuing such fields. Often, the common notion among such individuals is that there is no predictable benefit directly linked to their academic achievement (Boddie et al., 2019). Studies find significant variations in educational opportunities that correlate to demographic factors such as race/ethnicity and community income (Kurtz-Costes et al., 2014; Bañales et al. 2020). Furthermore, differences in race/ethnic groups related to academic achievement and educational attainment are pervasive in American society (Kurtz-Costes, 2014). Olszewski-Kubilius et al., (2004) noted that the U.S. educational system’s main challenge is eliminating the lagging behind of minority children in academic achievement that results from many factors.

Meanwhile, the goal of education is to improve all students’ creativity and knowledge, thereby enabling them to positively contribute to their communities. Education plays a critical role in promoting economic and social growth and improving wealth distribution (Gylfason & Zoega, 2003). According to Reardon, Kalogrides & Shores (2017), there have been ever-increasing gaps in student achievements as of fluctuating walks of life. Several studies have indicated that minority ethnicities tend to accomplish lower levels of proficiency on standardized tests and includes learners who are usually living in poverty. Reardon, Kalogrides & Shores (2017), findings concluded

that many factors lead to such disparities in the achievement gaps and what can assist in closing such gaps.

Lewis and Diamond (2015) study pointed out that pedagogical practices needed to best engage racial/ethnic minority group students are grossly underestimated and largely lacking application in practice. Research needs to take into account these factors in framing the narrative around racial/ethnic minority students' low academic performance. Bañales' (2020) research study used the voice of Black youth to explain social disparities in academic settings. The youths' sentiments were that their academic shortcomings were due to structural factors and poverty. Additionally, the New York City Council data on poverty by race/ethnicity found that, of respondents in 2018-2019, schools where more than 75% of students experience poverty were also comprised of majority Black and Hispanic students. It is well noted that racism and a poor economy are among the top factors that led to the mediocre state of minority academic achievement in US public schools. However, there are other factors such as laws and policies like the-Elementary and Secondary Act (ESEA) and No Child Left Behind Act (NCLB) of 2001. The ESEA focuses on placing education at the forefront by creating equal access to quality education for all. The act funds both primary and secondary education, and the goal was to achieve high standards in all schools and accountability. In addition, the act is also supposed to oversee professional development in schools, authorize resources that support educational development, involve parents in educational matters, and authorize instructional materials (Paul, 2018). The goals of the act, therefore, are proposed to ensure that all schools, including the minority schools that have students from all races, especially those from impoverished families, are well equipped with educational resources, have adequate

funds and are well developed to ensure that the achievement gap is reduced (U.S Department of Education, 2015). Meanwhile, Title 1 and the NCLB failed to fix the above problem because teachers were being forced to make sure the students passed the standardized tests, and this strategy was hindering teacher creativity and appropriate student learning. The ESEA, as a result, developed more amendments to ensure that student learning was more creative and not only focused on standardized tests but rather in equipping students with diverse skills, knowledge and abilities to help them both in school and the society (Paul, 2018).

Furthermore, the system and school geographic location factors have primarily contributed to the disparities in achievement in ELA among students in NYC. This makes it necessary to seal the gaps in equality identified in fighting for the limited opportunities in the larger community and schools (McLeod, 2018). Therefore, education policies are crucial to addressing the current gaps in academic achievement, even though limited changes are traceable to such attempts. Instead, the policies themselves are marred with gaps making them less effective. Considering this, this study examined how these factors relate to the literacy/achievement gap between four ethnic groups of students. Specifically, do economic trends predict student achievement and the gap between various groups? This research utilized Grade 8 ELA test scores in a sample of New York City schools during the period 2013 through 2019. However, a limitation of the study is that it did not have access to individual level data. The mean ELA test score by school, race, and year was the main outcome. The school neighborhood income was the median income by race for each school. Therefore, the study may not have appropriately captured variation at the individual level.

## **Purpose and Significance of the Study**

The proposed study sought to determine whether the longest US economic expansion led to an improvement in the ELA test scores among African American eighth graders in the New York City school district during the 2013-2019 period. This study also compared the performance of students from the four largest racial ethnic groups in NYC (Black, White, Hispanic and Asian) to determine whether this expansion also led to a reduction in the achievement gap. The results of this study could help inform educational policy makers and provide support for implementing strong educational literacy programs across the school system, regardless of the community.

This research is significant because it addresses a gap in the extant literature—using economic trends over time to examine the achievement gap in English Language Arts test scores using Generalized Estimating Equation approach to capture the effect of schools' neighborhoods on ELA test scores. Although the literature on economics and the relationship to achievement revealed a positive association between family income and student achievement, such a relationship is contingent on multiple social factors and the education systems (Gottlieb, 2002; Hornbeck, 2001; Lee, 2002; Nyhan & Alkadry, 1999; Sackey, 2014). However, a study on the trend/change over time for racial ethnic groups has not been investigated. This study assessed the magnitude of such relationships across five NYC boroughs and explored them over time. Furthermore, this research is significant because, although there are myriad studies in the field of education, there is inadequate educational research looking at trends over time in the economy and how they impact the ELA test scores of racial/ethnic groups of students as well. A contribution of this research is that it presented an approach that uses trends to examine ELA academic



gain in ethnic and racial groups. This research looked at how increased income in a community may change literacy for the better, hence bridge the achievement gap for minority students. Lastly, research is a process of critical and systematic examinations that intend to address practical and real-world problems (Creswell, 2015). Thus, this study may serve as a guide for educational policy makers by examining a more equitable and proactive approach for serving the schools.

## **Background**

The American educational system is composed of primary school, which is most commonly called elementary school (grades 1-5), middle school (grades 6-8), and then secondary school (grades 9-12). After graduating high school (12th grade), U.S. students may go on to college or university. Middle schools serve pre-adolescent and young adolescent students between grades 6 and 8. Middle schools are sometimes referred to as junior high schools or intermediate schools. In this stage of learning, it is imperative that students have access to grade-level work, with entry points into higher orders of thinking with scaffolding for them to succeed. The New York City Schools form the largest school system in the United States, with over 1.1 million students taught in more than 1,400 separate schools (Winters, & Cowen, 2012). The department covers all five boroughs of New York City (Bronx County, Kings County (Brooklyn), New York (Manhattan), Queens, and Richmond (Staten Island)). Since its formation it has been plagued with both deplorable school conditions and segregation. Yet, even though the 1954 *Brown v. Board of Education* decision called for integrating public schools, New York City public schools remained some of the most segregated in the country; this practice has a negative effect on students' academic achievement. Such a finding was found in Condrón (2009)

Early Childhood Longitudinal Study (ECLS). Using a nationally representative sample of first graders, the study result showed that racial segregation has the largest impact on the achievement gap - to a greater extent than class segregation. This makes sense since racial segregation produces social class segregation. The latter comes about due to differences in money, academic opportunities, and movement.

### ***Growth in the US Economy and New York City, 2013-2019***

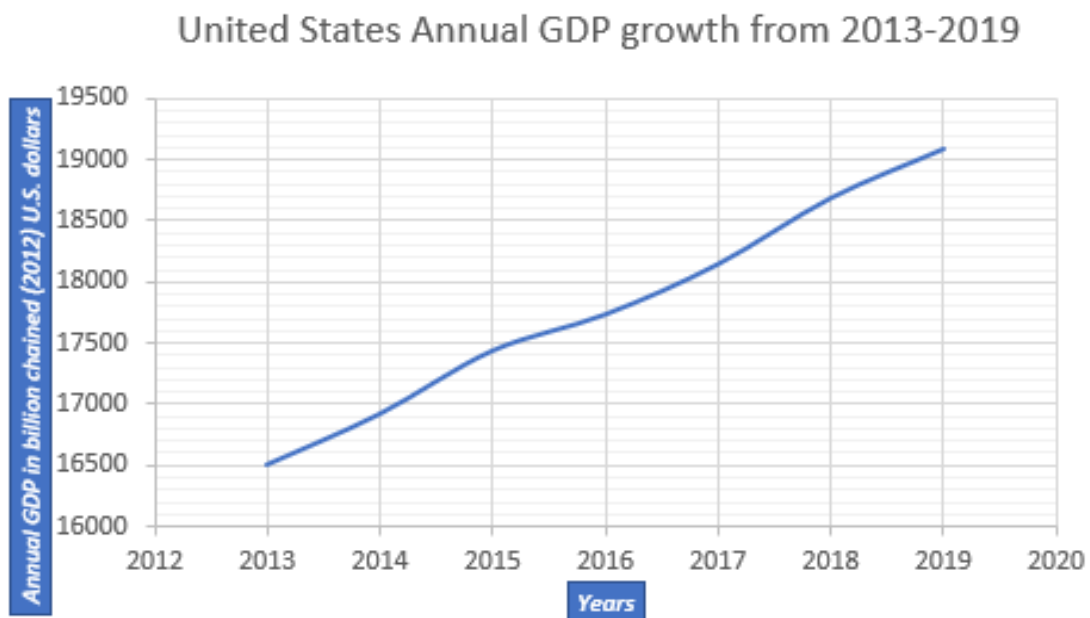
The 2013-2019 period saw an expansion in the United State economy. That economic gain can be measured in terms of Gross Domestic Product (GDP) as shown in Figure 1 (US) and Figure 2 (NYC). GDP growth was 2.6% in 2012 and had risen to 2.8% within the first six months of 2013. 2013 was considered in this case because the housing market turned into a robust expansion (Duffin, 2020 & Statista, 2019). According to Duffin (2020) the U.S. GDP escalated to 21.4 trillion dollars by 2019. New York City benefited from this rise too. The New York metro area's GDP has steadily risen in the last two decades from 1.2 trillion U.S. dollars in 2001 to 1.53 trillion U.S. dollars in 2018 (GDP of New York metro area. Statista, 2019). Cohen (2016) attributed this boost to substantial gains from the cloud services. Cohen suggested that these cloud services will yield 1.7 trillion dollars, which will add approximately 3 trillion dollars to the GDP. Figure 1 shows the economic growth from 2013-2019. While figure 2 presents the overall GDP of the New York City metro area from 2013-2019. This growth is higher than the economic growth rates experienced before the 2007–2009 recession.

Yet there is a growing inequality that is not conducive to the well-being of the nation given the existing historical differences in race/ethnic relations. One of the causes of the disparity in wealth has been identified as the educational inequality and

achievement gap (Gopalan, 2019; Cheng, Hitt, Kisida, & Mills, 2017). The educational achievement gap refers to the persistent gap in educational performance between groups of people defined by race, socioeconomic status, or gender (Cheng et al., 2017). The difference in achievement between high-income students and low-income students exists in all societies, but it seems more pervasive in America even though one would expect the contrary based on our egalitarian ideals. Findings from a longitudinal study indicate that early literacy has a lifetime effect on a person (Pierce, 2018). The kind of life one lives much later is influenced by the quality of the child’s early education. Discrimination, poverty, stress, and many other ills in society might affect a child’s ability to learn. Teachers have the mandate of educating students in a manner that will enable them to surmount the challenges faced. However, this gap is more obvious in big city school districts like New York City.

**Figure 1**

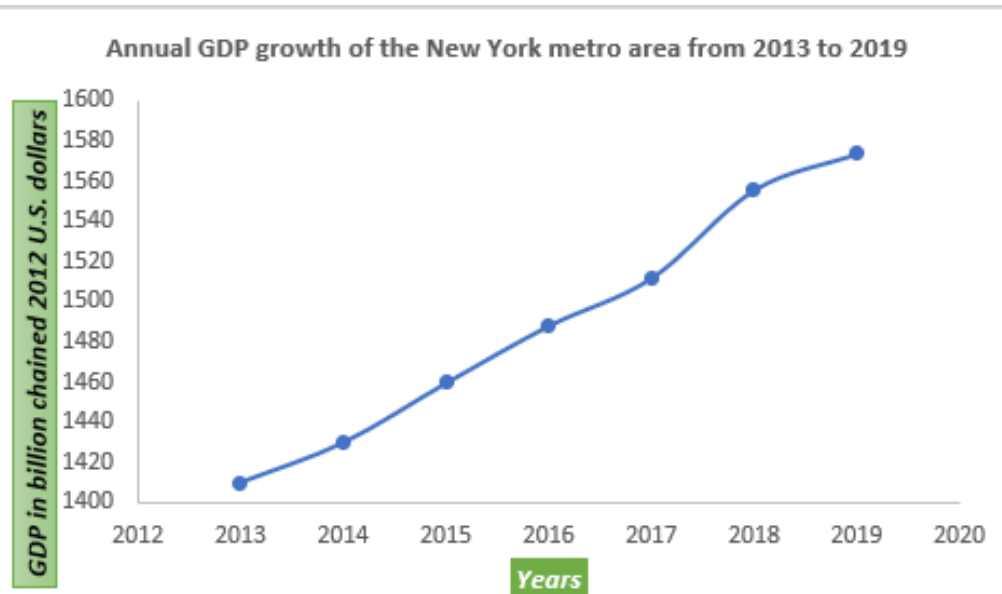
*United States Annual GDP Growth, 2013-2019 (in Billion Chained (2012) U.S. Dollars)*



Note: Data taken from the 2021 Economy & Politics Economy in STATISTA.

## Figure 2

*GDP of the New York Metro Area from 2013 to 2019 (in Billion Chained 2012 U.S. Dollars)*



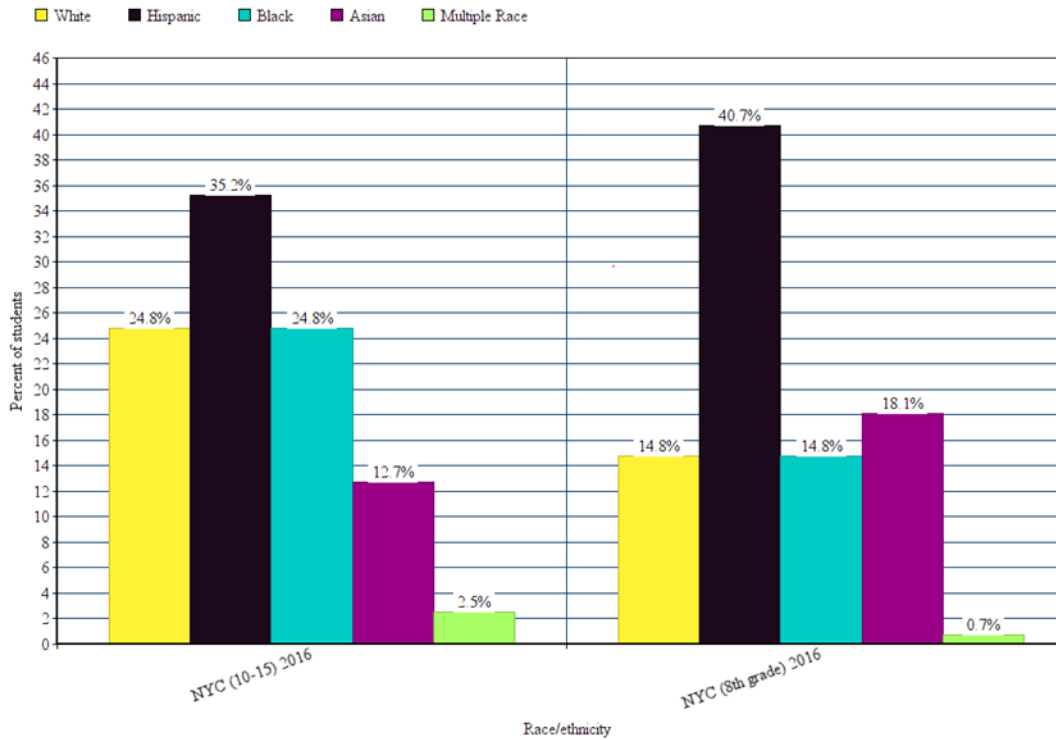
Note: Data taken from the 2020 Economy & Politics Economy in STATISTA.

## *New York City Diversity*

74.6% of Black and Hispanic students at New York City public schools, attend a school with less than 10% White students. Additionally, 34.3% of white students attend a school with more than 50% White students (The New York City Council). This paints a picture that the New York city schools are segregated by zone. Thus, it makes one wonder if the city's greatest attributes—diversity, and the label “America’s melting pot” falters its responsibilities to the public-school minority population?

**Figure 3**

*Comparison of the Population (10-15 years old) and the 8th Grade Students in NYC-2016*



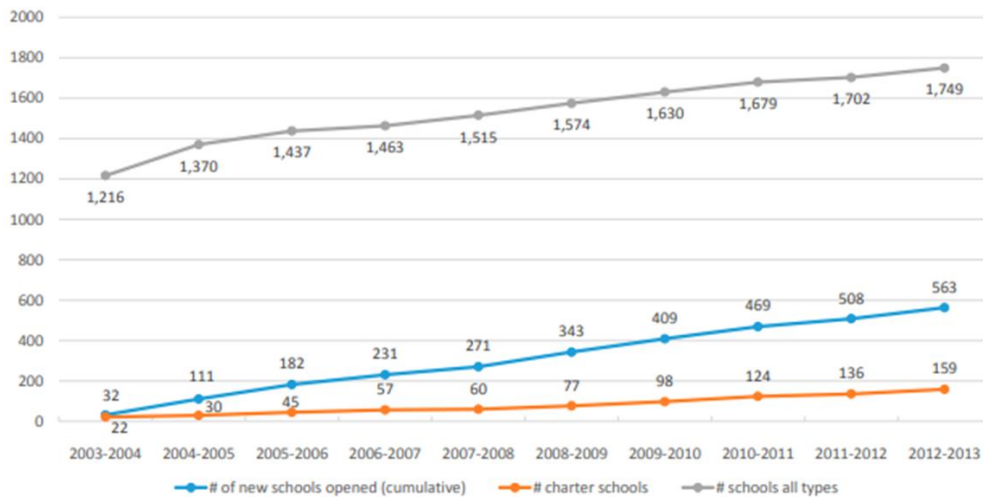
*Note.* Data taken from the “[New York City Council]” and “Where We Live NYC.”

In 2016, the midpoint of the analysis period, whites between the ages of 10–15-years-old made up about 25% of the NYC population, but only 15% of the NYC public school system (Figure 3). Currently, the New York State department of education record shows that most New York City public school students are Black or Hispanic; they made up about 75% of the student population in 2019. Meanwhile, the NYC public school system has seen many changes over the years. During the 2000 era, there has been a shift in the expansion of school choice and school competition. Parents were offered choices to send their children to the schools of their choice. As a result, there might be several reasons for the major shift in the demographics of students in the NYC public school

system. First, it could be that the economic expansion was greater for some of the White families; therefore, they moved out of the NYC School system. Second, NYC saw an enormous growth of new schools opening in 2003 onward. A third reason could be that charter and private schools attract most of these students as can be seen in Figure 4 below from the Brown Center on Education Policy at the Brookings Institution study. Regardless of the reason, the NYC school system needs to educate all students equally.

**Figure 4**

*New York City Public Schools: Growth in Charter and New Schools*



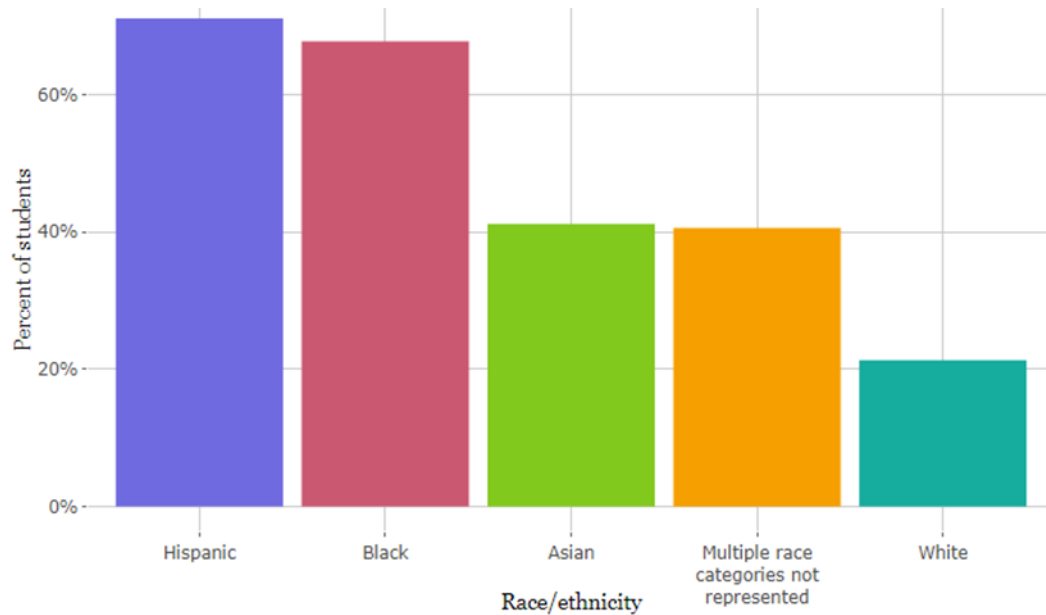
*Note.* This figure is from the paper “School Choice and School Performance in the New York City Public Schools - Will the Past be Prologue?”

Currently, the New York State department of education record shows that most New York City public school students are Black or Hispanic. Meanwhile, 32.1% of New York City’s population identifies as white and non-Hispanic, while only 15% of public-school students are identified as white by the DOE. In addition, the DOE stated that “Black and Hispanic students are much more likely to attend a school where more than

75% of students experience poverty (DOE)” (Figure 5). Meanwhile, studies have explored the impact of socioeconomic status (SES) and poverty in schools (Biddle & Berliner, (2002); Mesmer et al., (2012); Peske & Haycock, (2006); Rothstein & Wozny, (2013); Vanneman et al. (2009). The studies used SES information from the Common Core Data for 1995, School District Data Book, National Center for Education Statistics 2000, Schools districts and U.S. Census to calculate the percentage of students living in poverty. For instance, in Biddle and Berliner’s (2020) study, poverty was measured based on the disparities in per-student funding levels through schools. Yet, no study has explained the gap entirely. Fryer and Levitt (2004) established variables that account for a portion of the achievement gap.

**Figure 5**

*Percentage of Students by Race and Ethnicity and Poverty Status in NYC Schools*



*Note.* The figure is from the “[New York City Council]”. The figure illustrates the percentage of students attending a school where more than 75% of students experience poverty 2018-2019.

### *Unequal Chances for US Children*

It is well known that educational elements have much influence on achievement differences even though both in-school factors and home factors contribute to this widening gap. Knowing this, the US government passed several laws that aim to bridge the achievement gap: the Elementary and Secondary Education Act (ESEA), Every Student Succeeds Act (ESSA), and the Common Core State Standards for English Language Arts (CCSS). These policies and initiatives aim to offer an equal chance of success to every child. However, students from diverse ethnic and racial backgrounds seem to not always benefit from these policies due to where these groups of students attend school and live. Chase-Lansdale & Gordon, (1996) argued that poverty contributes to low academic performances for children aged between five and six years because of less fortunate social and economic infrastructure. Parents' unemployment results in children being more likely to internalize problems and face behavioral challenges, thereby contributing to lower grades in their academics (Chase-Lansdale & Gordon, 1996). Bennett et al., (2004) acknowledged that students of color have been underperforming because of the consequences of emerging from less fortunate settings - they proposed adopting a systematic approach to reduce the persistent gap.

Luter, Mitchell, & Taylor (2017) assessed learners' academic outcomes using the Community as Classroom Approach that helps to improve students' performance by teaching them about their neighborhoods. However, closing the achievement gap among learners from different ethnic, racial, gender, class, and language groups requires the establishment to possess intellectual competence and to catalyze change through



interventions in schools and communities (Bennett et al., 2004; Luter et al., 2017; Ostrove & Long, 2007).

### **Research Question**

Have the average ELA scores for New York City eight grade students changed from 2013-2019 by racial/ethnic groups due to the economy?

### **Definition of Terms**

The following definitions are provided to ensure uniformity and understanding of these terms throughout the study:

#### ***School District***

Refers to a geographically defined community that includes all of its local institutions that are served by a public administration. In this study the school district is the New York City School District.

#### ***Community Income (School Neighborhood ZIP Code)***

The community income is based on the ZIP Code Tabulation Areas (ZCTAs) created by the US Census Bureau to segment data. These ZCTAs are what the Census Bureau used to segment their socioeconomic and demographic data and thereby what this study used to correlate the economic status for the schools' students (Elnakat, Gomez, & Booth, 2016).

#### ***English Language Arts Achievement***

English Language Arts (ELA)/Literacy is a set of standards that spell out the knowledge, skills, and practices that a student should attain at each level. The standards aim to equip the student with the knowledge and skills required to succeed in college education, technical training, career, and generally in life outside school (Ciampa, 2016).

### ***Generalized Estimating Equations (GEE)***

This is a procedure that extends the generalized linear model to allow for analysis of repeated measurements or other correlated observations, such as clustered data (IBM SPSS Statistics).

### ***New York State English Language Arts Common Core State Standards (CCSS) Test***

This test is administered to students under standardized testing conditions. The test is measured through an end of year assessment test. New York State administers ELA/Literacy and Mathematics Common Core tests intended to provide students, families, educators, and the public better measures of student proficiency in the knowledge and skills that students need to succeed in college and careers (*Common core 3-8 ELA and mathematics tests*).

### **Summary**

This study explored whether the longest US economic expansion correlated to changes in ELA test scores among Black eighth graders in the New York City school district during the 2013-2019 period. A secondary purpose of this study was to explore the relationship between students from the four largest racial and ethnic groups in NYC (i.e., Black, White, Hispanic and Asian) to determine whether this expansion also led to a reduction in the achievement gap between groups. Chapter 1 defined the significance of this study, as well as the statement of the problem and research questions. Definitions of terms and acronyms were provided.

## CHAPTER 2: LITERATURE REVIEW

### Review of Related Research

Myriad studies using state-funded public schools have shown achievement disparities among racial/ethnic groups of students (Beecher & Sweeny, 2008; Bennett et al., 2004; Chubb & Loveless, 2004; “Edopportunity.org,” n.d; Gylfason & Zoega, 2003; Luter et al., 2017; Ostrove & Long, 2007). Some of the studies had longitudinal designs and quantitative methods. They shed light on one of the many variables, income disparity, that adds to the growing gap in achievement between minority students particularly Whites and Blacks in the US public school system. They all showed indisputably that social class and income are among the top significant indicators, if not the most critical indicators, of academic achievement.

Ostrove & Long’s (2007) study demonstrated that social class background was significantly associated with a sense of belonging at college and was marginally related to academic performance of students. While Beecher & Sweeny (2008) noted that: curriculum enrichment and differentiation demonstrated the importance of a multidimensional approach to reducing the achievement gap, it was progressively obvious that academic performance gaps by social class existed in the early ages of children and continued to limit them in the years that followed. This context means that kids who commenced behind other learners remained behind as they struggled to make up lost ground since their parents could not afford the pricier cost of early educational childcare. Furthermore, students from higher social class backgrounds showed better academic and social adjustment, thereby improving their educational outcomes (Ostrove & Long, 2007).

## **Trends for Income, Race, and Achievement in the Minority in the US through the Public School System**

Research shows that in the 1990s, the achievement gap between kids from poor and non-poor families narrowed but then widened again in the 2000s. Surprisingly, from 1996 to 2013, the minority students' achievement improved compared to the dominant race. When socioeconomic disparities are considered, those who are not categorized as English language learners achieved even more improvements (Baker et al., 2018). This conclusion holds for students in lower and higher educational levels who are Black, Hispanic, or Asian. Learners of the comparable race from more impoverished homes did not exhibit consistent academic increases in comparison to students from non-poor families throughout the same period

Meanwhile, the U.S. academic system tests students on standardized exams that include a set of expectations as to when a student should finish a set amount of education and move on the next level ("Standardized Tests," n.d.). Primary and secondary schools depend heavily on these tests to predict success in secondary and post-secondary education. Furthermore, the tests are used to determine the abilities of students in order to predict future success and chart these students' progress. One such standardized measure and the main variable of this study is the English Language Arts (ELA) test. This test is administered by the State of New York every year for students in grades 3-8. The teaching of ELA and literacy have become necessities for participation in almost all aspects of daily life. Currently, learners must develop a progressively composite set of modern literacy skills and expertise to qualify for social and economic opportunities; they also have to obtain and utilize information to reach their individual goals.

Many 8th grade teens are part of minority groups and are disproportionately disadvantaged in nearly all indicators of social development and test taking, which translates into poor academic performance. Factors such as race, economic status, class, and sociocultural differences explained the educational disparities affecting minority groups in different societies across the United States (Boddie, Kyere & Adedoyin, 2019). The study employed structural functionalism, critical race theory and modern capitalism methods to offer a meta-theoretical framework concerning the impact that racism has had on creating educational disparities among the Black students and creating achievement gaps. The study findings revealed that in the 21st century, Black students are still disproportionately concentrated at the bottom section of the achievement ladder, and the gap continues to grow daily (Boddie et al., 2019). The theories used in exploring race show that even the social-economic status and socio-political structures in the U.S. have contributed to the achievement gap.

There has also been a noteworthy scholastic achievement gap, among the racial/ethnic groups inside the New York City school districts, which is based on economic factors (Abdulkadiroğlu et al., 2009; Domanico, 2018; Harris, 2018; & “School Diversity in NYC.gov,” n.d.). Furthermore, huge achievement gaps between high-social-class and low-social-class kids in the same districts, and the variations in circumstances that drove these achievement gaps, compromised the very idea of the American Dream. Wealth inequalities between different social classes led to disparities between White and Black students’ educational achievements (American Psychological Association, 2017; Condron, 2009).

### *Elementary and Secondary Education Act*

In 1965, the President of the United States, Lyndon Johnson, sought to improve the quality and equality of schooling offered to people by introducing the Elementary and Secondary Education Act (ESEA). The Act's goal was to level the playing field for students by ensuring that all received a quality education. After years of not being updated, the U.S. Congress in 2001 revised it and changed its name to No Child Left Behind (NCLB); it was signed into federal law by President George W. Bush (Markowitz, 2018). The NCLB objectives were to close student achievement gaps by offering students an equal chance and opportunity to gain high-quality learning. To achieve this feat, the federal law held the schools accountable for the results that they produced.

Under the law, there was the creation of reading and math standards that all students were required to meet or exceed by the year 2014 (Heise, 2017). The tests were conducted in grade three, again in grade eight, and once in high school. The NCLB act mandated that each state creates state academic standards and state testing systems that would meet NCLB requirements. Each state customized standards that suited the requirements of its students and school institutions. Simultaneously, these standards also focused on socioeconomic issues that affected learning, including racial and social status-based differences among students and neighborhoods. The NCLB act was based on four pillars. One was accountability to ensure that poor and racial/ethnic groups of children achieved academic proficiency (Heise, 2017). Even with differences in races and social status, the first pillar of accountability promoted openness of learning programs to benefit students from all backgrounds without any limitations. Another was flexibility in how

public schools utilized federal education money to improve students' achievements. Necessarily, this pillar focused on linking resources to effective and efficient channels and procedures to ensure that the federal government provided direct support to schools and students in all states (Heise, 2017). The NCLB also emphasized procedures that had been proven effective through scientific research. Lastly, the act sought to increase the choices for parents whose children attended Title 1 schools. However, it has little to no effect on helping minority students and was echoed in Diane Ravitch's book and numerous talks. She was the chief architect of the No Child Left Behind (or NCLB) education law. She stated that "to conquer educational inequity, we must recognize that the root causes of poor academic performance are segregation and poverty, along with inequitably resourced schools. We must act decisively to reduce the causes of inequity. We know what good schools look like; we know what great education consists of. We must bring good schools to every district and neighborhood in our nation." The latter led to the creation of dual school systems for black and white students, thus creating mediocrity and a low achievement gap.

Furthermore, the NCLB act was motivated by the fact that states were not doing enough to fix their low-performing schools. The bill sought to fix such schools or close them if they did not deliver on their mandate of educating students well. Under the NCLB act, schools were graded using the Adequate Yearly Progress report, which aimed to get every student to grade level in English and Math. The bill also required the schools to subdivide students into sub-groups regarding factors such as disability, socioeconomic class, and race (Holbein & Ladd, 2017). If one subgroup failed, the whole school failed. The point was that the high performers could not cover up for the low performers. This

resulted in red flags for some schools that were previously considered top performers. The pressure to perform got into most of the teachers that taught in the schools, and they improved where they could. Schools that had extra capacity tended to have fewer challenges in meeting the new goals as all they did was focus more on the students with learning challenges (Sung, 2016).

In 2015, the Elementary and Secondary Education Act was reauthorized as Every Student Succeeds Act (ESSA); Congress allocated \$14.4 billion for the fiscal year to fund Title I, Part A. The Title I, Part A program provided supplemental educational services so that all children had a fair, equal, and significant opportunity to obtain a high-quality education (United States Department of Education, 2006). ESSA offered states new flexibility in how they determined the academic performance of their students and required states to commit to supporting all students equitably. Most importantly, under ESSA, standardized tests were still a foundational part of state accountability systems, but states also had to include other indicators. These additional measures could be used to both gauge and increase students' opportunity to learn, by bringing to the fore students' abilities to access a full and rich curriculum (Cook-Harvey et al., 2016). The authors averred that these indicators encouraged schools and other stakeholders to pay close attention to the resources and conditions that influenced student learning outcomes, and address inequalities that existed (Cook-Harvey et al., 2016, p. 8). The previous version of the law, the No Child Left Behind (NCLB) Act, was enacted in 2002. NCLB represented a significant step forward for our nation's children in many respects, particularly as it shined a light on where students were making progress and where they needed additional



support, regardless of race, income, zip code, disability, home language, or background (U.S. Department of Education, 2020).

### ***Socioeconomic Status and Academic Achievement***

Broer et al. (2019) observed that assessing the differences in student performances between countries indicated that background was an essential determinant.

Socioeconomic status came out as a standard background variable even though there were other underlying and more specific factors regarding students' academic achievements. Broer et al.'s (2019) study pointed out educational inequality as a central theme with strong links to educational achievements. Agreeably, Jackson and Addison (2018) highlighted poverty among minority groups as a cause for persistent disparities in academic achievements between minority and nonminority students. The study further explained how minority groups faced challenges - such as limited language proficiency - that directly impacted their comprehension skills and cognitive abilities. In most instances, the education system was standardized and did not note the diversities in individuals. The result was a disparity in which some students – those in the majority group – have undue advantage over others – those in the minority group. There was a gap in that the studies failed to explore other potential causes of academic performance disparities fully. The current study seeks to address such gaps by developing a quantitative descriptive approach for an all-rounded in-depth analysis of the identified variables.

Michelmores and Dynarski's (2016) study acknowledged a growing gap in educational achievement and pointed out that there was limited information on such phenomenon. Like in other existing studies, Michelmores and Dynarski (2016) indicated

that households' income was a significant factor in determining the quality of education students received. Similarly, Acevedo-Garcia et al. (2019) postulated that opportunity levels varied among children, a factor that impacted their academic achievement. Unlike the previous study, Acevedo-Garcia et al. (2019) went further to explore racial and ethnic dimensions as underlying causes of the difference in academic achievement. The statistics provided by the researchers illustrated that up to 84% of children from impoverished backgrounds needed free or at least subsidized prices for lunch. Furthermore, children from minority groups had limited exposure to playgrounds and other facilities to enhance their mental capabilities. This observation explained the differences in educational expectations between the two groups of learners, as Morgan (1996) observed. Contrary to studies focusing on cognitive skills as a measure of educational achievement, Morgan (1996) argued that other achievements were associated with academics. Instead, some students had intricate patterns of expectations from education away from the majority group's standardized outcomes. However, there was a gap since the studies did not explore such underlying educational expectations other than academic achievement. Besides, the information contained in Morgan (1996) may not reflect the current situation in exploring educational disparities witnessed in the minority groups of students due to school location and income.

### ***Disparities and Academic Achievement***

Consequently, Vetter, Schieble and Martin (2020) presented a unique study exploring the role of privilege and power in assessing academic achievement among students from different backgrounds. The study emphasized the need for teachers to enhance the engagement of students in learning challenging concepts. However, taking

part in critical conversations in schools were a construct of complex pedagogical practices between the teacher and the learner. Notably, the study acknowledged the existence of oppression and privilege that favored the majority group while students in the minority group were left out. The result was a system of persistently disadvantaged children with limited opportunities to exhibit and achieve their academic goals (Michelmore & Dynarski, 2012). Vetter et al. (2020) also noted that a student who felt powerless in critical engagements was likely to remain silent in such sessions, affecting their academic achievements. By adopting social constructivism framework, the current study is guided to investigate the underlying systems of oppression in educating students from minority groups. On the other hand, Vetter et al. (2020) also focused their study on the language arts classroom, failing to recognize the wider disparities in other subjects. The current study addressed this gap by adopting an all-rounded approach focused on different levels of study and subjects offered in the education system.

Interestingly, Acevedo-Garcia et al. (2020) presented a new observation in the education system directly affecting students belonging to the minority group. The researchers pointed out the prevalence of opportunity hoarding associated with ethnic and racial inequities meted against students from minority groups. Such disparities were evident, judged by the wide difference between children from high- and low-income backgrounds. Acevedo-Garcia et al. (2020) noted that there were some instances in which there were large gaps of up to or higher than 80% in opportunities accorded to children. A similar observation was in Vetter et al. (2020) reiterating that the differences in opportunities was the reason behind diverse perceptions on what constituted the identity of students from minority groups.

### ***Importance of Adolescent Literacy***

Adolescent Literacy is a term used to refer to the potential of teenagers to learn. It is the way adolescents interpret the world through their ability to read, write, comprehend and interpret what their instructors have taught them. It also pertains to what they grasp while not in class to comprehend their current lives and the future (Schaefer, 2017). The teenage years are a stage in life when children undergo fast and sensitive psychological growth. During this stage, children acknowledge the outcomes of their actions, through reasoning and interactions with others. These different types of growth impact the differing rates at which they develop literacy competencies (Marshaeni, 2016). To motivate teenagers to learn, literacy programs must catch their attention and speak to their inquiries concerning the world as they examine their position in it. Literacy instruction must permit teenagers to interact with psychologically challenging text and enhance their ability to obtain meaning from the contents. According to Frey and Fisher (2015) the basic standard for students is to read intimately to discover what the content says specifically and make rational deductions. When students read closely, the authors suggested that they explore, cross-examine, and search for the content's profound meaning. The authors built their judgments and reasoning on various texts that were explored by experts in their field. The authors discovered that for students to learn, they needed guidance from teachers and a moment to engage in discussions with peers to solve problems. In relation to Rosenblatt's transactional theory, Marshaeni (2016) argued that the theory denoted that both the student and the content play significant roles in shaping meaning. The author indicated that meaning was generated by the constant transaction between the learner and the text. Marshaeni noted that when students were

active in choosing and integrating their previous knowledge and skills, the contents contributed to modeling their selection and conjecture, resulting in an interaction between them. In both Frey and Fisher, and Marshaeni's notions, learning requires classroom instruction; the theory puts journal writing into practice. Depicted in Figure 6 is our interpretation of the conceptual framework that examined ways in which community economic factors related to the ELA test scores of minority students in the New York City school district and whether they correlated to changes in the achievement gap for minority students.

### **Theoretical Framework**

This study designates racial/ethnic groups of students as including as minority all students who are not non-Hispanic European Americans to examine the relationship between school neighborhood community income and racial/ethnic groups' academic achievement ELA test scores. In the process, the study is looking at other factors besides income that might account for the achievement gap particularly for Black students. To explore the issue of achievement gap affecting the minority groups further, the study drew on Ladson-Billings (1994) Critical Race Theory (CRT) and a proposed framework to examine the ELA achievement gap for racial/ethnic students, characterized by the following three concepts:

1. Public schools are not all on the same playing field in preparing students to take the end of year ELA test (school geographic location);
2. Educational inequality is systemic in American public schools (specific to racial group/time);

3. Neighborhood inequality is a vehicle to the social stratification and systemic achievement gap of ethnic/racial students (negative social capital).

Derrick Bell was the founder of Critical Race theory in 1960. Later, it was solidified by Ladson-Billings (1994). She asserted that CRT is grounded in abolishing all forms of racism, racial subordination and discrimination in society. Major disparities have been noted in the US schools comprising of Hispanics, Asians, and Black students. By exploring trends in the achievement gap among students from dominant and minority groups, the study points out how crucial in addressing the current gaps in academic achievements and critique the public school system practices for students geographic admission, continue racial inequity and lack of social capital due to racism. Therefore, adopting a theoretical framework was critical in putting the current study into a perspective that explored academic achievements among minority groups in regard to ELA assessment.

Ladson-Billings & Tate's Critical Race Theory of education (CRT) gave voice to equalizing educational opportunities for minority students through its tenet regarding the social construction of race (Ladson-Billings & Tate, 2016). Their stance emphasizes the proposed concepts stated above. They observed that while inequities exist in the public-school systems, class and gender are not powerful enough to explain all of the differences (or variances) in school experience and performance (2016, p. 51). The findings of this study might inform whether school community economic factors affect the ELA test scores of minority students in the New York City school districts. To this end, consider this is important for grasping how public schools can indeed provide all learners the

avenue to acquire the reading skills they need, thereby enabling them to do well on their achievement test(s) and succeed in school and in life.

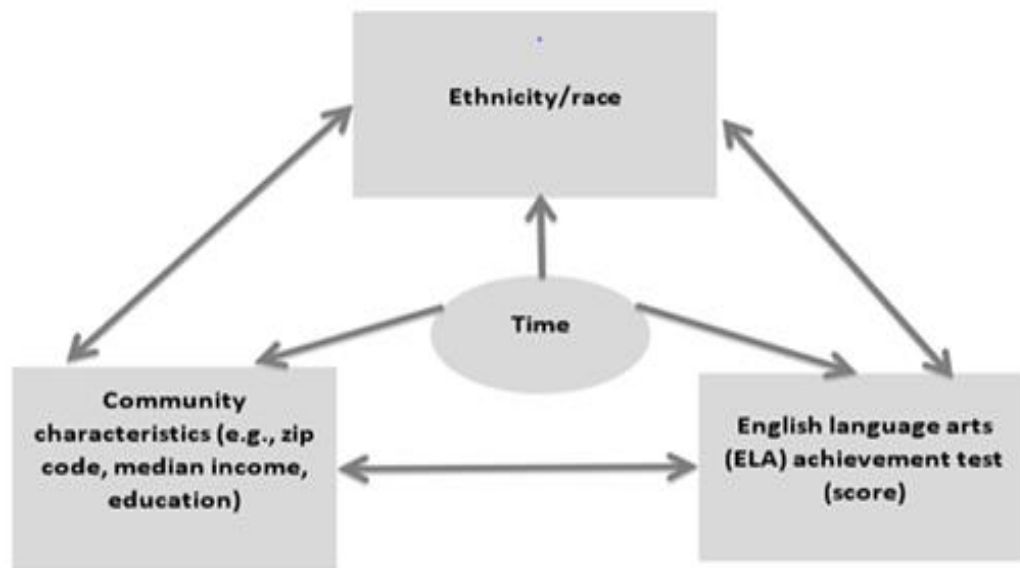
### **Conceptual Framework**

A framework was proposed to identify variables that contribute to the ELA achievement gap for racial/ethnic groups between 2013 and 2019, and the influence of the community economic level on these tests scores. The 2013-2019 period was one of economic expansion in the U.S. (Duffin, 2020 & Statista, 2019). However, this expansion was not uniformly distributed, and it is therefore unclear how various socioeconomic characteristics and built-in environmental factors of students and their families benefited from the improved economic situation, and whether it led to the reduction of the achievement gap. Three components were conceptualized for the shift: (1) less than proportional improvements in students and community social economic situations; (2) non-uniform distribution of funding to schools based on the racial and ethnic composition of funding; and (3) overall measure of school quality, neighborhood-built environment and access to basic services. Conceptually, improvement in the ELA achievement test score is influenced by the three components above. On the other hand, the correlation between economy and racial/ethnic groups of students' ELA achievement test scores can be confounded by other factors that act as vehicles to the social stratification and systemic achievement gap of minorities. Those factors (social, behavioral, and economic factors) may only partially explain the achievement gap - the relationship between income and ELA test scores may not always be direct. Therefore, further analyses will be conducted to compare the performance between students from the four largest racial

ethnic groups in NYC to determine whether this expansion also led to a reduction in the achievement gap (see Figure 6).

### **Figure 6**

*Relationship Between Community Income, Ethnicity/Race, and ELA Test Scores*



*Note.* Conceptual framework of variables connections. This figure demonstrates how each of the four variables has a connection to the other.

### **Context of Income on the Achievement Gap**

#### *Community Social Integration and Its Effects over Time*

Income inequality in communities is the level at which income is allocated unequally among the population. The U.S. has had high levels of community inequality, based on household incomes. Alongside income inequality in communities, parents' learning was among the greatest deficits (McKay & Dean, 2017). Investing in children's development eliminated many deficits and enhanced the economy's growth. However, the major cause of income inequalities in society was low literacy and lack of education.



Parham et al. (1989) explored the history and present-day status of the psychological, social, economic, and political aspects that affect Black families' academic accomplishments in the U.S. The authors laid out the historical growth of Black education. The authors noted environmental and psychological factors that influenced learning, such as parenting, motivation, and learning environments. The authors concluded that parental care was associated with the cognitive development of children. However, inequalities in the community also affected health as it does education.

According to the article, the joint contribution of neighborhood poverty and social integration in the United States determined the mortality risk. To come up with a concrete conclusion, the authors carried out an analysis of data from the Third National Health and Nutrition Examination Survey (1988-1994), which focused on mortality through 2006 in conjunction with census-based data on neighborhood poverty. The study noted that living in neighborhoods characterized by poverty and low social integration increased mortality risk. Therefore, it was concluded that mortality risk in the United States was much determined with social integration (Marcus, et al., 2016).

In the article on social cohesion, social capital and the neighborhood, by Forrest and Kearns (2001) they focused on understanding the relationship between social cohesion and social capital in the new residential neighborhood. To have this thesis understood, they first decided to set Neighborhood in a central position over social cohesion and social capital to illustrate how contentious and difficult these discussions were. Through the research, it was noted that social cohesion was the basis upon which social capital was built because, at the societal level, social cohesion was derived from the forms and quality of social interaction at the local level. In the article, "Length of

residence and social integration: The contingent effects of neighborhood poverty” by Keene et al. (2013), it showed that from a more holistic view, social integration had a role to play over the health effects. Therefore, they decided to use multi-level data from the Chicago Community Adult Health Survey to investigate the relationship between an individual’s length of residence and their social integration. Again, they looked for relationships that could be moderated by neighborhood poverty.

A relationship between social integration, neighborhood poverty, residential length and age were there; hence they influenced each other. In Massey and Denton’s article (1988), the dimensions of residential segregation were considered. Residential segregation was a multidimensional phenomenon that they discussed under five measurements: evenness, exposure, concentration, centralization, and clustering. Using these five measures, they recommended that segregation should be considered a multidimensional phenomenon. According to Darling-Hammond et al. (2019) knowledge concerning human growth and learning had expanded expeditiously, and the possibility to frame more productive educational practices was improving. Also, learning was more than an activity and an outcome of growing. Education focused on the fullest feasible comprehension and actualization of all the potentials of children. Parents and instructors had to be aware of their children’s abilities and talents (Darling-Hammond et al., 2019). Furthermore, school programs, policies, and operations should be modified to develop and evolve the achievement levels of students considering disparities in the students’ development rates.

### *The Status of Income Inequalities over Time*

In a study conducted by Reardon, et al., (2008), the researchers focused on the correlation between education and finance in the U.S. as well as in other global regions. They incorporated a systematic methodology to gather research contents. In this context, the authors assembled information from several disciplines including finance, education, sociology, and history, just to mention a few. In addition, they established that income inequality among the minority and majority groups had been persistent for decades, not only in the U.S., but in most developed nations (mostly EU nations). The authors concluded that over the last two decades, the economic inequalities between minority groups, such as Hispanics and Blacks, and the majority group primarily composed of Whites, had remained stagnant. This made it hard to establish an economic balance between the two groups. In another research study conducted by Rothstein and Wozny (2013) the conclusions of the authors supported the research of Reardon et al. (2018). Rothstein & Wozny (2013) analyzed tests taken by White and Black students and established a test score gap between the two groups. The researchers correlated differences in test scores, between learners from White and Black families, with constant income levels as well as distinctions related to changing levels of income in families from each group. The study utilized data from previously conducted research studies.

Rothstein and Wozny (2013) established that current income explained only about half as much of the Black-White test gap as did deviating income, and the differences between families with permanent income was only 0.2 to 0.3 standard deviations in two of the major utilized samples. The researchers utilized data from a research study by Fryer & Levitt (2006). They came up with the postulate that when deviating income was

incorporated into the controls of the study by Fryer & Levitt (2006), the unexplained gap in third grade scores shrank below 0.15 SDs, a figure that was below the actual figures available within their controls by approximately half. Rothstein & Wozny, (2013) concluded by noting that income inequalities among minority groups remained the main factor contributing to poor academic performance and the wider academic performance gaps between minority and majority groups.

### **Relationship between Prior Research and Present Study**

#### ***Effects of Unequal Income Levels between the Majority and Minority***

In a study by Hemphil, Vanneman, and Rahman, (2011), the researchers utilized the National Assessment of Educational Progress (NAEP) analytical research findings to compile a critical analysis of the differences in academic performance among public school students from grade 4 to grade 8. Mathematics and reading were the core subjects presented in the study as many U.S. states (forty-two) offered these kinds of examinations to public primary students from grade 4 to grade 8. Hemphil et al. (2011) established that 2007 was the year with the highest mathematics grades for both White and Black learners. Both groups had high grades, but White students had higher mathematics test scores as compared to their Black counterparts. The authors postulated that income inequality was the major contributor to the academic gap between White and Black students across the U.S.

The study by Hemphil et al. (2011) was echoed by the findings of Fryer and Levitt (2004). They conducted a research study using available data sets for Black and White kindergarten students in the U.S. Fryer and Levitt (2004) aimed at demonstrating persistent gaps in test scores between White and Black kindergarten students, as well as

showing the covariates that led to the differences in performance between the two groups. Fryer and Levitt (2004) found that Black students performed poorly compared to White students, and that this could be attributed to differences in income between Black and White families.

Research studies by Fryer and Levitt (2004) as well as, Hemphil et al. (2011) were backed by the research findings of Biemiller (2010); this was a study conducted throughout the United States to test the language development of learners in different grades. Biemiller (2010) utilized data assembled from a study on primary grades (K-2) and upper elementary grades (3-6). The study utilized more than eleven thousand words, with their meanings defined in the book, to assess the mastery of the learners. The research by Biemiller (2010) established that the eleven thousand root word vocabularies and their meanings could easily be utilized in teaching upper elementary grades (3-6) but were too complex to be taught to youngsters who were in elementary grades 2 or earlier. The authors noted that only some elementary upper grades learners were introduced to advanced learning techniques, and this could be explained by the ability of their parents to afford high-quality education.

### ***Inequality in Academic Opportunities between Minority and Majority Group***

In the 2009 research study by Vanneman, Hamilton, Anderson, and Rahman, the methodology employed by the researchers utilized the National Assessment of Educational Progress (NAEP) analytical research findings to compile a critical analysis of dissimilar economic status between White and Black students. Vanneman et al., (2009), established that White and Black students were provided with equal academic options, but the disparities in income distribution made it hard for Black students to pay

the academic fees needed to attend high-quality advanced schools. The authors postulated that this explained the manner in which the academia of minorities and majorities kept on stagnating or expanding each year.

The book by Sampson, Sampson, and Rasinski (2003) supports the findings of the study by Vanneman et al. (2009) as Sampson et al. (2003) aimed at establishing answers to the question of why there was a huge gap in total literacy between Black minority students and White majority students. The textbook is geared towards middle grade student literacy instruction. It provides practical suggestions and relevant information for future middle school and high school English teachers for engaging their students. Teachers learn how to guide students through the reading process and engage learners in the kind of discussions that support their literacy learning. These are some of the skills students need to be able to read complex texts and construct arguments supported by texts and communications, thereby preparing them for any standardized exam.

### ***Correlation between Income Levels and the Academic Achievement Gap***

Mesmer, Cunningham, and Hiebert (2012) presented a research study that sought to answer the question of the link between income levels and academic achievement. Mesmer et al. (2012) established that the earlier that complex vocabularies were introduced to the learners, the easier it was to develop an enhanced mastery of text. Furthermore, they noted that there existed a huge gap between the lingo of minority and majority students because the former lacked the capital needed to enroll in the advanced private schools which introduced learners to advanced texts at a tender age. The latter had the ability to pay for expensive and advanced private schools that introduced students to professional texts, and thus, sharpened their skills at a tender age. The research findings

presented by Mesmer et al. (2012) were backed by a similar study conducted by Ladson-Billings, (2005). Before presenting the findings of Ladson-Billings (2005), it is of great importance to present the research questions and methodology. Ladson-Billings (2005) aimed at establishing the factors that made it hard for minority groups to acquire scholarships despite their need, being of low socioeconomic status, as compared to the majority from a high socioeconomic status. Biddle & Berliner (2002) examined the extent, causes, and consequences of the unequal funding of public schools within and among states and found that funding not only affected academics but also the whole communities of the students. They also described state legal and legislative efforts to improve funding equity in the public-school systems.

Peske and Haycock (2006) wanted to demonstrate that minority students' lack of academic achievements was usually influenced by their own poor school environment. Furthermore, they wanted the readers to understand a fundamental but painful truth: "Poor and minority children do not underachieve in school just because they often enter behind; but, also because the schools that are supposed to serve them actually shortchange them in the one resource they most need to reach their potential - high-quality teachers" (p. 2). Funding played a role in how schools educated students and how in turn the students performed academically. However, there were other school environmental factors that affected students' academic achievements.

In summary, this literature review is of great significance to the pedagogical field because it explores some of the most critical factors contributing to the huge academic gaps across America between minority groups with low socioeconomic status and majority groups with high socioeconomic status. The strengths of this literature review

include the ability to summarize the findings from diverse forms of research linking academic achievement gaps with low income. Also, this literature review compares and links diverse research studies, and thus, makes it easier to trace the actual concepts in the discussion.

### ***Gaps in the Literature***

There is a plethora of research on achievement gaps and racial inequities in education. It is well-established that inequities and achievement gaps continue to persist between racial/ethnic students and their non-racial/ethnic peers. Its weakness lies in an inability to elaborate on how economic disparities among school neighborhood zip codes affect academic test assessments. For instance, Boyd, Zhang-Salomons, Groome, and Mackillop (1999) showed that the association between community socioeconomic status (SES) and cancer survival is weaker in Ontario than it is in the U.S. This is due to a combination of better survival among patients in the poorest communities and worse survival among patients in the wealthier communities of Ontario relative to those in the U.S (p. 2244). The next step in this literature review will be to conduct a study to identify ways in which economic factors in communities affect the ELA test scores of racial/ethnic students attending schools in those communities in the New York City school district, and thereby predict any changes in the achievement gap for the racial/ethnic groups of students. In addition to that, these past studies do not highlight achievement gaps in the Asian population. The literature also lacks research presenting a clear link between community level factors and poor academic performances. This study examined ways in which community economic factors relate to the ELA test scores of



minority students in the New York City school district and whether they correlate to changes in the achievement gap for minority students.

## **CHAPTER 3: METHOD**

This is a quantitative study, and the researcher serves as an independent observer; the research process is deductive and value free (Terrell, 2016). Meanwhile, Creswell (2002) gave a concise definition of quantitative research—it is an inquiry into an identified problem, based on test theory, measured with numbers, and analyzed using statistical techniques, to determine whether the predictive generalizations of a theory hold true. Therefore, the testing in this research is based on non-experimental quantitative approaches with a generalized estimating equations (GEEs) methodology (Liang & Zeger, 1986). Likewise, a social constructionist lens was utilized qualitatively. Meaning that, the quantitative results were analyzed with constructivist perspective to make inferences about relevant and meaningful relationships. Relationships based on the teacher's role and the ELA test scores, student's community, social environment, social skills, SES, life experiences, and the ELA test scores.

### **The Critical Race Theory Lens and the Analysis**

This thesis focused exclusively on the results from language arts as quantitative methods, to analyze and outline the gains (if any) as well as the stagnate gaps that manifest for black students particularly in 8th grade. From June 2009 to February 2020, the United States in general and NY State in particular, experienced the longest period of economic expansion in history. However, there is considerable evidence that Americans did not benefit equally from this expansion, particularly in New York City, which has a well-documented history of income inequality. Thus, the NYC public schools' diverse geographic location (high to low economic status areas), correlate with the experience that the students experienced daily at school. The test scores served as quantitative data

while school community experiences and average school zip code income infer reasoning, therefore, they were used to inform this research analysis.

## **Data and Procedures**

### ***Data***

These data used in this study were from the NYSED and the ACS-Census Bureau. The database contains school, district, county, and statewide enrollment by grade, race/ethnicity, gender, and the school zip code average income. The New York state department of education collected the data that are representative of kindergarteners through 12th graders, and schools across New York State. This study focuses on the average score of the ELA test of eighth graders in NYC public schools from 2013 to 2019. The data focus on the four largest racial/ethnic represented in the database and provide descriptive information on the students' grade status. The group selected for the study was limited to students who attend NYC public schools, in eighth grade and had no missing data for age, gender, race, SES, and ELA scores. Since the research purpose was to investigate the Black/White; Hispanic/White; Black/ Asian; Hispanic/Asian average ELA test score gap based on the 2013-2019 NYC economic boom, all analyses are restricted to students from those four racial categories.

### ***Procedure***

This study did not perform random assignment. In addition, the study did not engage in causal inference, rather it used the estimation of the partial direct and indirect associations of school neighborhood median income and economic disadvantage on ELA test scores. The study used only de-identified archival data provided by the NYSED.

School level data were combined for each 8th grade class (e.g., mean ELA scores, school composition by race/ethnicity, proportions of males vs. female students, proportion of economically/not economically disadvantaged) and median community income status collected at the school zip code level. NYC school addresses are publicly available online; they were linked to ELA test scores using the Basic Education System (BEDS) code. With the addresses, especially the school zip code, socio-economic data for the neighborhood in which schools were located could be found. The socioeconomic data needed for these analyses are publicly available (e.g., Geocodio, American Community Survey, and Neighborhood Deprivation Index). This facilitated integration of school-level community economic factors such as school area median household income by race/ethnicity. The relationship between the dependent variable (the school mean ELA test score,  $y$ ) and several independent variables at the school level (e.g., school composition by race/ethnicity, sex), and at the community level (e.g., median community income, education level, age distribution, gender, academic degree, employment, marital status) based on zip code were examined. The archival data used in these analyses are available in Microsoft Access, Comma-Separated Values (CSV), and Excel files. These files were combined using SPSS and SAS 9.4. The independent variables were manipulated to obtain the proportions by sex and social economic status. Permission to conduct the study was also obtained from Saint John's University Institutional Review Board (IRB) and the IRB committee approved the IRB form on January 11, 2021 (Appendix A). Student identifiers are not included in the database, and they were not used in the analyses. The data were verified and stored on a password-protected computer.

## *Population*

At the time of this study, NYC public schools had 76,664 eight grade students in its six hundred public middle schools. The current study sample included students who took the ELA test in grades 8. Students with ELA scores from approximately 410 middle schools per year in the five NYC boroughs comprised the sample. Descriptive data for the study sample (see Table 1) were drawn from the enrollment data of NYSED.

**Table 1**

### *Demographics of Study Population*

Year	Schools	Students	Female (%)	Disability (%)	Proficient (%)	SES (%)
2013	410	116,668	48.9	15.5	11.0	79.4
2014	409	118,570	48.8	16.9	9.9	79.0
2015	412	113,683	49.0	17.9	9.9	71.1
2016	419	110,569	49.2	18.1	10.1	70.6
2017	417	109,087	48.7	17.7	-	69.1
2018	411	108,197	48.9	18.7	-	73.5
2019	403	109,697	48.5	18.9	-	72.6

*Note.* Percent proficient were not provided in the years 2017-2019

## **Description of Variables**

### *Dependent Variables*

The dependent variable of interest was ELA test score, where ELA was the mean test score observed for each school for Black, Hispanic, Asian, and White students during each calendar year. It is an average broad-based score using assessment items in English Language Arts. When looking at the average test scores descriptively, Black and

Hispanic students' scores are substantially lower than White and Asian students in the eighth-grade classroom.

### *Covariates*

The covariates for these analyses included race, socioeconomic status (SES) the proportion of students who qualified for free or reduced lunch or students who qualified for full price lunch. It was determined by federal guidelines for parent or guardian income as part of the NYSED database. The median school zip code level income of each school neighborhood was used as parental income. School neighborhood was determined by geographic location and U.S. Census Bureau categorization of the school district from which a student attended. The data were from the Geocodio, American Community Survey, and Neighborhood Deprivation Index. Student gender (male or female) was indicated on each year's mean ELA test scores. Student race was indicated on each school mean ELA test score. The following race categories were included in this study: Black, White, Hispanic, Asian, and other based on the NYSED data. For the purpose of the data analysis students categorized as Native American, Alaskan Native, Native Hawaiian, other Pacific Islander, or Multiracial were excluded due to the small sample size. Since race is a categorical variable, dummy coding was used.

The variable time was computed as Year-2013, such that time=0 for 2013, 1 for 2014, and so on. The Greek letter epsilon ( $\epsilon$ ) represents the error term. When looking at the test scores descriptively, Hispanic and Black students' scores are lower than White and Asian students in the early year and made gains onwards.

## **Data Analysis**

### ***Analytic Strategy***

The analytic models presented in this study examined the influences of school neighborhood median income on achievement gaps in ELA test scores between non-Hispanic Black and Hispanic students with non-Hispanic White and Asian 8th grade middle school students in the NYC School District. The models sought to determine whether – and if so, to what extent – the economic extension led to a reduction of the performance gap. Again for the income, the study used the average income in New York City residents where the schools are located. Figure 7 shows the income information collected by the United States Census Bureau. According to the United States Census Bureau, the median household income in New York City is \$63,799. Furthermore, due to the nature of the data – correlated and normally distributed data – generalized estimating equations (GEE) modelling approach (Lee & Nelder, 2004; Ziegler, 2011) was used. Utilizing GEE model in these analyses provided the ability to account for the correlation between test scores for students who went to the same schools. Certain school characteristics (i.e., faculty, neighborhood environmental factors, and budget) do not change rapidly and can last over several years. These factors can all affect student performance, such that test scores for student who frequent the same schools may not be independent, even if they took the ELA test in different years. The models were fit and tested using a (GEE) between Black, Hispanic, and White, Asian 8th grade students to assess whether changes observed in median community incomes for where the schools are located during the 2013-2019 period are associated with changes in the students' mean ELA scores over the same period.

Moreover, using GEE approach helped avoid computational difficulty in ANOVA with correlated and normally distributed outcomes. The great advantage of GEE used instead, was to account for repeated observations over time. The study had multiple years of data for the same schools, GEE allowed for adjustment for the correlation in test scores for students who went to the same school. Several studies used GEE to analyze longitudinal data analyses (Ballinger, 2004; Duggleby et. al., 2013; Morgan et. Al., 2005; Vagenas & Totsika, 2018). Descriptive data dictionary for the study sample are presented in (Appendix B). The distribution observed by race from 2013-2019 period is shown in table 2 below.

**Table 2**

*Distribution of Race/Ethnicity of the Study Population*

Year	Asian	Black	Hispanic	White
2013	16.6%	29.4%	39.9%	14.1%
2014	17.6%	28.1%	39.3%	14.9%
2015	17.7%	27.2%	40.3%	14.8%
2016	18.2%	26.0%	41.0%	14.9%
2017	19.2%	24.4%	41.1%	15.2%
2018	20.4%	23.1%	41.2%	15.3%
2019	20.0%	23.1%	42.2%	14.7%

The original GEE model for ELLA test scores over time can be simplified and demonstrated as follows:

$$\begin{aligned}
 ELA = & \beta_0 + \beta_1 Race + \beta_2 Time + \beta_3 School ZipcodeIncome + \beta_4 (Race \times Time) \\
 & + \beta_5 (Year > 2017) + \varepsilon
 \end{aligned}$$



$ELA$  = Average ELA test scores of the students, nested in eight grade classrooms, nested in school zip code

- $\beta_0$  = The intercept
- $\beta_1$  = The effect of race
- $\beta_2$  = The effect of time
- $\beta_3$  = The effect of school zip code income
- $\beta_4$  = The interaction to determine the effect of race over time
- $\beta_5$  = The effect of the change in the way the ELA test is scored after 2017
- $\varepsilon$  = represents the error term

It should be noted that this model was easily fitted in SPSS under Generalized Linear Models, treating the race variable as a factor and time as a continuous covariate. The research question is:

- RQ: Has the average ELA scores for New York City eight grade students changed from 2013-2019 by racial/ethnic groups due to the economy?

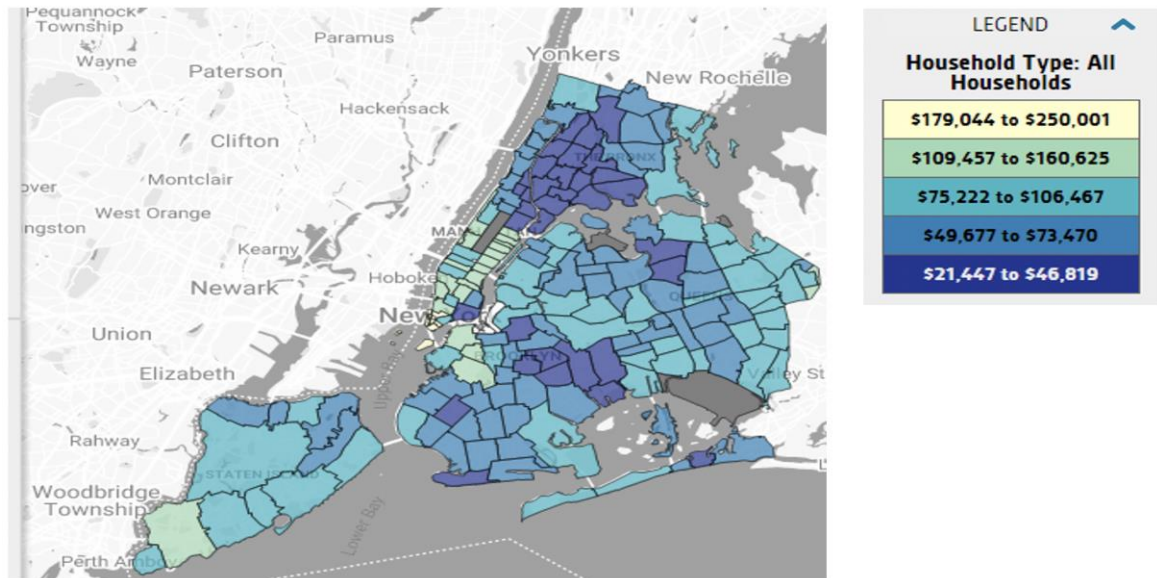
The guiding hypothesis is:

- $H_0$ : There is no change in the average ELA scores among New York City eight grade students from 2013-2019 by racial/ethnic group due to the economy.

$H_a$ : There is a significant change in the average ELA scores for New York City eight grade students from 2013-2019 by racial/ethnic group due to the economy.

**Figure 7**

*NYC Income Distribution 2019*



*Note:* The figure is from the U.S. Census Bureau, American Community Survey 1-Year Estimates S1903 (2005-2019).

### ***Descriptive Statistics***

Descriptive statistics, including means and standard deviations for continuous measures and frequencies and percentages for categorical, were calculated to describe the average ELA scores, class composition, and neighborhood school income data.

### ***Type I and II Error Probabilities***

Two types of error are possible in the hypothesis testing procedure, depending on which hypothesis, Null (H<sub>0</sub>) or alternative (H<sub>1</sub>), is actually true. Rejecting null hypothesis when it is true is known as Type 1 error. If a test fails to reject the alternative when it is true it is called a type II error (Tamhane, & Dunlop, 2000). In social science, the 0.05 level of significance is often used as a cutoff point. Therefore, if there is a 5% or less probability that a relationship is just due to chance, it can be concluded that the

relationship is likely statistically. The level of significance is typically denoted by the Greek letter alpha ( $\alpha$ ). That is, the probability of committing a Type I error. The lower the alpha level, the more the data must depart from the null hypothesis to be significant. The mean ELA test results are important in terms of understanding achievement gap in ELA scores. Understanding factors that influence the mean ELA test scores could lead to improvements in ELA is taught in the classroom. If the results of this study show that the economy had an effect on the mean ELA test scores (the dependent variable), educational policy officials could use this information to make decisions on school development, service and funding allocations. If the results indicated that the economic factor did not have an effect on mean ELA test score, then different decisions would be made. On the other hand, if the null hypothesis stating that there are no differences in the mean ELA test scores results for Blacks and racial/ethnic students in 8th grade classrooms is rejected, when there are no differences, a Type I error would occur. As a result, endemic social and economic disparities could persist. A suggestion could be made that all students should receive early literacy education to better prepare them for the future. The benefits in this instance are that literacy education can be equal and fair for all students regardless of their zip code. There will be no need for efforts towards school desegregation in New York City for their inferior education to Black students (Back, 2003). In this case, there would be a false confidence in the value of the ELA test.

On the other hand, the type II error, often denoted by the Greek letter beta ( $\beta$ ), represents the probability that a false hypothesis in a statistical test is accepted as true. (Tamhane & Dunlop, 2000). If the null hypothesis stating that there is no difference in ELA test results between Blacks and students of other minority ethnic groups, then

economic factors have no bearing and are not rejected. Under this scenario, if there were a statistical difference, a Type II error would occur. As a result, a decision could be made by the New York State not to desegregate schools and provide equal benefits and financial services. Additionally, efforts towards school desegregation in New York City for their inferior education to Black students could be enforced and resolved for good (Back, 2003). All hypotheses were conducted assuming a type I error rate or significance level ( $\alpha= 0.05$ ) in this study. The data analysis process of this study included two stages. The first stages included hypothesis testing with GEE. The second stage included a descriptive analysis to describe the distribution of the data.

### ***Assumptions***

An assumption underlying this study is that, with improvement in the economy during the study period and likely changes in classroom instruction due to policy shifts, ELA test scores of middle school students from minority ethnic groups improved, and this improvement would start to fill the achievement gap, relative to White and Asian students. Furthermore, data aggregated at the school level provides sufficient granularity to address the research questions. To the best of knowledge, these questions have not yet been directly addressed in rigorous research efforts. Chapter four below describes the results of the study.

## **CHAPTER 4: RESULTS**

The purpose of this study was to explore whether the longest US economic expansion was related to a change in ELA test scores among Black eighth graders in the New York City school district during the 2013-2019 period. A secondary purpose of this study was to explore the relationship between students from the four largest racial and ethnic groups in NYC (i.e., Black, White, Hispanic and Asian) to determine whether this expansion also led to a reduction in the achievement gap. Most studies that examine the Black/White achievement gap use student- or parental-level SES when analyzing class. Because of the reliance on surveys and individual level-data, these studies typically used much smaller sample size. For this thesis, average school community SES observed over a long time period was used to explain school environment factors to account for the lack of individual information about parental education, occupation and income into one continuous measure for the eighth-grade study group class level (Condrón, 2009). This is important because students living in poverty and attend poor schools experience hardship at school. They are less likely to be referred to gifted education programs than their White and Asian peers (Peters et al., 2019; Yoon & Gentry, 2009). They are also at disadvantage environmentally and socially. These negative factors clearly can affect their academic development; hence their ability to score high on the yearly ELA assessment test.

### **Research Question**

Have the average ELA scores for New York City eighth-grade students changed from 2013-2019 by racial/ethnic groups due to the economy?

## Generalized Estimating Equation Results

Model:

$$ELA = \beta_0 + \beta_1 Race + \beta_2 Time + \beta_3 School ZipcodeIncome + \beta_4 (Race \times Time) + \varepsilon$$

Median income by race/ethnicity were obtained for the American Community Survey (ACS), using the one-year estimates. To facilitate comparison, incomes for the entire 2013-2019 period were expressed in 2013 dollars to account for inflation. Linear trends regression models were again fitted with the mean ELA test scores as outcome with race/ethnic specific income, year, number of students and an indicator variable to distinguish between the 2013-2017 and the 2018-2019 periods. Interaction effects were tested for the joint effects of race on income and exam year to determine whether race/ethnicity altered the relationship between income and test scores, and whether the passing of time contributed differently to test scores. A generalized estimating equation approach was used to capture the effect of schools on ELA test scores. These analyses showed that race/ethnicity, year, income and the indicator variable described above were significantly associated with the ELA test scores. In addition, there was an interaction effect between race/ethnicity and income suggesting that race/ethnicity modified the effect of income on the ELA test scores. However, the number of students per school did not affect the average ELA test score. The parameter estimates (betas), standard errors and p-values are shown in Table 3 below.

**Table 3***Linear Trends Result for ELA*

Variable	Level	Betas	SE	P-value
Intercept		294.7***	3.1	<0.001
	Asian	1.29	1.71	0.45
	Black	-18.10	1.92	<0.001
Race	Hispanic	-17.42	2.14	<0.001
	White		Reference	
Year		2.01	0.46	<0.001
	Asian	0.94	0.38	0.01
	Black	2.20	0.36	<0.001
Year*race	Hispanic	1.94	0.34	<0.001
	White		Reference	
Income		1.45	0.39	0.0001
Change indicator		287.02	1.28	<0.001

---

\*\*\*p<.0001

*Note.* Linear trends model results for ELA test scores as a function of student race, median income in school zip code over time.

**Descriptive Statistics**

Consideration of school neighborhood income was therefore crucial to determine whether the observed reduction was only due to changes in the ELA Test. To facilitate the interpretation of these analyses, average zip code income was stratified in low (income less than \$40,000 a year), middle (income between \$40,000 and \$120,000 a

year) and high (income greater than \$140,000 a year) Tables 3 and 4 provide the results for descriptive statistics. Table 5 shows the 8th grade classroom ELA test scores means across these racial ethnic groups, after stratifying the median income of residents who lived in the same zip code where the school was located.

**Table 4**

*Mean, SD, and the Black and White Test Scores Gap*

Year	Asian M (SD)	Black M (SD)	Hispanic M (SD)	White M (SD)	Black vs. White Gap M (SD)
2013	298.8 (16)	289.1 (14.1)	289.5 (15.1)	301.2 (14.9)	-12.1 (14.4)
2014	301.7 (16.1)	292.5 14.4	292.5 (15.2)	304.3 (14.3)	-11.8 (14.4)
2015	304.1 (14.7)	294.9 (13.8)	295.2 (15.1)	305.9 (14.5)	-11.0 14.1
2016	311.2 (14.6)	301.7 (13.5)	302.6 (14.4)	312.4 (13.5)	-10.7 (13.5)
2017	315 (14.1)	305.8 (13.6)	306.7 (14.5)	316.2 (12.7)	-10.4 (13.3)
2018	604.6 (8.5)	599.6 (8.0)	599.9 (8.4)	605.3 (8.2)	-5.6 (8.1)
2019	603.8 (8.7)	599.2 (7.5)	600 (8.4)	604.9 (8.1)	-5.7 (7.7)

*Note.* Mean and SD ELA test scores over time. Minus indicates the mean of Black students is lower than the mean of White students.



**Table 5***Mean, SD, and the Black and White ELA Test Scores Gap Over Time by Income*

Year	Income	Asian M (SD)	Black M (SD)	Hispanic M (SD)	White M (SD)	White vs. Black Gap M (SD)
2013	Low	299.4 (21.4)	286.5 (14.6)	284.2 (13.4)	297.8 (21.3)	-11.3 (16.0)
	Middle	299 (14.2)	291.3 (13.1)	293.6 (14.5)	301.7 (13.1)	-10.4 (13.1)
	High	308.7 (15.6)	299 (15.1)	300.2 (18.1)	309.2 (13.3)	-10.2 (14.5)
2014	Low	302 (20.3)	289.6 (14.8)	287 (13.8)	304.1 (20.4)	-14.5 (16.1)
	Middle	302.1 (15)	294.5 (13.5)	296.3 (14.4)	304.3 (12.8)	-9.8 (13.2)
	High	306.2 (11.3)	301.3 (17.2)	305 (19.3)	312.8 (13.2)	-11.5 (15.9)
2015	Low	301.4 (19.6)	293 (14.6)	289.6 (14.6)	302.1 (20.4)	-9.1 (16.0)
	Middle	304.4 (13.2)	296.3 (12.8)	298.7 (13.8)	306.3 (12.8)	-10.0 (12.8)
	High	316.2 (12.8)	299.7 (16.5)	306.3 (18.5)	314.1 (13)	-14.4 (15.3)
2016	Low	310 (18.7)	298.6 (14.5)	297.2 (14)	309.8 (17.5)	-11.2 (15.3)
	Middle	311.4 (13.5)	302.7 (12.6)	305.2 (13.7)	312.8 (12.2)	-10.1 (12.4)
	High	317 (12.5)	309.2 (15)	310.8 (16.4)	318.5 (14.5)	-9.3 (14.8)
2017	Low	311.7 (17.6)	301.8 (15.2)	301.2 (14.1)	311.1 (18.3)	-9.3 (15.9)
	Middle	315.2 (12.3)	307.8 (11.7)	309.8 (13.7)	316.6 (10.6)	-8.8 (11.3)
	High	324.6 (9.9)	311.1 (17.1)	313.6 (18.6)	323.3 (13.1)	-12.2 (15.6)
2018	Low	603.9 (10.7)	597 (8.2)	596.7 (8)	604 (11)	-7.0 (8.9)
	Middle	604.5 (7.7)	600.7 (7.5)	601.6 (8.1)	605.4 (7.2)	-4.7 (7.4)
	High	605.6 (8.5)	603.6 (7.4)	605.8 (7.9)	606.1 (8.2)	-2.5 (7.8)
2019	Low	602.1 (10.4)	595.8 (7)	597.1 (8.5)	603.1 (9.9)	-7.3 (7.8)
	Middle	604	600.4	601.3	604.7	-4.3

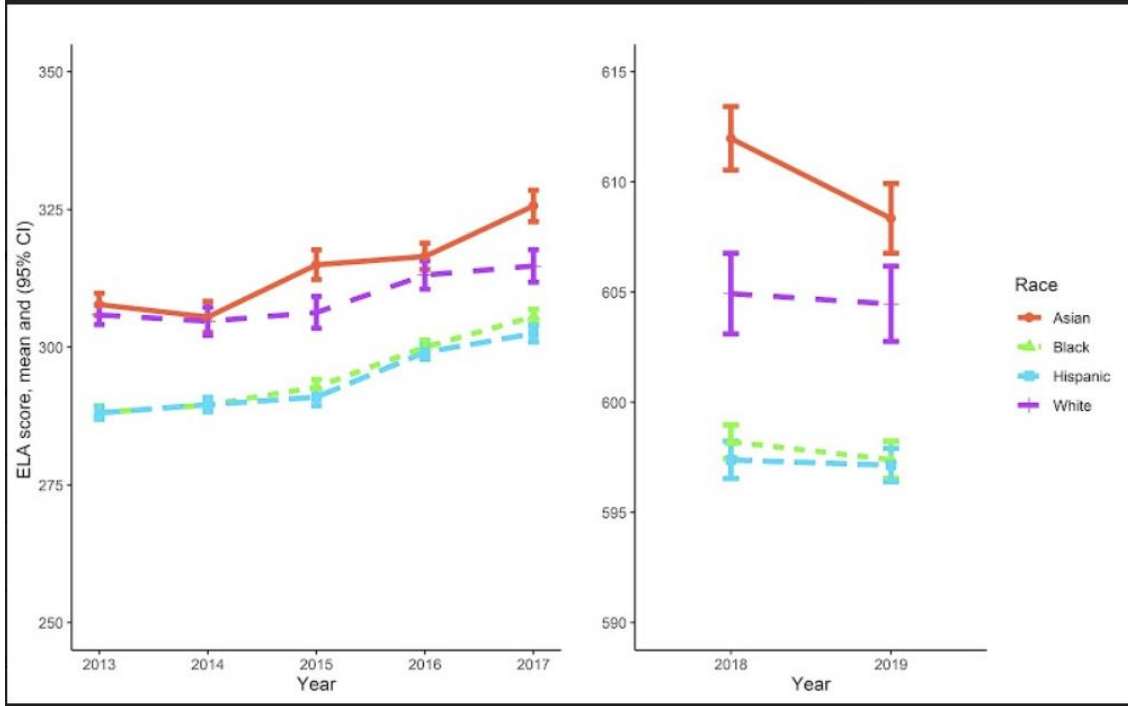
	(8.1)	(7)	(7.6)	(7.3)	(7.1)
High	608.4	606.2	606.7	608.3	-2.1
	(7.1)	(8.1)	(8)	(7.9)	(8.0)

*Note.* Low: < \$40,000; Middle: \$40,000 -- \$120,000; High: > \$120,000. Minus indicates the mean of Black students is lower than the mean of White students.

A similar pattern is observed with an average ELA test scores gap of about 10-11 points between Black and Hispanic students, relative to Asian and White. The gap persisted between 2013 and 2017 and appeared to drop to only 3 points after changes were made in the ELA test itself in 2018 and dropped to less than two points in 2019. It is noted here that this was the median income by zip code for all race/ethnic groups combined, such that the disparity in median incomes across racial/ethnic groups was not reflected in these analyses. In addition, changes applied to the way the ELA test was applied and graded in 2018 and 2019 made it hard to compare ELA scores observed for these two years with previous ELA scores (see Figure 8).

**Figure 8**

*Mean ELA Test Scores Over Time for Period before Testing Structural Changes (2013-2017) and After Change (2018-2019)*



**Figure 9**

*School Neighborhood inflation adjusted income (High and Low)*

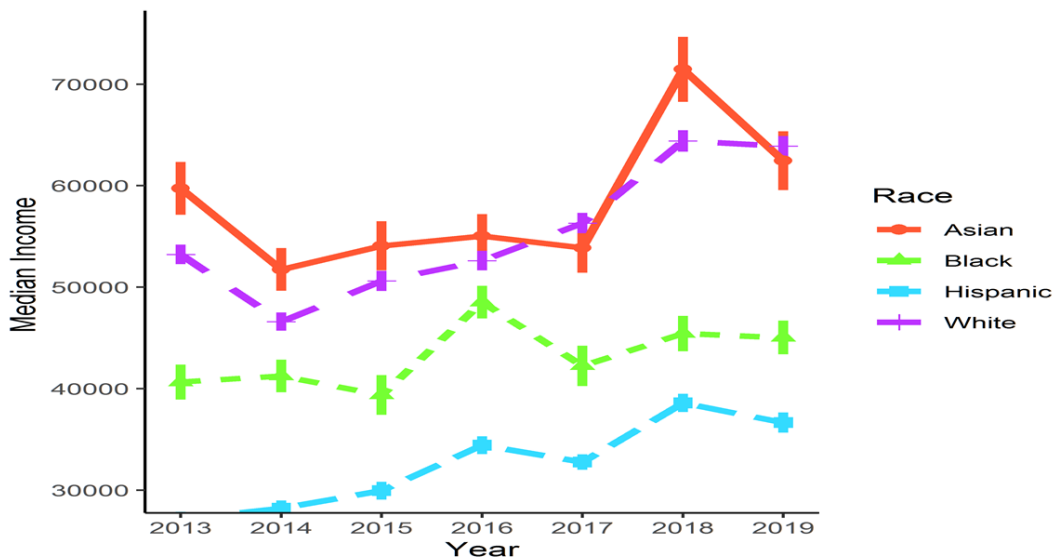


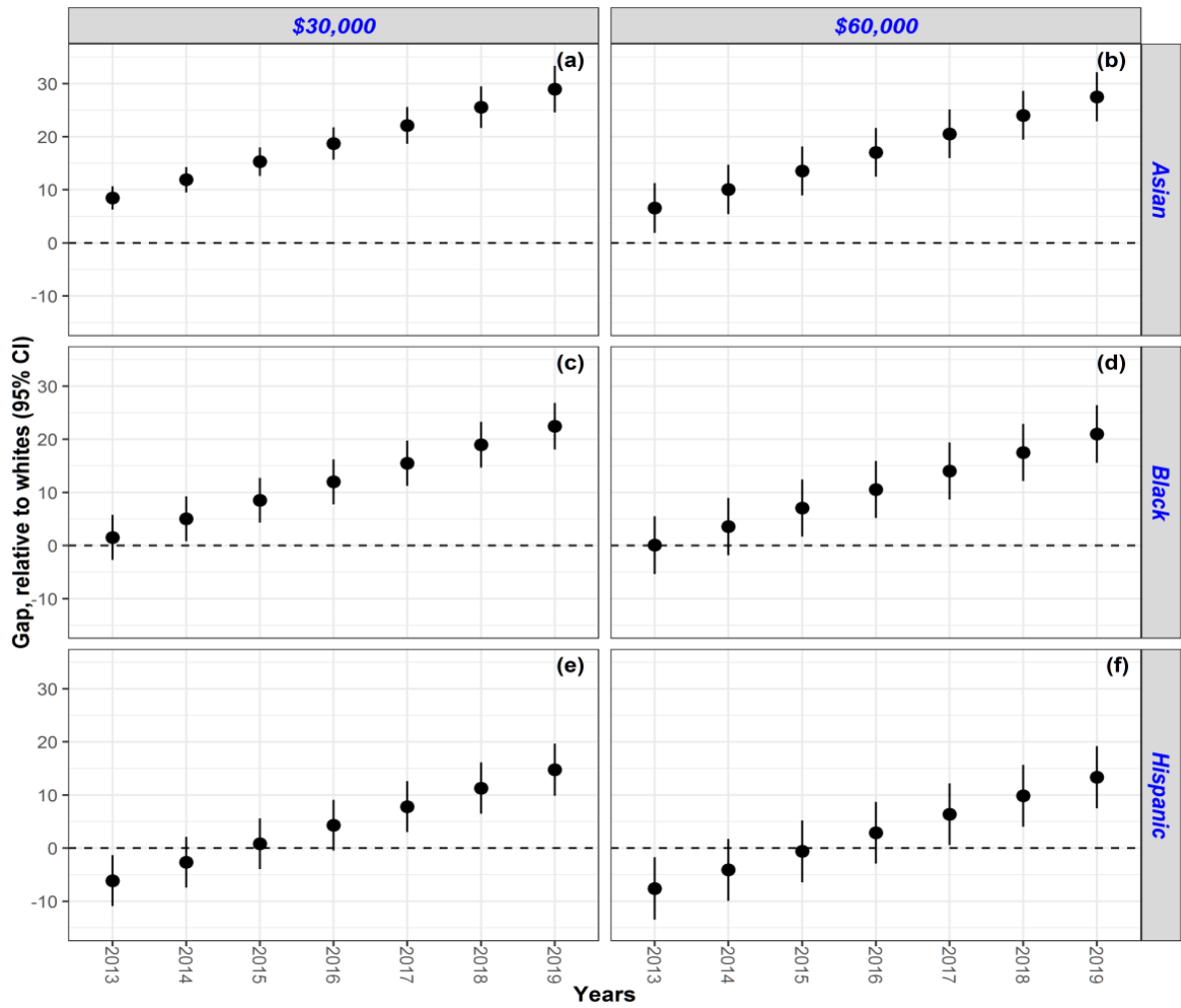
Figure 9 presented the School Neighborhood inflation adjusted income distribution over time by race/ethnicity. The higher school neighborhood incomes occurred for Asian and white students, then followed by Black and lastly Hispanic students. Unlike the ELA test scores, there seems to be a gap in income between Black and Hispanic residents of these neighborhoods. By looking at the graph, however, income increased in all four groups, considerably better for the Hispanic students.

However, because of the presence of the interaction term, results cannot be interpreted based solely on the parameter estimates shown in Table 5. Differences in ELA test scores between Black and White students and between Hispanic and White students are shown in Figure 10. To facilitate interpretation, income levels were split into low (\$30,000), and high (\$60,000). Plots shown only for high- and low-income values suggest that the gap in ELA scores may have reversed. The filled circle represents the adjusted difference in scores between Asian, Black and Hispanic students with White students. The vertical bars above and below the circle represent the length of the 95% confidence intervals. Intervals that include 0 (represented by the dash line) are not statistically different. The estimates and confidence intervals were derived by contrasting the parameter estimates obtained from the adjusted model for Asian, Black and Hispanic students with the estimates for the White students. These estimates are shown on Table 4. For 2013 and 2014, for schools located in zip codes where the median income by race/ethnicity was less than \$30,000, Black students scored on average ~10.1 and 7.0 points lower respectively, relative to White students. By the year 2015, the adjusted difference was no longer significant (the 95% confidence interval included 0), and there

is evidence that the Black students may have performed better in 2019, after adjusting for the changes made in the way the ELA test was administered and graded. Similar patterns were observed for students attending schools in zip codes with median incomes of \$60,000 or more. In fact, the mean ELA test scores for Black students in these higher income schools were on average 10.2 and 13.2 percent higher in 2018 and 2019. Similar patterns are observed for both low- and high-income Hispanic students. Figure 9 showed the adjusted differences in mean ELA test scores and their 95% confidence intervals between Black and White students and between Hispanic and White students over the observation period.

**Figure 10**

*Differences in ELA test scores by income level (High and Low)*



*Note.* Differences in ELA test scores between Black and White, and Hispanic and White students by income level (High and Low) during the 2013-2019 period.

## CHAPTER 5: DISCUSSION

Studies on academic disparities and parental income have dominated the academic and social science research for decades (Broer et al., 2019; García & Weiss, 2017; Joyce & Cartwright, 2018; Micheltore & Dynarski, 2016). Yet, a critical component, income, has always been a driving factor that complicated real change in the academic achievement of ethnic/racial minority students. With significantly lower income and generational wealth, most parents of minority students have struggled to ensure that their children maintained comparable academic performance with wealthier, mostly White students who enjoyed an early academic head start (Browne, 1993; Campbell & Kaufman, 2006; Ryabov, 2020; Warren & Britton, 2003). And when and if the public schools or foundations provided an early academic head start, there was always inequality in the way in which the programs were run, due to socioeconomic factors and geographic location.

Many communities lacked basic services that would allow children and families to flourish. For instance, libraries and parks were places for young children to learn, play, grow, develop and become literate, but they were not available in many communities. According to Freire & Macedo (2005) the act of reading was significantly accomplished by the world in which the reader lived. The reader needed a place to dream, and to make words come to life. The point implied that the comprehension of the message was primarily influenced by the knowledge the reader had of the issue being talked about. If one reads the word “garden” but has never seen one, it will be hard pressed for the person to further imagine different scenes that can happen in a garden. In addition, understanding of a message depends on how students connect between what they read

with the experiences they have had. Therefore, it is important that students are well prepared to take the English Language Arts (ELA) test and succeed on it. Sampson et al. (2003) literacy instruction provide key strategies with a particular focus on teacher instruction in literacy and in reading that would allow teachers to guide students' acquisition. Moreover, ELA teaching should serve as an effective form of learning acquisition and pedagogy. Thereby, students and teachers benefited from having experience with the ELA subjects. This statement echoed the New York State Department of Education goals.

The ELA prepares student academically with instructional programs utilizing information for developing literacy skills for the 21<sup>st</sup> century. Students learn to become effective readers and writers. Therefore, students must: (a) be able to master content and skills in various areas; (b) be on track to graduate high school and ready to start their college/career, and (c) know their skills level and path toward higher education. As a result, the State test results give schools and teacher standardized indicators such as synthesizing and structuring, problem-solving, critical thinking skills, and literary analysis skills for college and career readiness to educate students. For racial/ethnic minority students entering secondary school, having a strong and effective grasp of reading and writing is essential. These skills are needed for reading comprehension and writing. Moreover, the environment where this learning occurs is equally important for effective acquisition. As Freire & Macedo (2005) put it, understanding a message depends on how students connect what they read with the experiences they have had. For example, a reader only understands the meaning of the word dog if they know what a dog is or have interacted with one before. All students should have the opportunity to learn in



an atmosphere that augments their ability to understand and succeed in society. However, this is not the case for all students in public schools. Sociological theory is based on empirical findings of human constructed knowledge and interaction with each other (Bay et al., 2012; Vygotsky, 1978). The findings of this research on understanding the role of median school income in relation to ELA test scores, while limited to New York City schools, showed societal factors that plagued the schools and have varied implications for educational leaders.

Two decades ago, No Child Left Behind (NCLB) became law and billions of dollars were spent on administering and developing standardized tests, but without concrete academic outcomes for students. For instance, reading scores in the U.S. did not improve. Data from the National Assessment of Educational Progress (NAEP) 2001-2019 illustrates that the average reading performance increased only slightly in 2013-2014 and 2016-2017 during the last 20 years. Failing students could not have been the intent of the law, yet that is exactly what the high-stake test demonstrated. I believe that equitable teaching and equitable distribution of resources to schools form the basis that allows students to learn freely, and not repeated standardized high-stake tests that leave many students behind, while teaching others how to be good test takers. Freire & Macedo (2005) asserted that literacy education is cyclical. The cyclical nature of literacy is based on the dependence between word formation and the world since comprehension depends on the understanding of each other. Thus, if students are not receiving or given the equal chance to create knowledge then it is not proper to test them on something that they have not partook of. Furthermore, this study compares racial/ethnic students among other peers without accounting for several factors that affect their environment and how they are

learning. In general, students need a good foundation to become successful readers and writers, and to perform well on the ELA test. Therefore, they should receive equal preparation with teacher freedom to teach without constraint. Moreover, the ELA test as a literacy instruction should not be a drill. To the contrary, drill-like literacy instruction within the school environment limits the scope that education is supposed to cover. Literacy is reflected by how students function in the world outside the school setting, and how they use what they have learned to serve self and community. When literacy is seen as a tool for making students functional and critical in some school settings that have a higher income or racial majority, it influences the content taught in these particular schools to make learners functional and critical in a particular neighborhood only, but we as school community fail. The view narrows down the focus of education as being for a selected few and to only focus on performance within the selected school settings rather than the rest of the community or society; this is not conducive to fair and equitable education for all.

### **Interpretation of Results**

The purpose of this study was two-fold. The first purpose was to explore and determine whether the longest US economic expansion led to an improvement in the ELA test scores among African American (Black) and Hispanic eighth graders in the New York City school district during the 2013-2019 period. This purpose was accomplished by comparing Black and Hispanic students ELA test scores over time during 2013-2019 to school area median household incomes. This research was in response to a deficit in research regarding the effects of economic trends on ELA test scores across racial/ethnic groups of students, particularly Black and Hispanic students

who frequent schools located in economically disadvantaged neighborhoods in NYC. Changes were implemented in the administration and grading of the ELA test during the 2018 academic year, leading to almost a doubling of the mean scores among all students. However, the change in grading appeared to have only impacted the overall score, but not the variability in the score; comparisons based on the average difference between Black and Hispanic students with White students were not greatly affected. Across the seven-year comparison for race/ethnic groups, average ELA test scores improved yearly for Black and Hispanic students. However, White students scored consistently higher, with an average difference of 4 points, relative to Asian students, the group with the second highest scores.

The secondary purpose of this study was to explore the relationship between students from the four largest racial ethnic groups in NYC (Black, White, Hispanic, and Asian) to determine whether this expansion also led to a reduction in the achievement gap. The study focused on the interaction effect between student race/ethnicity and the year the test was taken on the mean ELA test score. After accounting for the median income observed in the neighborhood where the school was located, the interaction effect had a Chi-square value of 32.8 on 2 degrees of freedom, for a  $p$ -value  $< 0.0001$ . This indicates that after accounting for income, ELA test scores were changing over time across the different race ethnic groups. Whenever an interaction term is significant, one needs to combine the main effects and interaction before the interpretation of model parameters can proceed. Figure 8 showed the mean ELA test score by race/ethnicity and time. For ease of interpretation, the study showed the adjusted mean difference (achievement gap) between Black and White students, and between Hispanic and White

students during the 2003-2019 period for two median income values – \$30,000 and \$60,000. For children who frequented schools in neighborhoods where the median income was \$30,000, the achievement gap was greater in 2003; Black and Hispanic students scored on average 10 points lower than White students. The 95% interval also excluded 0, which suggests that this gap was statistically significant. This gap narrowed over time such that by 2019, the gap reversed with Blacks and Hispanics scoring close to 10 points – after accounting for school neighborhood income. It is worth noting that variations between individual- and neighborhood characteristics are often observed. These variations are not always well captured in neighborhood statistics, such that direct contact with neighborhood residents is often needed. Future studies can try to disentangle neighborhood characteristics from family characteristics by conducting surveys and talking directly to a representative sample of families. Similar patterns were observed, except that after accounting for income, Black and Hispanic students had similar adjusted ELA test scores in 2013 because the confidence interval included 0. By 2018, Black and Hispanic students appeared to outperform White students, after again accounting for the school neighborhood median income. In summary, the achievement gap appeared to be driven primarily by differences in the neighborhood median income.

### **Relationship Between Results and Prior Research**

Research has consistently shown racial/ethnic discrimination, racial inequity in public schools, and income inequality in society and communities (Luter et al., 2017; Ostrove & Long, 2007; Bennett et al., 2004; Chubb & Loveless, 2004; Gylfason & Zoega, 2003; Mickelson, 2003; Wenglinsky, 1998). The level at which income is allocated unequally among racial/ethnic communities in society is a social problem that

needs an optimum solution for the betterment of the generation to come. NYC has prominent levels of community inequality, dependent on household incomes. Although income inequality exists in communities, parents' learning is among the greatest expenditures (McKay & Dean, 2017). It is understood that investing in children's development eliminates many deficits and enhances economic growth. Meanwhile, (Battle & Lewis, 2002; Crosnoe, Johnson, & Elder, 2004; Seyfried, 1998) studies have demonstrated how race plays a major role in racial/ethnic students' low education achievement compared to White students. This was the result of economic disparities and lack of equitable academic opportunities. According to Darling-Hammond et al. (2019) knowledge concerning human growth and learning has expanded expeditiously, and the possibility to frame more productive educational practices has improved. Therefore, education should focus on the fullest feasible comprehension of all the potentials of children. Parents and instructors have to be aware of students' abilities and talents (Darling-Hammond et al., 2019). Furthermore, academic curriculum, policies, and operations should be modified to match the development and evolutionary levels of students considering their development rates and disparities situation.

The findings, for the entire group studied, indicated that there was a significant difference in ELA test scores for Black students; such that after accounting for school neighborhood income, Black students appear to perform better over time. The five borough schools in the study showed a significant difference in scores after the 2017 changes in the test after I adjusted with dummy variables. The findings indicated financial factors matter when it comes to the evaluation of student test performance. Simple comparison of test scores does not provide a complete picture. Neighborhood

socioeconomic status (SES), as well as neighborhood racial distribution played a major role in ELA mean score increases. The hope is that these results can assist future professional and educational policy makers with development opportunities related to ELA education in public schools and can help decrease some of the structural forces that drive the academic gap. School quality/geographic location and family income status showed students' reading and math improvement seemed to promote academic achievement (Dearing, et al., 20; Keys, et al., 2013; Geoffroy et al., 2010).

### **Limitations**

Due to the unique characteristics (e.g., ethnic diversity, urban setting) of the data used for this study, results may not be generalizable beyond the New York City public school population. For simplicity, 8<sup>th</sup> grade middle school students in the New York City Schools for the 2013-2019 period was selected because they could be seen as an important predictor of academic performance in high school and beyond. These NYC public schools did not represent all the middle school students who attended the New York City schools. For example, charter and private school students were not represented. However, one strength of this study its size, which makes it generalizable to other students. For example, students from the NYC public school district represented the most populous groups in NYC Schools. In addition, while reviewed each school district's respective ELA test scores, there were missing data. Consequently, some relevant information might have been missed. In addition, it is important to note that New York State changed the ELA test scoring in 2017 and that might have had a bearing on the significance; however, we accounted for this change in the model. The NYC Department of Education advises that the 2013 grades 3-8 ELA and math proficiency data should not

be compared directly with prior-year results. The 2013 proficiency tests were based on the common core standards - to meet the demands of 21st century curriculums. Likewise, data from 2018 and 2019 cannot be compared directly to data from prior years due to the change in test administration. However, the adjusted model does account for that change, which makes trend analyses feasible. Furthermore, this single quantitative research study did not account for all factors associated with minority ELA achievement gaps and the economy. Finally, in a correlational study such as this, correlation does not equate with causation. Future studies could focus on causal analyses to determine causality.

### **Implications for Future Research**

Although this study has answered the research questions; How have average ELA scores for New York City eighth-grade students changed from 2013-2019 by racial/ethnic groups based on the economic expansions, it has also raised other questions. In answering the study question, this research suggests that the “presume gap” can be solved with economic wellbeing for all. By considering leveling the schools’ budget and socioeconomic status of minorities, all students will afford the opportunity to learn in equal settings with effective teachers guiding them through the understanding of the English language Arts activities and assessments. One of the many possible implications for this study is that it helps create a usable framework on how to examine the literacy assessment gap in racial/ethnic student groups. The contribution to the field with this research is in highlighting the skills of racial/ethnic students, particularly Blacks and Hispanics, and looking at assessment as something that take on multiple factors. In exposing income as the elephant that it has always been, my hope is the key academic players can see the neglected factors in the ELA assessment challenge for minority

students. After all, “educational policy makers and test critics often assert that standardized test scores are strongly influenced by factors beyond individual differences in academic achievement such as family income and wealth” (Dixon-Román et al., 2013).

The findings from this study were reflective of the population from which the sample data were drawn. Nevertheless, it may be possible to generalize these results to other school districts similar to NYC. Future research can examine the many different factors that are involved in the assessment of the achievement gap for minorities. Gay’s (2002) theory can be a starting point. He argued that by presuming that being poor was a reflection of individual bad choices while overlooking society’s and educational institutions’ own contributions to the overall issue of poverty, school administrators and educators were oversimplifying poverty. The findings of this study indicated that racial/ethnic students group suffered from poverty and that in turn limited their chance to perform at the same level as their peers due to their economic misfortune. Furthermore, poverty created some significant challenges to academic learning thereby limiting these students’ ability to excel on the ELA test or any other achievement tests. Adding a layer of deprived neighborhood school settings further burdened their chance at academic success. Capital strategies and cultural competence should also be explored as ways to remedy this issue.

### **Implications for Future Practice**

The hope is that these results might add to the literacy preparation of all learners; that understanding racial/ethnic students shortcoming is complex; cultural diversity, institutional factors, school neighborhood and the economy all impact academic outcomes. Having students’ cultures and viewpoints aid in literacy preparation will



produce diverse perspectives and lead to better solutions. Providing all students with the same resources can have significant impacts on learning. The benefits of increased median neighborhood income have a significant impact on students' academic outcomes. Because of findings of the ELA test scores and median income in relation to racial/ethnic outcomes, a connection was made to the second goal of having a policy impact. Having all public schools with the same fiscal allocations to educate students can increase literacy skills in the NYC school districts. However, for progress and alleviation of this issue to begin, teachers and school leaders must first see the urgency for change in order for that change to happen. And only then will the racial/ethnic achievement gap be solved.

## **Conclusion**

To conclude, this non-experimental correlational study reviewed the test data from the NYC English Language Arts. There are several conclusions that can shed light on the ELA test score gaps between racial/ethnic groups of students and the data revealed several key trends. The ELA test scores demonstrated that from 2013-2017 the scores of Black and Hispanic students increased greatly. The results further indicated that race, socioeconomic status, and middle school community type all affect the relationship significantly. Ultimately, this study suggests that school neighborhood community income drive students' performance, independently of the individual income, which was not available for the analyses. The evidence for the 2013-2019 school year, presented in Figure 8 revealed very similar patterns showing School Neighborhood inflation adjusted income distribution over time by race/ethnicity led to better student outcomes for all group, but more so for minority students. The No Child Left Behind Act, 2001, should

have incorporate the school community income medium term effects, and specifically the increased targeting of funds for schools' communities rather than to linking of increased fund allocations to student performance. While there are no silver bullets for addressing the racial/ethnic achievement gaps, New York state can start by focusing in economic expansion for public school neighborhood and community development to make these areas viable, thereby equalizing school achievement for all students regardless of their school location.

Due to the significant differences in correlational strength between racial/ethnic minority groups, the hope is that the NYC Public Schools looks at the results of this study and finds ways to improve the overall structure of school quality, neighborhood-built environment and create access to basic services for students and the community. The Critical Race Theory lens in literacy for the study of minorities ELA test scores is a valid theoretical framework for an achievement gap is still apparent. Yet, the gains made in closing the Black and White achievement gap on the ELA test in NYC public schools provide a view on how the economy and schools location played an integral role in narrowing of the achievement gap. After all, where one lives influences how the person learns, lives, engages, plays, and thereby excels at life.

## APPENDIX A

### IRB Approval Memo

IRB #: IRB-FY2021-253  
Approval Date: 01-11-2021



Federal Wide Assurance: FWA00009066

Jan 11, 2021 4:57:52 PM EST

PI: Dominique Limplevildivers  
CO-PI: Kyle Cook  
Dept: Education Specialties

Re: Initial - IRB-FY2021-253 *THE ROLE OF THE ECONOMY IN CHANGING THE ACHIEVEMENT GAP BETWEEN DIFFERENT RACIAL AND ETHNIC 8th GRADE STUDENTS' ENGLISH LANGUAGE ARTS TEST SCORES*

Dear Dominique Limplevildivers:

The St John's University Institutional Review Board has rendered the decision below for *THE ROLE OF THE ECONOMY IN CHANGING THE ACHIEVEMENT GAP BETWEEN DIFFERENT RACIAL AND ETHNIC 8th GRADE STUDENTS' ENGLISH LANGUAGE ARTS TEST SCORES*.

Decision: Exempt

PLEASE NOTE: If you have collected any data prior to this approval date, the data must be discarded.

Selected Category: Category 4. Secondary research for which consent is not required: Secondary research uses of identifiable private information or identifiable biospecimens, if at least one of the following criteria is met:

- (i) The identifiable private information or identifiable biospecimens are publicly available;
- (ii) Information, which may include information about biospecimens, is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained directly or through identifiers linked to the subjects, the investigator does not contact the subjects, and the investigator will not re-identify subjects;
- (iii) The research involves only information collection and analysis involving the investigator's use of identifiable health information when that use is regulated under 45 CFR parts 160 and 164, subparts A and E, for the purposes of "health care operations" or "research" as those terms are defined at 45 CFR 164.501 or for "public health activities and purposes" as described under 45 CFR 164.512(b); or
- (iv) The research is conducted by, or on behalf of, a Federal department or agency using government-generated or government-collected information obtained for nonresearch activities, if the research generates identifiable private information that is or will be maintained on information technology that is subject to and in compliance with section 208(b) of the E-Government Act of 2002,

## APPENDIX B

### Data Dictionary Variables

Variable Name	Description/Coding	Source
SHOOL_YEAR	Indicates the school year from which the data were obtained. Values were coded as year 2013, 2014, ..., 2019 since the test is given once every year.	NYSED
SUBGROUP_NAME	Original variable name for race.	NYSED
BEDSCODE	Basic Educational Data System (BEDS) code. Each school building requires its own unique BEDS Code and related paperwork.	NYSED
RACE	I included the variable, race, which indicated if the student was Asian, Black or African American, Hispanic or Latino, and White. For the purpose of the data analysis students categorized as Native American, Alaskan Native, Native Hawaiian, other Pacific Islander, Multiracial were excluded due to their small sample.	Variable was re-coded based on subgroup_code. This is a derived variable.
SUBGROUP_CODE	All demographic and social economic characteristics, i.e. sex, race, students with disabilities, economically disadvantaged students, proficiency, and migrant were school-level variables by NYSED.	NYSED
MEAN_SCALE_SCORE	Recoded into score below. The database had this variable to describe test scores, independent of the topic and subgroup for which it was calculated.	Test scores as provided by the NYSED. This variable is coded as a string in the database. It has been recoded as a numeric variable in the score variable.
ENDYEAR	For each, year test dates are recorded as June 30, 2013-2019.	Author

NSTUDENTS	Number students in the school that took the ELA test in each year.	NYSED /SPSS
SCORE	ELA test score by race and year.	NYSED
N_ALL	Total number of students who took the test.	NYSED /SPSS
INCOME	School neighborhood socioeconomic status.	ACS
INCOME_GROUP	Economically disadvantaged students.	NYSED

*Note:* The table above lists the variables that were used in the study.

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## Vita

Name	<i>Dominique Limprevil-Divers</i>
Baccalaureate Degree	<i>Bachelor of Arts Stony Brook University of NY Stony Brook, NY Major: French &amp; Political Science</i>
Other Degrees and Certificates	<i>Master of Arts- Education- TESOL University of North Carolina at Greensboro, NC</i>