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School-Based Health Clinics and Student Outcomes in New York City Public Schools

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School-Based Health Clinics and Student Outcomes in New York City Public Schools

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Abstract

Schools have made efforts to improve outcomes for poor, Black, and Latino students, but disparities persist. Education policies in the United States are not addressing the structural inequities in schools and any external influences that contribute to the low achievement of Black, and Latino students living in poverty. The research in this study highlights inadequate or lack of healthcare services as a contributing factor. This results in a host of problems children bring with them to schools such as attention disorders and chronic absenteeism. In order for schools to mitigate these educational and health challenges, they must have the resources and adequate funding, particularly for schools in disadvantaged communities. Accessible medical services in schools may provide students living in poverty with a healthy start. The need for accessibility to adequate healthcare and children's readiness to learn brings in the question of the role of School-Based Health Centers or School-Based Health Clinics (SBHC).

This study aims to determine if School-Based Health Centers have a direct impact on attendance and the academic performance of Black and Latino students living in poverty. This study is guided by the following research questions:

- Does the presence of School-Based Health Centers impact the academic performance of Black and Latino students in New York City public schools?
- Does the presence of School-Based Health Centers impact the attendance of Black and Latino students in New York City public schools?

In NYC there are currently 165 established School-Based Health Centers that are serving 359 schools. Two data sources were utilized to create a 20-year panel of data on the population of schools in New York City from 1996 to 2016. I'm going to estimate the effect of a clinic using a difference-in-difference framework, and the Callaway and Sant'anna difference-in-difference

estimator. A difference-in-difference will determine whether the pre-intervention difference in outcome between the treatment and comparison group changes after the intervention is implemented.

Results

Overall, there was a positive relationship in ELA between student performance and School-Based Health Clinics. There is no relationship between attendance and School-Based Health Centers in New York City public schools. The event study indicated a statistically significant relationship with attendance after a school had a clinic for 7 years.

The descriptive statistics showed that the majority of the students attending clinic schools are Black and Latino and that more students attending clinic schools live in poverty in comparison to non-clinic schools. Based on this data, it can be inferred that Black and Latino students that attend clinic schools are experiencing an increase in performance in literacy. It is important to note that anything below proficiency is not in the data set used for this study. Therefore, any positive results in the data is encouraging because there is student growth that will not be picked up by a proficiency rate. Additionally, I consider the implications of these findings for policy and practice.

Dedication

I dedicate this work to my son Daniel, daughter Janelle, and grandchildren Daniel James, David Vincent, and Celine Iris. Use your voice for the voiceless, lead with your heart, and know that anything is possible. Be your true authentic self because when we are, we honor our ancestors. Always know that you are brilliant, beautiful, and powerful. Use that to elevate yourself and bring others with you. Look deep within, find something you believe in, and pursue it because if you can dream it, you can achieve it. Be true to yourself. And finally, always remember that love is everything. This work was a labor of love. It represents my belief that all children deserve access to everything they need to become whom they are destined to be. That includes healthcare, education, and opportunity. It is our collective responsibility to tear down all barriers because we must do our part to end systemic racism. Ok, kids, grandma has just raised the bar. Now get to work!

Love
Dr. Grandma

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Thank you to my dissertation committee Dr. Gutmore, Dr. Burns, and Dr. Osnato. Dr. Gutmore, you helped me see this through to the end, kept your word, and here we are. I wish you many more years of success and good health.

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To my pride and joy Daniel and Janelle. You are the best gift God has given me. I am so proud of the man you are Daniel, and the woman you are Janelle. You stand firm in your convictions and have the courage to follow your heart. I have been blessed to watch you grow and look forward to many more years of love. I am the luckiest mom in the world!

To my dearest best friend and new Guardian Angel in heaven, Evelyn. You supported my dream of getting my doctorate and were my thought partner until the end. Your friendship and love helped carry me through the difficult moments, and I miss you terribly. Thank you for being my friend. Until we meet again.

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Chapter 1: Introduction

The stressors of poverty contribute to lower academic achievement and slower children's maturation process (Richardson, 2007). Poor healthcare, poor nutrition, and inadequate housing are examples of these stressors. Poverty creates conditions such as inadequate healthcare and places children at risk of "concomitant threats to childhood educational potential" (Richardson, 2007). Children living in poverty who do not receive appropriate healthcare may be susceptible to behavioral and cognitive consequences such as absenteeism, ADHD attention deficit, hyperactivity disorder, and ADD attention deficit disorder (Richardson, 2007). Students who attend schools in such communities have the best chance at a healthy start if these medical facilities are accessible and available. School-Based Health Clinics may provide students with this chance. The primary function of a School-Based Health Clinic is to provide onsite healthcare services in schools. Partnerships between community health care organizations and schools are developed to offer services to students (National Assembly of School-Based Healthcare [NASBHC], 2009). The services provided may depend on the grade bands the clinics serve. For example, high school students' services may differ from what is offered to elementary and middle school-age students since their services target the population they serve. According to the NASBHC, the most common staffing models include primary care providers, such as nurse practitioners, physician assistants, or physicians. Partnerships may also have mental health and dental providers (NASBHC, 2009). Reproductive health may be offered more appropriately in a high school setting.

School-Based Health Clinics are a form of wraparound services designed to meet the health-related needs of the students enrolled to receive services. Wraparound services are developed in response to the needs of students in a particular school building. These services

address the non-academic needs of students that, if left unaddressed, may lead to obstacles that interfere with their academic success (Hill, 2020).

The services provided by School-Based Health Clinics depend on the age group of the students they are serving. However, all health care services are age-appropriate and must comply with New York State Child/Teen Health Plan requirements (NYSDOH, 2022). In general, the centers are open during regular school hours. A backup health provider ensures that students enrolled to receive services have access to care 24 hours a day and seven days a week during non-school hours and when school closes due to vacation. Students under 18 must have consent from parents before receiving services or qualifies to give consent under section 2504 of the Public Health Law (NYSDOH, 2022). The clinics can also serve as the student's primary care provider at no cost to the family. The services provided can consist of direct or preventive care, management of chronic illnesses, and the diagnosis and treatment of medical conditions. Students can be seen by appointment or as a walk-in with permission from a school staff member. The preference is for them to avoid missing core subjects when seen in a clinic, so there is no loss of instruction for those classes. Students receive services just as if they were visiting their primary care physician in a traditional medical facility.

School-Based Health Clinics (SBHC) or School-Based Health Centers (SBHC) can relieve some of the stressors perpetuated by poverty, such as poor healthcare. However, the need for accessibility to adequate healthcare and children's readiness to learn brings in the question of the role of School-Based Health Clinics.

In the United States, schools have expressed concern about their students' health for well over a century (Kirby & Lovick, 1987). The spread of contagious diseases was of great concern to the community and became one reason for expanding the number of nurses in schools in the

early 1900s (Kirby & Lovick, 1987). However, the reality that many poor students were not receiving adequate healthcare became more important than the concern that healthcare in schools was incompatible with schools' primary mission (Kirby & Lovick, 1987).

The terms School-Based Health Clinics (SBHC) and School-Based Health Centers (SBHC) may be used interchangeably.

Purpose of the Study

This study aims to determine if School-Based Health Clinics directly impact the academic performance of students living in poverty. School-Based Health Clinics deliver healthcare services on school premises. Healthcare professionals provide this care level, including medical and mental health clinicians (Keeton et al., 2012). The research in this study will highlight inadequate or lack of healthcare services contributing to the low achievement of Black and Latino students living in poverty (Berliner, 2009). This "poverty-induced" factor, inadequate or lack of healthcare, results in many problems children bring to schools, such as attention disorders and chronic absenteeism (Berliner, 2009).

This study proposes to examine if there is a relationship between School-Based Health Clinics and academic performance and attendance.

Problem Statement

Although graduation rates have been rising in recent years (U.S. Department of Education, NCES, 2018), many challenges still prevent Black and Latino students from competing with their White counterparts. Similar challenges exist between economically disadvantaged students and non-economically disadvantaged students. In 2001, the reauthorization of the Elementary and Secondary Education Act, No Child Left Behind (NCLB), forced state and federal education policies to focus on improving academic outcomes for students by mandating that schools develop strategies to reduce racial and socioeconomic

disparities. Schools have made efforts to improve outcomes for poor, Black, and Latino students, but disparities persist. With another reauthorization of the Elementary and Secondary Education Act, the enactment of the Every Student Succeeds Act (ESSA) into law in 2015 seeks to advance equity by "upholding critical protections for America's disadvantaged and high-need students." (U.S. Department of Education, 2020). Due to the increase in school accountability, it becomes more critical to determine if and to what extent School-Based Health Clinics impact the educational outcomes of students. School-Based Health Clinics can improve the effectiveness of the school in meeting the needs of students with academic and behavioral challenges. SBHCs may help to level the playing field for students at risk of these challenges so that when state school accountability measures are imposed, the results reflect a more accurate picture of the school.

Education policies in the United States do not address the structural inequities in schools or the external influences that contribute to the poor, Black, and Latino students (Bishop & Noguera, 2019). These inequities include staffing and curriculum, classroom practices, and resources such as money, time, and human capital (Simon et al., 2007). Providing schools with funds and human capital to address disparities experienced by students living in concentrated poverty, such as lack of healthcare, may help mitigate this disparity. In addition, suppose schools are being held responsible for the well-being of the "whole" child. In that case, education policy must be broadened to address the conditions that interfere with students' achievement in poor communities.

Health plays a significant role in the proper development of children. Basch (2011) discusses how a coordinated national effort to close the achievement gap should include school health initiatives. He found that students of color living in urban settings are affected by health

and educational disparities (Basch, 2011). He further states that healthy students are better learners and that school policy can positively influence "educationally relevant health disparities" (Basch, 2011). Student wellness and access to healthcare are essential for students living in poverty.

There is a lack of empirical literature that shows the direct impact SBHCs have on the achievement of students living in poverty. Knowing the clinic's effect on student performance can serve as the evidence needed for legislators to influence legislation in favor of funding for SBHCs. Increasing the number of SBHCs in schools located in communities with concentrated poverty may effectively advance health equity. These clinics will serve Black and Latino students who live in poverty.

Significance of the Study

Unfortunately, inequality based on income, race, and class has been manifest in public schools. In particular, race has been the standard variable in the various manifestations of educational disparities (Bishop & Noguera, 2019). Children who attend public schools that are highly segregated by income, race, and ethnicity experience more significant challenges because the problems they face occur simultaneously and with more frequency (Berliner, 2009). A concern is that educational policies have not effectively addressed the structural forms of racism in schools (Bishop & Noguera, 2019). Examples of structural racism include geographic and environmental conditions (Akom, 2011) and access to health services (Phelan & Link, 2015). It is becoming evident that more resources are required if schools are expected to address issues that directly or indirectly impact student achievement. Help needed by school districts includes money, human capital, and time (Bishop & Noguera, 2019). Explicitly, these resources directly impact the health and well-being of children. Thus, many Black and Latino students living in poverty do not have access to quality and affordable healthcare. The research suggests that

School-Based Health Clinics positively impact chronic absenteeism in students (Knopf et al., 2016; Symons et al., 1997). However, there is a gap in the literature regarding the direct impact these clinics may have on student achievement.

School-Based Health Clinics may play a role in improving academic outcomes for Black and Latino students living in poverty (Richardson, 2007). SBHCs and schools share a common link and can benefit students. SBHCs focus on health-related issues, and their mission is related to health outcomes (Richardson, 2007). Schools are held accountable for educational outcomes, such as test scores. Schools that serve Black and Latino students experience more significant challenges if policies are not developed to counteract the poverty-induced factors that can interfere with student achievement. Knowing if School-Based Health Clinics have a direct positive impact on the achievement of Black and Latino students living in poverty can help inform advocacy strategies that may then be used by public health and education officials to put pressure on legislators to develop legislation to fund School-Based Health Clinics in schools serving Black and Latino students living in poverty.

Research Questions

Research Question #1: Does the presence of School-Based Health Centers impact the academic performance of students in New York City public schools?

Research Question #2: Does the presence of School-Based Health Centers impact the attendance of students in New York City public schools?

Theoretical Framework

This study will be based on the premise of two conceptual theories. The first theory relies on the increasing evidence that convenience is essential to consumers. This marketing theory leans on the fact that consumers will opt to purchase the most convenient goods and services. The second is based on the relationship between health and performance in school. It is based on

the idea that the two are interrelated. If both ideas are integrated, it will help explain how School-Based Health Clinics are an essential part of student performance.

According to Farquhar & Rowley, convenience is paramount in consumer purchasing. This first theory focuses strictly on convenience. The advantages of offering health services on school grounds are obvious; after all, it is where young people are (Kirby & Lovick, 1987).

The second is based on the research that states that health is related to academic performance. SBHCs offer an array of services for students on school grounds. The convenience of the location and the time services are delivered will contribute to its appeal.

Additionally, if students take advantage of these services, their health may benefit, impacting their academic performance. The healthier children are, the more likely they will attend school more regularly and will benefit from being in school more often (Richardson, 2007). Issues that become barriers, such as immunization children need to attend school, can be mitigated by an SBHC.

The two theories were applied to a similar study conducted in New Jersey, where the researcher found that her findings contradicted both theories (Sherwood-Samuel, 2016). However, due to the differences in population, geographic location of schools, organizational structures of the districts, and physical make-up of school buildings, the theories may guide this study more appropriately. The two theories will be described in more detail in the literature review in Chapter 2 of this study.

Summary of Methodology

In this quasi-experimental, quantitative study, a difference-in-differences design, specifically the Callaway and Sant'anna difference-in-differences estimator, will be used to analyze the effect of School-Based Health Centers on student performance and attendance. This type of design is appropriate because it will provide the most credible estimate of an effect. It

will estimate a treatment effect by comparing a change in outcomes for participants in a program to those who did not participate in the program (Pomeranz, 2017). The analysis for this particular design compares a change in outcome over a period of time for schools that participated in the program with those that did not participate (Pomeranz, 2017). The sample for this study will consist of schools in New York City public schools from year to year.

Limitations

The researcher will measure academic performance using school-level New York testing data in New York City public schools. Because it is a quantitative study, it may limit the results because the researcher cannot ask probing or follow-up questions.

Definition of Terms

Every Student Succeeds Act (ESSA). The law that replaced the No Child Left Behind Act and is the most recent version of the nation's federal education law. The law seeks to improve educational equity for students from lower-income families and students who receive special education services by providing federal funds.

Poverty. Students who are eligible for free or reduced-price lunches or otherwise qualify for other public assistance forms.

School-Based Health Clinic (SBHC). Onsite healthcare services in schools. Partnerships between community healthcare organizations and schools are developed to offer services to students (NASBHC, 2009). The most common staffing models include primary care providers, including nurse practitioners, physician assistants, or physicians. Partnerships may also have mental health and dental providers (NASBHC, 2009). Reproductive health may be more appropriately offered in a high school setting.

Structural racism. "Barriers that are rooted in a history of racial oppression as well as practices that are embedded in the operation of economic and social institutions" (Bonilla-Silva, 2017).

Summary

The stressors that come with poverty interfere with the academic achievement of Black and Latino students. These stressors include lack of or poor healthcare, nutrition and food insecurities, and inadequate housing. A child's educational potential is impeded by conditions such as these. To mitigate these educational and health challenges, they must have the resources and adequate funding, particularly for schools in disadvantaged communities. Accessible medical services in schools may provide students living in poverty with a healthy start. School-Based Health Clinics can quickly alleviate some of the stressors of living in poverty.

In the early 1900s, the spread of disease was a significant concern. The lack of adequate healthcare in poor communities made them vulnerable to contagious diseases. Expanding the number of nurses in schools became a necessary option. School-Based Health Clinics provide various onsite healthcare services to students, and age-appropriate services include preventive care and reproductive health services.

Structural inequities in schools in the United States contribute to the low achievement of Black and Latino students living in poverty. Broadened educational policy developed to address the conditions contributing to the low achievement of Black and Latino students living in poverty must address the "whole" child. Access to healthcare is essential for students living in poverty. The literature does not show the direct impact School-Based Health Clinics have on the achievement of Black and Latino students living in poverty.

This study aims to determine if School-Based Health Clinics directly impact the performance of Black and Latino students living in poverty. The research will focus on inadequate healthcare due to the various problems students who live in poverty bring to school.

Research suggests that School-Based Health Clinics have a positive impact on student attendance. In addition, they may play a role in improving academic outcomes for students living in poverty who utilize the services. Understanding the direct impact SBHCs may have on the academic achievement of Black and Latino students living in poverty can inform education and public health officials. Organizations such as the National Assembly on School-Based Health Care rely on research to provide data to advocate for school-based healthcare. Its grassroots approach for advocating for healthcare clinics in schools is the organization's cornerstone. Groups such as this influence national policies, support the development of programs and advocate for funding for the expansion of School-Based Health Clinics. They can help counteract some of the consequences of structural racism and address a poverty-induced factor that can interfere with student achievement.

Chapter 2: Review of the Literature

Introduction

Many factors contribute to the existing achievement gap for Black and Latino students living in poverty. Recognizing and addressing how race, class, language, and culture reinforce these disparities in student achievement will promote equity in academic outcomes for Black and Latino children living in poverty (Bishop & Noguera, 2019). Berliner offers "out-of-school factors" (OSFs) that play a significant role in generating these existing achievement gaps (Berliner, 2009). Because schools in the United States are highly segregated by race, ethnicity, and income, the prevalence of issues impacting students living in poverty is more concentrated in schools serving disadvantaged communities. For that reason, it is urgent that policies designed to address factors that interfere with student achievement, for Black and Latino students living in poverty, accompany test-based accountability requirements. Particular health problems that interfere with their learning ability are experienced by Black and Latino students living in poverty. This opens the door to the many disparities that exist for these students. The literature says that disparities may be reduced if there are coordinated efforts to mitigate them (Basch, 2011; Berliner, 2009; Bishop & Noguera, 2019; Richardson, 2007). School-Based Health Clinics can be used as a strategy to help mitigate health disparities experienced by minority youth who live in poverty. This literature review is intended to provide the foundation for this study.

Organization of Literature Review

A review of the literature discusses the historical evolution of School-Based Health Clinics (SBHC). The following section discusses what the research is saying about the benefits of SBHCs and extend to the treatment of chronic illness and the advancement of health equity. A discussion follows regarding the differences and similarities between School-Based Health Clinics and School-Linked Health Clinics. This is followed by a review of the theoretical

framework, which provided the theoretical lens for this study. The literature review then focuses on health and student performance, followed by an overview of health services and minorities. More specifically, there is a discussion in the next section about health services and Blacks and Latinos living in poverty which includes a discussion involving health and racism. The following section explains the gaps in the literature, followed by the conclusion.

Historical Evolution of School-Based Health Clinics

Understanding the concept and historical evolution of School-Based Health Clinics (SBHC) is essential for this study. Offering health services in schools is the primary function of a School-Based Health Clinic. The literature on School-Based Health Clinics in schools began to focus on minimizing infectious diseases in children. In 1872, along with the establishment of the American Public Health Association, came the desire of the federal government to safeguard the general health and welfare of the public (Woolworth, 2011). The reality of diseases spreading in schools became an area of focus for health reform. This led to the expansion of the practices of public health boards in schools. Physicians in schools uncovered a host of conditions that interfered with children's intellectual capabilities, which led to the expansion of medical services in schools. In the early 1900s, during the public health nursing movement, the high rise in communicable diseases such as measles, scarlet fever, and whooping cough caused a rise in the rates of student absenteeism (Vessey & McGowan, 2006). As the immigrant population in New York City's tenements rose, so did these diseases.

The New York City Board of Education response was, "You are sick-go home" (Vessey & McGowan, 2006). There was no recognition that parents may not have the resources to seek medical attention, the knowledge of the language or literacy skills to read the note, or could not afford to leave work to see a doctor. As a result, the rise in the contraction of these communicable diseases became out of control.

This led to an experiment to bring nurses to schools to treat and educate students and their families. The recognition that services should be available in schools was the beginning of the movement to make healthcare more accessible to children in school. Fifty years later, the role of school nurses expanded to include primary healthcare such as immunizations, health screenings, and referrals (Keeton et al., 2012).

Across the United States, and over the next several decades, the need for primary care physicians in pediatrics was recognized (Murphy, 1990). The idea of a nurse practitioner in service of children became more appealing and was embraced widely across the country. To address the need for a more expansive role of the school nurse, Colorado established a school nurse practitioner certification program (Gustafson, 2005). By the mid-1970s, the role of the school nurse practitioner became an essential part of the successful expansion of school-based health, and today the majority of healthcare providers in School-Based Health Clinics are either nurse practitioners or physician assistants (Strozer et al., 2010).

Also, during this period, in Cambridge, Massachusetts, Dr. Phillip Porter established "neighborhood health centers" primarily to provide healthcare services to children in underserved communities (Porter et al., 1976). Many of these health centers were placed in elementary schools, allowing for the collaboration between Pediatric Nurse Practitioners (PNP) and teachers.

These community-based and school-based health centers began receiving national attention, and secondary schools opened centers to address teenage pregnancy (Dryfoos, 1985). School-Based Health Clinics were now expanding in high schools as the need for reproductive education and the prevention of sexually-transmitted diseases among teenagers became a priority.

Eighty percent (80%) of all SBHCs today serve at least one grade of adolescents, 6th grade to 12th grade (Brodeur, 2000). In the 1980s, national foundations became key to the expansion of SBHCs in underserved communities. Their goal was to expand services for more children and adolescents in the communities that needed them the most (Brodeur, 2000). By 1988, there were nearly 120 funded SBHCs in the United States (Schlitt et al., 2000).

SBHCs continued to expand during the 1990s. Funding for these clinics came from private foundations such as the Robert Wood Johnson Foundation and the W.K. Kellogg Foundation. These private foundations have been vital in influencing state policy around the sustainability of SBHCs. As a result, states have committed to investing in SBHCs using state general funds (Lear et al., 1999; Schlitt et al., 2008). Although many SBHCs have been established today, sustainability is a great challenge. Funding continues to be inconsistent despite the benefits reported about School-Based Health Clinics.

Benefits of School-Based Health Clinics

SBHCs are primarily located in schools and can provide healthcare services to students in pre-Kindergarten to grade 12. These on-site services are predominantly intended to serve students in low-income communities (Knopf et al., 2016). SBHCs are sponsored mainly or operated by local healthcare organizations, hospitals, or the local Department of Health (Keeton et al., 2012). This care can be provided by a team of healthcare professionals, including medical and mental health clinicians (Keeton et al., 2012). This interdisciplinary team is known to integrate with the school community, further benefiting children. Positive relationships between SBHCs and children receiving services such as immunizations, treatment for chronic illnesses such as obesity and asthma, and various mental health conditions have been reported by researchers (Keeton et al., 2012). The benefits of these services reinforce the mutual goals of the

healthcare professionals and the school. Keeton et al. also state positive health and social outcomes when students have access to SBHCs.

Treatment of Chronic Illness

Providing quality care for students with chronic illnesses in school benefits School-Based Health Clinics. Children suffering from chronic diseases need special care. They will likely be at a disadvantage academically if special considerations are not made in school. Specifically, a student with diabetes may experience seizures and ketoacidosis if the illness is not controlled (Taras & Datema, 2005). This condition must be monitored carefully by a school nurse and preferably a medical professional in an SBHC.

Another example is the dangers of Sickle Cell Anemia that primarily impacts African-Americans. A child with this illness can develop chest pain and severe anemia, and risk for strokes (Taras & Datema, 2005). If a child with a chronic disease is struggling academically, the school must pay close attention to their unique needs. This is an excellent example of how healthcare and education intersect. If the school is not well-versed in the student's illness, the child could be put in grave danger. Therefore, the partnership between the school and the SBHC becomes very important. The ultimate responsibility of the school is education and the safety of all children. Nevertheless, if an illness is a barrier or can present a danger to the child while in school, then the school must find a way to ensure the child's safety and find a way to minimize interference with learning. Therefore, it is essential to understand the relationship between chronic illness and how it impacts a student's learning.

Advancement of Health Equity

In the United States, poor children from racial or ethnic minority populations are less likely to have access to healthcare and are more prone to develop chronic health problems than

their White peers (Knopf et al., 2016). If SBHCs successfully provide healthcare to children in disadvantaged communities, they are positioned to advance health equity.

Children in low-income communities develop chronic health problems because of the lack of consistent quality healthcare (Bloom et al., 2012). Knopf et al. reported substantial increases in the utilization of recommended immunizations, a significant decrease in symptoms and incidents involving asthma, and a substantial decrease in hospitalizations for all conditions (Knopf et al., 2016). The risk of these youth not receiving adequate healthcare increases due to the structural inequities in their neighborhoods. Their health outcomes are worse than those of their more affluent peers. SBHCs essentially serve schools with a high number of economically disadvantaged students. Because the majority of users of SBHCs are members of a minority group, it can suggest that the use of the centers is an effective strategy in mitigating access barriers experienced by these youth.

School-Based Health Clinics vs. School Linked Health Clinics

Studies show that School-Based Health Clinics (SBHC) and School-Linked Health Clinics (SLHC) have been an appropriate and effective strategy for delivering health services to young people (Fothergill & Ballard, 1998; Peak & Hauser-McKinney, 1996). The common ingredient when examining SBHCs and SLHCs is their service to the youth in underserved communities. For young people, this healthcare delivery system has been endorsed by national professional associations such as the American Medical Association and the National School Boards of Education (Peak & Hauser-McKinney, 1996). The most impressive finding was the impact these clinics have had on reducing the rate of pregnancy in adolescents (Edwards & Steinman, 1977; Edwards et al., 1980). Both delivery models have slight differences, and services offered in each clinic depend on that community's specific needs.

School-Based Health Clinics (SBHC) provide on-site health services to students in schools (Bloom et al., 2012; Keeton et al., 2014; Knopf et al., 2016; Richardson, 2007; Soleimanpour & Brindis, 2012). SBHCs are typically found in schools located in underserved communities. Researchers have found that SBHCs are not solely involved in providing health services. The clinic's location makes it easier for the school community to benefit from its services (Strolin-Goltzman, 2010). Teachers may leverage the SBHC as a resource while supporting a student experiencing an acute asthma attack in the classroom. They are also positioned to take full advantage of the resources provided by SBHC in supporting curriculum development for health-related content. SBHCs that serve elementary schools typically do not offer services supporting reproductive health, but most SBHCs provide immunizations regardless of students' age. In addition, on-site health services in schools have been positively associated with the amount of time students spend learning in the classroom (Richardson, 2007; Strolin-Goltzman, 2010).

School-Linked Health Clinics (SLHC) are similar to School-Based Health Clinics in that they offer similar types of healthcare services to students. Their primary clientele consists of adolescents while located off school property. School-Linked Health Clinics typically serve students in multiple schools within the same community (Fothergill & Ballard, 1998). SLHCs may also serve other groups of students, such as students much younger than adolescents and those much older up to age 23. However, most serve adolescents and the children of teens. Referrals to SLHCs can come from the local community schools and community-based organizations. Because of their focus on adolescent health, these clinics often receive referrals of students of different economic backgrounds as represented in the community (Fothergill & Ballard, 1998).

The services offered are similar to SBHCs, such as physical exams, immunizations, and general laboratory tests. Some SLHCs provide pediatric care for the children of teens. Since a significant focus is on adolescents, SLHCs offer various reproductive health services. SLHCs offer treatments for STDs (Sexually Transmitted Diseases), gynecological exams, prenatal care, HIV testing, and family planning counseling. The staffing in SLHCs is similar to SBHCs, such as Nurse Practitioners, dentists, and social service personnel (Fothergill & Ballard, 1998). Since SLHCs receive most of their referrals from schools, they develop relationships with school nurses, counselors, and administrators. Thus, these clinics rely on the connections established in schools to obtain clients. According to Fothergill & Ballard, these clinics do not limit their services to schools and community-based organizations. SLHCs also serve dropouts, homeless, youth who have run away, and those students in detention centers (Fothergill & Ballard, 1998). Although schools may be the primary source of referral for students, they do not control the services offered to students, and all services are rendered with complete privacy.

The differences between School-Based Health Clinics and School-Linked Health Clinics can benefit communities based on the community's specific needs they are intended to serve. Both models have similar staffing structures and are located primarily in underserved communities. Parental and school intervention in services will depend on the student's age and the location of the clinic. Figure 1 below illustrates the differences between School-Based Health Clinics and School-Linked Health Clinics.

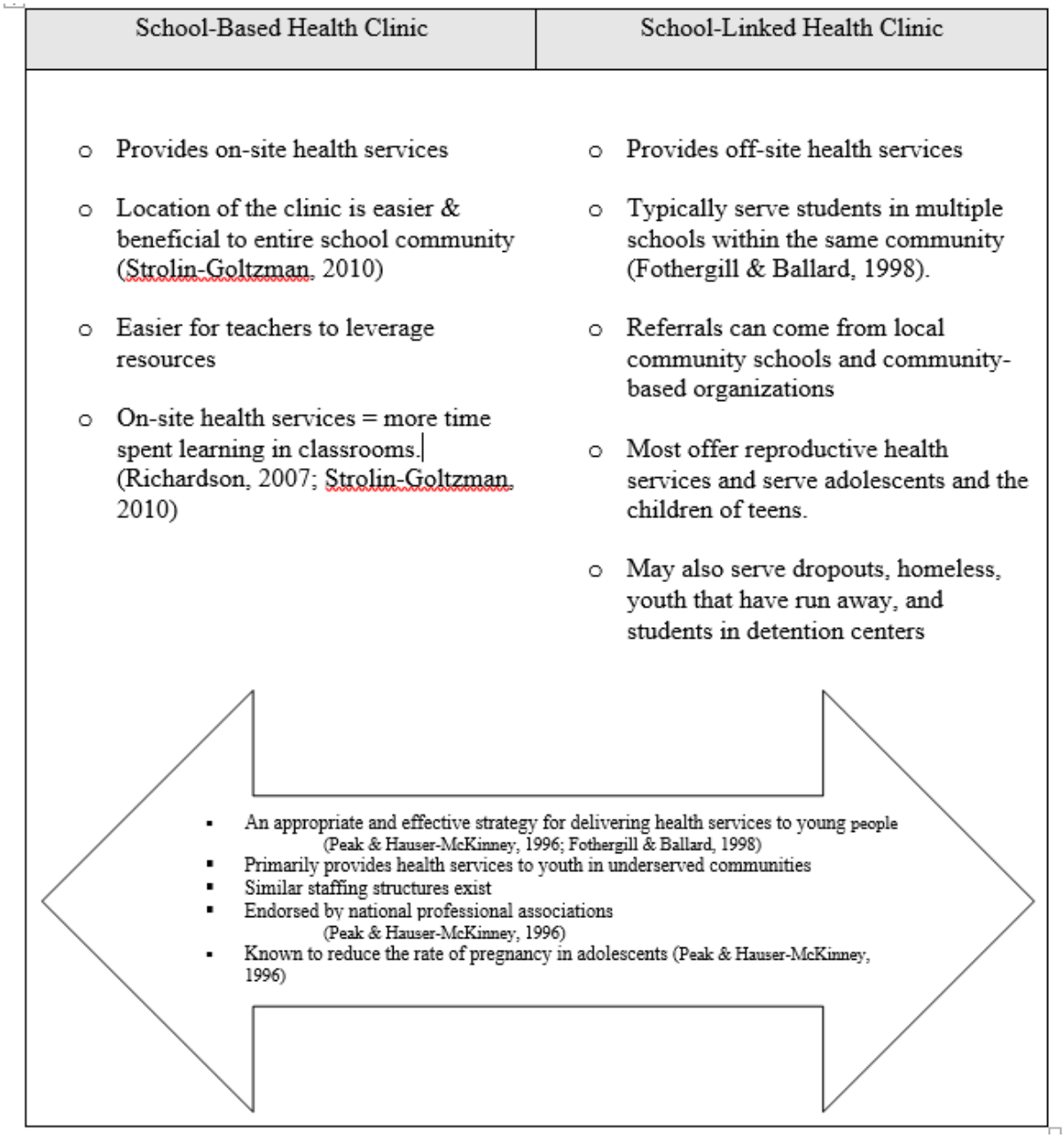

Figure 1. School-Based Health Clinic and School-Linked Health Clinic

Theoretical Framework

This study was based on the premise of two conceptual theories. The first focuses on the idea that convenience is important and essential to consumers. This marketing theory relies heavily on the increasing evidence that consumers make decisions about the purchase of goods or services based on convenience. The second makes a connection between health and a

student's performance in school. Both concepts further support the idea that access to SBHCs is important for the academic success of urban Black and Latino students living in poverty.

In marketing, convenience can be viewed as a multidimensional construct (Brown, 1990). Brown further indicated that the dimensions in the construct of convenience include place and acquisition. Some theorists suggest that there are "classes" of convenience that provide for accessibility (Yale & Venkatesh, 1985). According to Brown, the most commonplace that is most convenient to consumers is their home. He provides the example of "at-home" oil changes for a Baltimore car repair company (Brown, 1990). The research says that with more money and less time, consumers search for the convenience of timesaving products and services (Brown, 1990; Farquhar & Rowley, 2009; Yale & Venkatesh, 1985). They contend that convenience is a major determinant of consumer purchasing.

Jekanowski, Binkley, & Eales, conducted a study that explored the demand for "fast food." The researchers concluded that convenience determined the magnitude of the demand. They further found that accessibility was an important component of convenience, particularly ease in acquiring the product (Jekanowski et al., 2001). In another study conducted by Farquhar & Rowley, accessibility was determined to be especially important because of proximity, availability, and flexibility (Farquhar & Rowley, 2009). The best illustration of this is the convenience provided by supermarkets. Offering consumers a wide range of products, flexible opening hours, and prime locations contribute to their appeal. Farquhar and Rowley's study indicated a strong relationship between convenience and the accessibility of goods and services.

Convenience can be described as a construct that consumers consider based on their needs and goals and associated with access to goods and services. Accessibility is an important component of convenience and further contributes to its demand. Convenience theory is easily

illustrated in marketing since it heavily determines why consumers would prefer one product or service over the other. Figure 2 is an illustration of convenience theory.

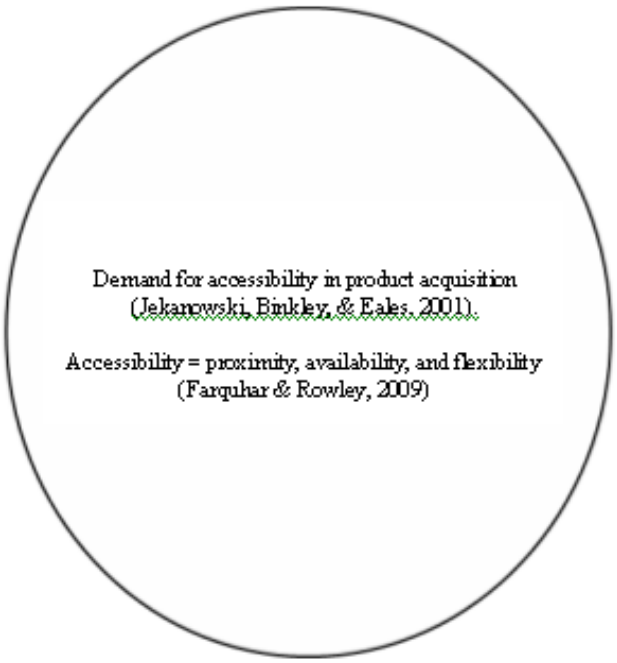

Figure 2. Convenience Theory
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The second theory is based on the premise that health is associated with a student's academic performance. Covering empirical literature on the relationship between health services and student performance, there is evidence to support that healthy students learn better (Geierstanger & Amaral, 2005; Symons et al., 1997). The motivation for children to learn can be diminished by factors that contribute to the hindrance of their well-being. One such hindrance is health problems that interfere with going to school because of pain, reaction to medication, lack of care, and other medically related issues. There is evidence that academic performance can be hindered by chronic illnesses such as asthma and lead poisoning, causing conditions such as attention deficit hyperactivity disorder that may impact the attention span of students and their participation in extra-curricular activities (Richardson, 2007; Williams & Noguera, 2010). The

onset of these conditions will eventually impact the student's ability to focus in school and may have a negative impact on their experiences.

The seminal publication by Geierstanger et al. (2004) was the first of its kind that examined SBHCs and educational outcomes. This body of literature unveiled multiple factors that may influence educational outcomes such as health interventions including SBHCs, social and environmental factors such as socioeconomic status, educational factors such as class size, and health status (Geierstanger et al., 2004). The research also showed a strong relationship between the involvement of students in certain health risk behaviors and measures of school performance. The risk behaviors included tobacco, alcohol, drug abuse, dietary behaviors, sexual behaviors resulting in pregnancy, and intentional injuries (Symons et al., 1997). In this study, the researchers found that engaging in risk behaviors such as these affected student performance as measured by dropout rates, attendance, and academic grades.

Basch offered evidence-based approaches as recommendations to schools serving urban minority youth in his study. His study recognized that urban minority youth were disproportionately impacted by health disparities (Basch, 2011). He further states that health programs are likely inequitably distributed in schools that serve this population. Therefore, a coordinated effort to mitigate the health disparities in these schools may positively affect their performance.

In summary, the research indicates that good health is positively associated with academic performance. If healthy students learn better, it can be deduced that illness can hinder learning.

Certain health risk behaviors and the health inequities experienced by urban minority youth can adversely affect student performance. There is a connection between health status and a student's performance in school.

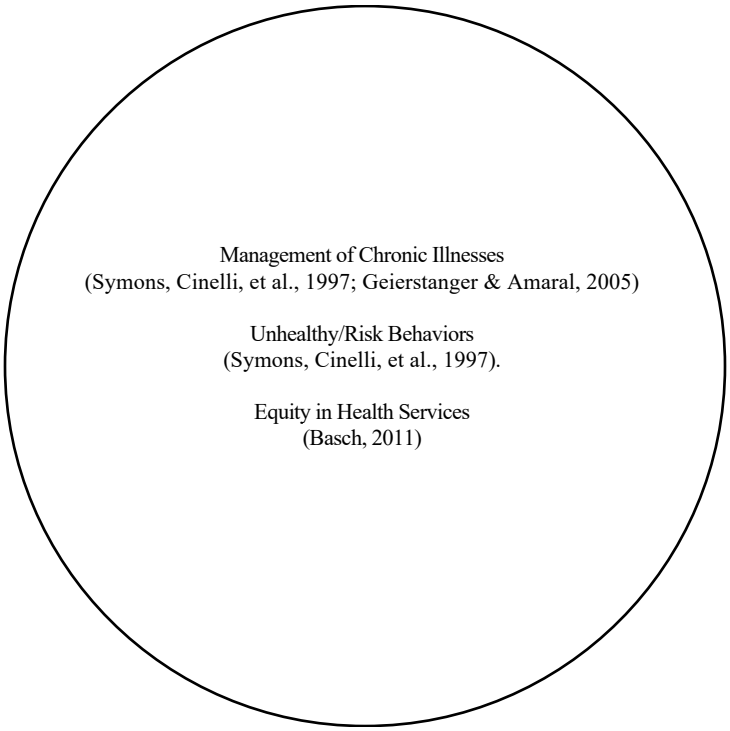

Figure 3. Health and Academic Performance Theory

The use of SBHCs as an intervention strategy will support the integration of both theories. Providing students with convenient access to quality healthcare can contribute to the improvement of academic performance. Health clinics located in schools can provide students with a wealth of services where they already spend the majority of their day. The structure for SBHCs includes using an interdisciplinary team known to integrate with the school community, further benefiting children. The convenience of the location and services offered will contribute to its appeal. Figure 4 illustrates the integration of convenience theory and health and academic performance theory.

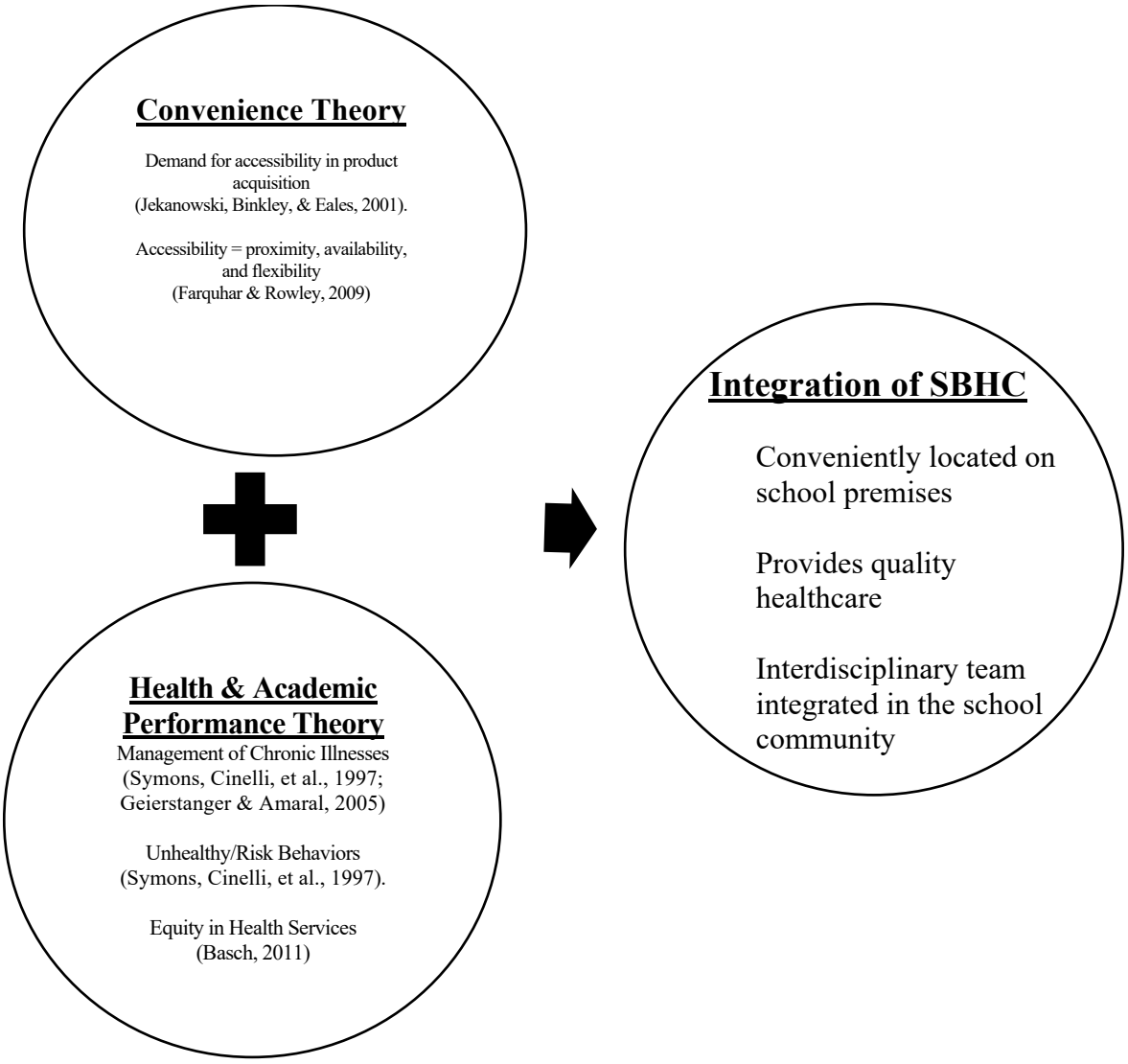

Figure 4. Integration of SBHC

Health and Student Performance

A discussion about health and student performance is usually accompanied by describing specific health conditions that impede a student's academic potential. During this literature review, it was found that researchers tend to quantify the relationship between health and a student's ability to excel in school by examining the association between specific medical conditions and how it impacts a student's performance in school. The collective purpose for

highlighting the specific health factors that interfere with the attainment of academic achievement is to address them by strategically planned and effectively coordinated programs and policies (Basch, 2011).

When researchers quantify the relationship between health and student achievement, schools will be able to determine which health conditions most negatively impact the performance of students. For example, in their study, Eide et al. found that although ADHD (Attention Deficit Hyperactivity Disorder) was less prevalent for girls than for boys (sample population, girls = 3%; boys = 11%), the results of the research suggested that it had a stronger effect on the academic performance for girls (Eide et al., 2010). This particular finding, coupled with future research, may have important implications for the instructional planning for female students.

According to the Center for Disease Control and Prevention, there is a strong link between the academic success of America's youth and health (CDC, 2020). They also say that the predictor for the overall well-being of a child is academic success, and that is confirmed by leading national education organizations such as the Council of Chief State School Officers, National School Boards Association, and American Association of School Administrators (CDC, 2020). In addition, researchers have found that the general physical well-being of children, chronic illness, and risk-behaviors in adolescents all influence student performance (Basch, 2011; Bradley & Greene, 2013; Ickovics et al., 2014; Taras & Potts-Datema, 2005).

Historically, students' health due to crises, such as inadequate nutrition and diseases such as polio in the 1950s, sexually transmitted diseases, drug abuse, teen pregnancy, and mental illness, has been the focus in the United States (Bradley & Green, 2013). The research conducted by Basch showed that inattention and hyperactivity, poor vision, teen pregnancy, asthma,

aggression and violence, physical activity, and lack of breakfast were related to the academic achievement of students, and produced the term "educationally relevant health disparities" (Basch, 2010). Similarly, the results reported by Bradley and Green re-affirm that risk behaviors and academic achievement are highly interrelated (Bradley & Green, 2013). The specific risk behaviors that are known to researchers to contribute to poor academic achievement are violence, tobacco use, unhealthy dietary behaviors, inadequate physical activity, alcohol, and other drug use, sexual behaviors contributing to unintended pregnancy and sexually transmitted diseases (Basch, 2010; Bradley & Green, 2013; CDC, 2020). In addition, these risk behaviors, typically seen in adolescents, have contributed to death, disability, and other social problems (CDC, 2010).

There is consensus among researchers that health has an impact on student performance. Based on relevant research, it can be deduced that poor health negatively influences a student's performance in school. However, the factors that influence student performance vary greatly and must be isolated to determine which conditions must be mitigated to ensure the best possible outcomes for all students.

Health Services and Minorities

When using health services, ethnic minorities tend to have different experiences than non-ethnic minorities. The concept of "ethnic minority" refers to immigrants newly arrived to a country, and also groups that have been a part of the country for hundreds of years, as is the case with American Indians in the United States, who are the original inhabitants (Scheppers et al., 2006). The various groups that fall into this category oftentimes have different values and practice different cultural norms than the majority culture. The purpose of examining how minorities interact with health services is to see if there are distinctions in comparison to non-minority groups. Some barriers faced by minority groups in healthcare vary from those

experienced by non-minority groups due to differences in culture and socioeconomic status (Scheppers et al., 2006). The literature review did not reveal many public studies that distinguished between reducing these barriers or disparities and improving the health of minorities. Reducing these barriers can contribute to better quality healthcare for minorities and thus result in the improvement of their health. However, the research shows that only focusing on reducing disparities may hinder the larger opportunity to improve healthcare overall (Asch et al., 2006; Scheppers et al., 2006). Nonetheless, it is still worth examining which disparities exist for minorities and why in order to uncover the implications for practitioners and policymakers.

Because healthcare in the United States is not operated under one single coordinated system, it requires a multi-faceted approach to make improvements. The United States healthcare system is a collage of providers and regulators, making it challenging to address the different disparities (Beal, 2004). The most obvious example of a disparity impacting minorities is the language barrier that has been found to have a more profound effect on the quality of healthcare provided for non-English speaking patients (Partin & Burgess, 2012). Providing an intervention to alleviate the effects of this disparity would not interfere with English-speaking patients, hence not impacting the quality of care for English-speaking patients and reducing that disparity for patients that do not speak English.

Poor healthcare for minorities is also seen when there are challenges with accessibility. Asch et al. found that patients with at least minimal access to healthcare did not experience a difference in the quality of care if they had health insurance. Having health insurance increases access to healthcare but does not guarantee the quality of care. The same study further found that when they confined their analysis to similar indicators and variables used in previous studies related to racial and ethnic disparities, they noticed a trend that showed better care for Whites

than for Blacks (Asch et al., 2006). There are similar findings related to the healthcare provided to children. For example, children categorized as minority in the United States experience substandard care, have poor access to medical and dental care, are less likely to receive the necessary medications as prescribed, and are less likely to receive essential health services in comparison to White children (Keeton et al., 2012).

Poor health services for minorities have exacerbated barriers experienced due to COVID-19. Coronavirus disease 2019 has caused a global pandemic in the United States. The disease has brought to the forefront the glaring impact poor health services have on minorities in the United States. In the most recent data, the Center for Disease Control and Prevention has reported that African-American, Alaska Native, and American Indian populations are five times more likely to be hospitalized due to COVID-19 than non-Hispanic White persons (CDC, June 2020). They also reported that Hispanics/Latinos are four times more likely to be hospitalized than non-Hispanic White persons (CDC, June 2020). Finally, they report that COVID-19 related deaths are significantly higher in the African-American and Hispanic/Latino populations (CDC, June 2020).

According to D. Tai et al., chronic medical conditions derived from inadequate healthcare are compounded by less access to quality healthcare by some racial and ethnic minority groups (Tai et al., 2020). They report that the uninsured rate of Americans is significantly higher for Native Americans (22%), Hispanics (19%), African-Americans (12%), compared with Whites (8%) (Tai et al., 2020). It is also known that these groups tend to live in underserved communities that offer poor healthcare; therefore, minorities may receive lower-quality care for COVID-19.

The challenges faced by minorities in obtaining health services often become barriers and prevent them from receiving quality healthcare. The lack of access to quality healthcare and the lack of culturally sensitive and multi-lingual healthcare providers are common gaps within minority communities. This phenomenon extends to the care for children as well. These barriers stem from a long history of structural inequalities and physician bias (Smedley et al., 2003). For these reasons, minorities will inevitably remain vulnerable to increased mortality due to COVID-19 and other fatal diseases as per the CDC, 2020.

Health Services and Blacks and Latinos Living in Poverty

The disparities within the healthcare system directly impact the well-being of Blacks and Latinos living in poverty. Many of the disparities are prevalent due to the inequities within the healthcare system as influenced by society as a whole. In order to eliminate these disparities, the healthcare system will require multiple interventions (Beal, 2004). The Institute of Medicine (IOM) surmised that these disparities exist across a wide range of healthcare services and illnesses (Beal, 2004). Race and socioeconomic status combined to affect the health of Americans (Williams, 1999). Some of the disparities that exist influenced by race and low socioeconomic status include lack of healthcare coverage, the quality of child healthcare, and lack of diversity of healthcare providers.

The lack of insurance will likely leave individuals without adequate healthcare and unaddressed medical needs (Beal, 2004). Poor healthcare may be experienced by Black and Latino children, largely due to the individual bias of providers (Beal, 2004). In addition, the low reimbursement from Medicaid makes it difficult to get high-quality care. The lack of diversity of healthcare providers is another disparity known to interfere with cross-cultural interactions. Healthcare providers of color tend to serve lower-income communities and speak the same language as their underrepresented patients (Beal, 2004). Beal concludes that although there is

growing interest in reducing disparities of Blacks and Latinos, there is a lack of coordinated effort to improve their care (Beal, 2004).

Research shows that Blacks or African-Americans have a higher rate of disease compared to Whites and that this disparity persists over time (Hahn, 1992; Hummer et al., 1999; National Center for Health Statistics, 1998; Sorlie et al., 1993). The racial gap in mortality is widening for various causes of death. The National Center for Health Statistics reports that the mortality rate for Blacks was higher in 1995 than in 1950, despite the decline of specific causes of death, including cancer, diabetes, suicide, cirrhosis of the liver, and homicide (National Center for Health Statistics, 1998). The report in 1997 indicated that the life expectancy of a 45-year-old White male is five years more than that of Black males. Similarly, when studying 45-year-old White females, it is found that their life expectancy is 3.7 years more than their Black counterparts (National Center for Health Statistics, 1997).

Health statistics for Hispanics, as reported by the National Center for Health Statistics, indicate that their overall mortality rate is lower than Whites. However, they have higher death rates for diseases such as cirrhosis of the liver, HIV/AIDS, and diabetes (National Center for Health Statistics, 1998). As a result, researchers raise concerns when reporting statistical data for the Hispanic population. When putting the data in perspective, one must consider the possibility that many non-Black minorities may be falsely classified as White in death certificates or other data. This misclassification may result in the lower reporting for Hispanic rates of disease, mortality, and life expectancy (Hahn, 1992; Sorlie et al., 1993).

Racism and Health

For centuries, racism has reinforced the inequalities experienced by minorities. Consequently, the impact of experiences due to residing in poor neighborhoods, racial bias in

healthcare, and discrimination can have detrimental effects on minorities and health (Williams, 1999).

Segregation has been the key mechanism used to restrict access to the attainment of higher socioeconomic status by way of equitable education and competitive employment opportunities (Massey & Denton, 1993). Residential segregation has exacerbated the concentration of poverty in some communities, and hence segregated and concentrated poverty in classrooms. The unanimous Supreme Court ruling in Brown vs. Board of Education has done nothing to alleviate the segregation of public elementary, middle, and high schools in the United States (Orfield & Eaton, 1996). Even in integrated schools, Black students are not typically found in the more advanced classes with their White peers (Jaynes & Williams, 1987). Residents of segregated neighborhoods may be subject to pathogenic housing and be disproportionately exposed to environmental toxins and poor-quality housing (Williams, 1999). Besides deterioration of the physical environment, access to healthcare is another way discrimination can affect health status. Racial inferiority is a stigma that appears to influence how Blacks and Latinos are received and treated in the healthcare system (Williams, 1999). Research shows that Whites are more likely to receive a broader range of medical procedures than Blacks (Council on Ethical and Judicial Affairs, 1990). The types of procedures more commonly performed were necessary due to failure to manage chronic diseases, a delay in initial treatment, or a delayed diagnosis (Council on Ethical and Judicial Affairs, 1990). In Beal's work, she points out that children have similar experiences (Beal, 2004).

There is a dearth of data on the racial and ethnic health disparities experienced by children of color. Beal indicates that children in these groups experience the same challenges and disparities as adults of color. However, in comparison to White children, their care is not of

similar quality if they have access to healthcare at all (Beal, 2004). Beal also emphasized that this lower quality care ranges from primary care to care for asthma.

According to Partin & Burgess, a national priority for the U.S. is to improve health outcomes for racial and ethnic minorities (Partin & Burgess, 2012). The Robert Wood Johnson Foundation funded a national program, "Finding Answers: Disparities Research for Change," and they seek to review literature that focuses on ways of reducing existing disparities (Partin & Burgess, 2012). One example of their work is the important focus on reducing barriers for patients who do not speak English. The goal of these programs is to intervene in areas that are within the control of healthcare providers. Examples are diagnosis and testing (Partin & Burgess, 2012). Areas where patients must act regarding their health, as in their follow-up or response to treatment, are not an example that can be controlled unless it is a matter of access.

The social environment is an excellent influence on the racial differences in health. Addressing the underlying causes of disparities may positively improve the health of the Black and Latino population and reduce racial disparities in health (Williams, 1999). Basch speaks of the mutual reinforcement of health and education in his work. He discusses the detrimental outcomes associated with the lack of healthcare available for vulnerable youth (Basch, 2011). There is consensus that an intervention is needed to mitigate some of the consequences that come from a lack of healthcare for Black and Latino students (Basch, 2011; Geierstanger et al., 2004).

Gaps in the Literature

The literature indicated that health affects a student's performance in school. It also described the positive association between good health and a student's performance. Researchers agree that healthy students learn better. Inequities that exist in the healthcare of urban minority youth have also been known to affect student performance. The literature also indicated that if schools offer health services, it reduces the disparities experienced by minority urban youth.

The results of several studies showed that SBHCs generally have a positive effect on students' experiences in school. Keeton et al. state that when students have access to SBHCs, they experience positive health and social outcomes (Keeton et al., 2012). There were no significant findings that indicated if SBHCs directly impact student performance. If most SBHCs are located in underserved communities, there is a dearth of evidence that shows the direct impact on student performance for Black and Latino students living in poverty. Although the literature highlights the benefits of healthcare in schools, very little empirical evidence shows how it directly impacts student performance.

Conclusion

An understanding of SBHCs is essential to determine if they will contribute to students' achievement. SBHCs were initially created in response to the spread of infectious diseases in the early 1900s. SBHCs can be traced back to establishing the American Public Health Association. The public health nursing movement's response to the outbreak of communicable diseases in NYC tenements and public schools further solidified the need for medical care for students in the school. It also brought to light the importance of education for students and their families around health and disease risks. Making healthcare more accessible to students in the school was very beneficial in mitigating the spread of disease in schools and the community. SBHCs rely on public and specific private funding sources and will deliver services in the school. Medical and mental healthcare professionals primarily provide care. The immediate benefits include the treatment of chronic diseases and immunizations. In comparing SBHCs to School-Linked Health Clinics, it was discovered that both models primarily serve students in lower socioeconomic communities. The services provided would depend on the community's needs, and there were clear benefits associated with both models. Both the SBHCs and SLHCs have similar staffing structures and funding sources.

The literature regarding the relationship between health services and student performance revealed that healthy students learn better. Conversely, illness and poor health can hinder a child's well-being, making it less likely to be fully engaged in school. The evidence shows that chronic illnesses such as asthma and lead poisoning can lead to conditions that can make it more difficult for children to focus in school, as in attention deficit disorder. It is vital that children with more serious chronic illnesses receive care on school premises and that educators are aware of how to keep them safe. It is widely ascertained that a coordinated effort is needed to meet the health needs of children in the schoolhouse. This effort will require the involvement of key decision-makers so that disparities are addressed and minimized. A coordinated effort in ensuring children receive the appropriate healthcare in school can be lifesaving and requires the involvement of the U.S. Department of Education.

In general, it was found that the poor health services experienced by minorities are due to the continued structural inequalities that exist in the United States. The inaccessibility to quality healthcare and insensitivities to the needs of multi-lingual patients remain barriers that are exacerbated by the current pandemic.

The literature regarding the relationship between health services and Blacks and Latinos living in poverty uncovered the many disparities and inequities regarding healthcare. An example of a response is the work of the Robert Wood Johnson Foundation, which focuses on studying the different disparities that exist. Nonetheless, these inequities contribute to poor healthcare and the decline of children's academic outcomes. Therefore, it is crucial that in addition to the mandated testing requirements of the federal government, there are policies that are developed to eliminate barriers that interfere with student achievement.

After careful consideration of the literature, I expected to find a relationship between SBHCs and the academic performance of Black and Latino students living in poverty. Unfortunately, the literature did not reveal evidence that SBHCs directly impacted the academic performance of Black and Latino students living in poverty. The convenience of the location and the time services are offered will contribute to the demand of the SBHCs. Taking advantage of these services may benefit children and impact their academic performance.

Chapter 3: Research Design and Methodology

Introduction

This chapter describes the research design and methodology utilized for this study, and the steps taken to generate results. In this quasi-experimental, quantitative study, a difference-in-differences design and the Callaway and Sant'anna difference-in-differences estimator were used to analyze the effect of School-Based Health Centers on student performance and attendance. Microsoft Excel has been used to manage the data, and Stata is the statistical software that has been utilized to analyze and manage the data. Typically, quasi-experimental designs identify a comparison group that is as similar as possible to the treatment group prior to the implementation of an intervention as a baseline (White & Sabarwal, 2014). The comparison group is intended to represent what the outcomes would be in the absence of the treatment, or what is called the counterfactual (Pomeranz, 2017; White & Sabarwal, 2014). In order to get a good understanding of the impact of a program, it is important to estimate and consider the counterfactual. A counterfactual is an estimate of what would have happened in the absence of treatment. The treatment, in this case, is the School-Based Health Center. To understand the impact of a School-Based Health Center, it is important to see what would have happened in the absence of one.

Research Design and Modeling Strategy

Difference-in-differences (DID) is a quasi-experimental design that allows for the comparison of treatment and comparison groups after accounting for pre-treatment differences in an outcome over time. Simply stated, it estimates a treatment effect by comparing a change in outcomes for participants in a program as compared to those who did not participate in the program (Pomeranz, 2017). Because the counterfactual can never really be observed, DID estimates it in order to compare it to what actually occurred. The estimate for the counterfactual is represented by the control or comparison group (Pomeranz, 2017). In this study, the control

group is represented by students who did not attend schools with clinics. The treatment group consists of students who attended schools with clinics. The impact of the treatment or the intervention is measured by the outcomes of the treatment and control group (Pomeranz, 2017). It determined if there is a change between the treatment and comparison group after the treatment is implemented. A difference-in-differences determined whether the pre-intervention difference in outcome between the treatment and comparison group changes after the intervention is implemented. It is important to see whether the difference post-treatment is larger or smaller than the difference pre-treatment, the difference in the differences.

Difference-in-differences also provide a stronger estimate of an impact than single difference. Single difference only compares the difference in outcome between the treatment and comparison groups immediately after the intended intervention (Pomeranz, 2017). The single difference method does not require data of the comparison or treatment group prior to the treatment. There must be a great deal of certainty that both groups are very similar before the intervention or the method may be biased and either over- or underestimate (look at feedback) the real impact of the treatment (Pomeranz, 2017). This is the reason why single difference is an inferior method to difference-in-differences. The opening of a clinic is referred to here as the treatment. For this study, the treatment is the School-Based Health Center, and the comparison consisted of students who did not attend a school containing a School-Based Health Center.

The key assumption when using difference-in-differences is that both the comparison and treatment groups would have had identical trajectories over time in the absence of the program or treatment (Pomeranz, 2017). Since we are looking for a credible estimate of an effect, a straightforward approach would be to compare the relative performance of students in treatment to comparison schools over time. In order to maximize the credibility of the estimate, it is

important to see if both the treatment and comparison groups experience parallel trends before implementing the treatment (Pomeranz, 2017).

Students who attended schools that contained School-Based Health Centers (SBHC) in a given year were be referred to as the treatment group. The comparison group will be all students who attended schools that did not contain School-Based Health Centers (SBHC) in that year. The treatment to be measured in this study is the implementation of a School-Based Health Center.

The key estimating equation to be used is the following:

Test Score = B0 + Treatment/Clinic + *Year* + (Treatment/Clinic X Year) + demographics
Attendance = B0 + Treatment/Clinic + *Year* + (Treatment/Clinic X Year) + demographics

where the dependent variable is an outcome and includes New York State ELA and Mathematics proficiency rates and Attendance. B0 is the constant, *Treatment/Clinic* is a binary variable that takes a value of 1 if a school had a clinic in a given year and 0 otherwise, and *Year* is a continuous variable. It is recorded as the year at the end of an academic year. CSDID is being used as opposed to the standard difference-in-differences approach because CSDID proposes difference-in-differences estimators when there is variation in treatment timing and multiple time periods.

Research Questions

This study aims to determine if School-Based Health Centers have a direct impact on attendance and the academic performance of students attending New York City public schools. This study is guided by the following research questions:

- Does the presence of School-Based Health Centers impact the academic performance of students in New York City public schools?
- Does the presence of School-Based Health Centers impact the attendance of students in New York City public schools?

Data Collection and Process

Data Sources

To answer these research questions, two sets of primary sources of publicly available data have been utilized. A School Level Master File (SCHMA) from The Research Alliance for New York City Schools (RANYCS), from 1996 to 2016, has been merged with a dataset that identifies which NYC schools have School-Based Health Centers and when those centers/clinics opened (NYU Steinhardt, 2021). The Research Alliance for New York City Schools gets their data from the New York City Department of Education.

The first data source, the SCHMA, contains comprehensive data on all NYC public schools for a 20-year period, 1996 to 2016 (Research Alliance for NYC Schools, 2016). It contains information for school-level student characteristics such as DBN, school address, school name, enrollment, attendance rate, performance, ethnic composition, class sizes, free and reduced-price lunch, performance indicators, and report card grades.

The second data source, Clinics File, was developed by using the state clinic database to identify all centers/clinics currently serving New York City public school students. This data is provided by the New York State Department of Health and the Dataset Owner is Center for Health Care Facility Planning, Licensure, and Finance (NYS Department of Health, 2021). The dataset contains information such as facility ID, name, description, date opened, address, city, state zip code, phone number, and website.

The Research Alliance for NYC Schools created a longitudinal School-Level Master dataset from publicly available data sources for 20 school years 1995-1996 through 2015-2016. This publicly available data has been downloaded from RANYCS.

The second set of data sources was utilized to develop the Clinics File representing 165 clinics serving 359 schools. This file was created by cross-referencing the list of school health

facilities of New York State found in Health Data NY (State of New York, 2021), and Health Facility General Information, State of New York (NYS Department of Health, 2021), with the list of school-based health centers in New York City Public Schools grades K through 12 found in "School-Based Health Centers" (School-Based Health Centers, 2021). The state tracks every health care facility in the state. These facilities include School-Based Health Clinics. The challenge was to examine each health care facility in the state and determine which were school-based. This original state file, the Health Facility General Information, State of New York (NYS Department of Health, 2021), is not intended for schools. It contains the data for all health care facilities in New York State. The school health facilities of New York State data found in Health Data NY (State of New York, 2021), provided the name of the facility, address, and date the clinic opened. The key when working with this file was to determine which clinics were school-based or school-linked. I was only interested in clinics that were located in schools, School-Based Health Clinics. The NYC School-Based Health Center data provided the address of the center, campus and school name, building code, and school DBN. The school DBN is how the New York City Department of Education (NYCDOE) identifies schools. The DBN is comprised of three parts: the two-digit NYC school district, a letter indicating the borough, and a three-digit school number. These files were used to create the Clinics File that was then merged with the School Level Master File (SCHMA) in Stata by using the building code. The process of cross-referencing all of these files was critical in ensuring all centers or clinics were accounted for. The building code and DBN of all schools with a center, in an NYC public school, were found in the Clinics File that was created utilizing these files. Any data pertaining to public and non-public charter schools, District 75 & 79 programs have been omitted because they are not relevant to this study. District 75 programs provide instructional support for students with significant

challenges such as Autism Spectrum Disorders, emotional disturbances, sensory impairments, significant cognitive delays, and multiple disabilities (District 75, 2021), and District 79 is New York City's Alternative Schools District (District 79, 2021).

There is a need for cautionary analysis in the data review. As a result of the participating district not allowing for individual student data, the research focused on school-based data. The unit of analysis therefore shifted from the student to the school. Therefore, conclusions need to be tempered based on that shifting unit of analysis.

Process

The SCHMA was accessed and downloaded in excel format. A school-wide proficiency rate was generated in Stata for ELA and mathematics for each testing grade, 3 through 8. After those variables were generated, the Clinic Indicators file was merged into Stata. The Clinic Indicators file was created in Excel format to identify the DBN, name of the school, and the year the center was established. After the successful merge, I was able to see when a school received a clinic, and that is what was used to identify the treatment. The date the center was established is an important factor. In order to provide consistency, the following rule was established: if a center was established from January to June of a given year, then the year the clinic was established was the same calendar year. If the clinic was established from July to December, then the year the clinic was established would be the following year. The Year variable is the year in the spring of the academic year. Then the variable clinicopened was generated to identify the first time an observation was treated, or the year the clinic/center was opened. This information provided all that was needed for a difference-in-differences.

A description of all variables used in this study can be found in Appendix C. A close examination of co-variates determined if there were missing observations and in which year(s) using this command: table YEAR, contents (mean variable). The end goal was to figure out how

I could control for the gaps so I had accurate results. If there were variables with no observations, then Stata drops them and I had to control for these gaps.

The following are the variables that were used and the year/timeframe that observations existed for that variable:

Table 1

Variables, Labels, and Observations

Dependent Variables	**Label**	**Year(s) observations exist**
STCELAPCTL34TOT	ELA Percent Proficient	2000-2016
STCMTHPCTL34TOT	Math Percent Proficient	2000-2016
ATTPCTTOT	school attendance rate total	2000-2016

Independent Variables	**Label**	**Year(s) observations exist**
FRLPCT	free & reduced-price lunch	1999-2002, 2006-2009, 2011-2012
POVINDPCT	Poverty Indicator Percent	2015-2016
DMGPCTELLTOT	Percent of ELLs	2006-2012
SPEDPCT	Percent of sped	1996-2016
BLPCT	Percent of Black	2000-2016
AMIPCT	Percent of American Indian	2000-2016
ASIPCT	Percent of Asian	2000-2016
HISPCT	Percent of Hispanic	2000-2016
WHTPCT	Percent of White	2000-2016

Callaway and Sant'anna Estimator

Next process: the installation of the Callaway & Sant'anna estimator into Stata. This estimator aggregated comparisons for the estimation of the Average Treatment Effect on the

Treated (ATT). The results were an estimate of the treatment effects with an accounting of as much information as was reasonable (CSDID, 2021).

Stata Codes

Now that all variables have been identified and the estimator has been installed, the general syntax as specified in CSDID version 1.6 was used (CSDID, 2021). The general command is as follows:

csdid depvar indepvar [if] [in] [iw], ivar(varname) time(year) gvar(group_var) method(drdid estimator) [notyet] [saverif(file) replace cluster(var) wboot agg(aggregation method) reps(#) rseed(#) wbtype(wbtype)]

The specification above includes the dependent variable or the outcome of interest and all independent variables, and the ivar identifies the panel ID. If this was not used, then the command used repeated cross-estimators instead. Also included in this syntax was time, which was year; gvar identified the first time an observation was treated; and method indicated the preferred estimator (CSDID, 2021).

Based on the needs of my study, the specifications I used were as follows:

Specification #1
csdid ATTPCTTOT SPEDPCT BLPCT AMIPCT ASIPCT HISPCT, ivar(IDNUM) time(YEAR) gvar(clinicopened) method(dripw)

Specification #2
csdid STCELAPCTL34TOT SPEDPCT BLPCT AMIPCT ASIPCT HISPCT, ivar(IDNUM) time(YEAR) gvar(clinicopened) method(dripw)

Specification #3
csdid STCMTHPCTL34TOT SPEDPCT BLPCT AMIPCT ASIPCT HISPCT, ivar(IDNUM) time(YEAR) gvar(clinicopened) method(dripw)

In all three instances, the ivar represented the school DBN, and the gvar represented the earliest year the school received treatment, or the year the center/clinic was opened.

If there were co-variates missing in the panel, I was only able to estimate for schools that were open during the timeframe for which data was available. One model has all co-variates that have observations for the time period of available data.

Generating Results

I was most interested in the results for Average Treatment Effect (ATE), where the effects by school and year were combined into a single estimate. This answered the question "Do student outcomes improve overall after health services via a clinic become available in the building where their school is located?" The average treatment effect is a pooled treatment effect across all years. This is a preferred way to review results in comparison to the group-by-year estimates that are generated by default because it provides overall data across all cohorts and time periods. However, when I looked at the ATE, its average assumed that it is linear and this may not be as helpful as an event study.

The event study format breaks up the average treatment effect over time and shows the effects for each post-treatment year. Event studies are popular tools utilized by researchers in policy evaluation. It is a difference-in-differences design where units in the panel receive treatment at different times (Borusyak et al., 2017). In this study, the event study format answered the question "How do student outcomes respond to the availability of a clinic, in each year, after a clinic is open?" Stata provided the event study version of this and then showed the effect of the clinic year by year. The event study allowed the effect to be different in each year of treatment.

Examining the Average Treatment Effect and event study format together was important because it provided a more complete picture of what happened after the clinic opened. For example, if student outcomes change steadily after a clinic opens, then both the ATE and event study showed the same results. But if outcomes improve shortly after the clinic opens and then

level off, or if it takes some time for improvement in student outcomes to emerge, then the ATE and event study looked different.

For each specification a series of commands was entered into Stata:

- *estat simple* gave me the overall Average Treatment on the Treated across all cohorts and time periods.
- *estat event* was the event study and basically answered this question: What's the difference in leading up to and then after a school gets a clinic?
- *estat group* addressed the difference between groups or, as in this case, cohorts. It answered the question: What is the difference between groups? In this case specifically answered: What was the effect of the centers/clinics for cohorts of schools that got centers/clinics in any given year?
- *estat calendar* was the effect by calendar year. So, no matter when a school got a clinic, it answered the question: How did things look for those treated schools in any given year?

The purpose of this study was to analyze the effect of School-Based Health Centers and student performance and attendance. In this quasi-experimental, quantitative study, a difference-in-differences design and the Callaway and Sant'anna difference-in-differences estimator were used. The estimator is a more preferred approach because CSDID proposes difference-in-differences estimators when there is variation in treatment timing and multiple time periods.

This quasi-experimental, quantitative study allowed for the comparison of treatment and comparison groups after accounting for pre-treatment differences in an outcome over time. With this design, we were able to see whether the difference post-treatment was larger or smaller than the difference pre-treatment, the difference in the differences. The population for the study

consisted of New York City public schools, and the dataset utilized was from 1996 to 2016. The impact of the treatment was measured by the outcomes of the treatment and control group. The results of this study are presented in Chapter 4.

Chapter 4: Results

In this quasi-experimental, quantitative study, a difference-in-differences design and the Callaway and Sant'anna difference-in-differences estimator were used to analyze the effect of School-Based Health Centers on student performance and attendance. Microsoft Excel was then used to manage the data, and Stata applied to analyze and manage the data. Typically, quasi-experimental designs identify a comparison group that is as similar as possible to the treatment group prior to the implementation of an intervention as a baseline (White & Sabarwal, 2014). The comparison group is intended to represent what the outcomes would be in the absence of the treatment, or what is called the counterfactual (Pomeranz, 2017; White & Sabarwal, 2014). In order to get a good understanding of the impact of a program, it is important to understand the counterfactual. Therefore, a difference-in-differences, a quasi-experimental design that allows for the comparison of treatment and comparison groups after accounting for pre-treatment trends in an outcome over time was used. Simply stated, it analyzes an outcome over time by comparing a change in outcomes for participants in a program as compared to those that did not participate in the program (Pomeranz, 2017). Difference-in-differences is one of the most common approaches for identifying the causal effect of participating in a treatment on some outcome (Callaway & Sant'Anna, 2020).

Descriptive Statistics and Analysis

Student Demographics

For the purposes of this study, student demographics in New York City public schools were analyzed within the context of whether a school contains a clinic or not for a given year. It was a way to show how clinic and non-clinic schools compare demographically. In order to see if the treatment group (clinic schools) and comparison group (non-clinic schools) look similar, descriptive statistics were run in Stata. This was important because we used the comparison

group to estimate the counterfactual, so the treated group should be similar to the comparison group. Two-sample t-tests with equal variances were done to compare the mean of each sample. The benefits of a reasonably large panel of data that spans over a 20-year period, in this case 1996 to 2016, is the ability to isolate a given year and compare outcomes to subsequent years. Tables 2, 3, and 4 show the demographics of New York City public schools in 2006, 2011, and 2016 subsequently, in clinic schools and non-clinic schools.

Table 2

Descriptive Statistics Analysis of the Demographics of NYC Public Schools in 2006

2006	Non-Clinic Schools	SD	Clinic Schools	SD	p-value
ELA Proficiency	54.50	21.47	39.43	16.95	0.00
Math Proficiency	62.14	22.72	46.02	20.62	0.00
Attendance Rate	90.19	7.13	85.27	9.25	0.00
Enrollment	720	581	686	729	0.00
Free & Reduced-Price Lunch	74.73	23.23	75.65	25.20	0.14
ELL	11.36	11.81	13.50	12.28	0.00
Special Education	11.23	21.49	6.90	7.24	0.00
American Indian	0.54	0.55	0.48	0.52	0.00
Asian	11.98	16.35	4.72	11.10	0.00
Black	35.54	29.62	38.45	23.13	0.00
Hispanic	36.45	24.60	52.38	23.82	0.00
White	15.49	21.27	3.97	7.74	0.00

Note: Non-Clinic and Clinic Schools mean data
*SD = Standard Deviation
*FRLPCT found in descriptive tables, but not in the panel data.

In 2006, the mean population in non-clinic schools is 720 and in clinic schools 686, suggesting that the enrollment of the groups is not so different. For FRLPCT, the comparison and treatment groups look similar, and the mean is slightly higher for clinic schools. There seem to be more students classified as needing special education in non-clinic schools than in clinic

schools and the p-value is significant. For Hispanic students there's a descriptive difference in students attending clinic schools, and that difference is very highly significant suggesting that clinic schools have more Hispanic students than any other ethnicity.

Table 3

Descriptive Statistics Analysis of Demographics of NYC Public Schools in 2011

2011	Non-Clinic Schools	SD	Clinic Schools	SD	p-value
ELA Proficiency	45.94	21.42	30.74	16.28	0.00
Math Proficiency	57.78	21.99	44.18	17.42	0.00
Attendance Rate	90.41	8.38	87.84	6.34	0.00
Enrollment	660	547	576	536	0.00
Free & Reduced-Price Lunch	74.46	21.13	82.02	14.47	0.14
ELL	13.40	14.00	19.01	18.20	0.00
Special Education	13.62	19.90	12.41	8.79	0.00
American Indian	0.56	1.04	0.47	0.47	0.00
Asian	12.95	17.80	5.09	11.18	0.00
Black	33.98	29.56	35.58	23.04	0.00
Hispanic	37.29	24.67	55.17	23.82	0.00
White	15.22	21.24	3.70	7.43	0.00

Note: Non-Clinic and Clinic Schools mean data
*SD = Standard Deviation
*FRLPCT found in descriptive tables, but not in the panel data.

In 2011, the mean population in non-clinic schools is 660 and in clinic schools it's 576. For FRLPCT, there was a 7.56 increase in the mean, indicating an increase in the average number of students living in poverty who attend clinic schools. Although the mean for special education students attending clinic schools almost doubled since 2006, it is still slightly less than for special education students attending non-clinic schools. Hispanic students maintain their descriptive difference in students attending clinic schools and that difference is very highly significant suggesting that in 2011, clinic schools still have more Hispanic students than any other ethnicity. The mean for White students attending clinic schools has decreased in 2011 in comparison to 2006, and has widened the gap even further from students attending non-clinic schools.

Table 4

Descriptive Statistics Analysis of Demographics of NYC Public Schools in 2016

2016	Non-Clinic Schools	SD	Clinic Schools	SD	p-value
ELA Proficiency	38.73	20.59	24.54	14.99	0.00
Math Proficiency	36.89	23.28	21.12	17.62	0.00
Attendance Rate	91.45	8.49	89.00	6.69	0.00
Enrollment	616	524	505	390	0.00
Free & Reduced-Price Lunch	No Data Available				
Poverty Indicator	79.00	23.12	87.01	13.74	0.00
ELL	No Data Available				
Special Education	16.47	19.41	14.68	7.08	0.00
American Indian	No Data Available				
Asian	13.65	17.86	5.83	11.45	0.00
Black	30.46	28.22	32.58	21.69	0.00
Hispanic	38.56	24.60	55.46	23.40	0.00
White	15.15	20.37	4.48	8.08	0.00

Note: Non-Clinic and Clinic Schools mean data
*SD = Standard Deviation
*POVINDPCT – this variable represents students living in poverty in the SCHMA dataset for the 2015-2016 school year only. No information was provided to indicate how this variable is measured in the SCHMA dataset.

In 2016, the mean population in non-clinic schools is 616 and in clinic schools it's 505. The mean for the Poverty Indicator is 87.01 for students attending clinic schools and 79.00 for

students in non-clinic schools. In comparison to FRLPCT in 2006 and 2011, this variable has a slightly higher mean for both clinic and non-clinic schools. The mean for students classified as needing special education in non-clinic schools and in clinic schools has increased steadily. However, the mean has also remained consistently lower for clinic schools in comparison to non-clinic schools. Hispanic students are showing consistency in a much higher mean for clinic schools than for non-clinic schools.

Based on Descriptives Tables 2, 3, and 4, clinic schools disproportionately serve students of color and ELL. In comparison to White students, Black and Hispanic students make up the majority of the students attending clinic schools. Comparatively, the mean for White students attending clinic schools is significantly lower than the mean for Black and Hispanic students individually. The data also show that more students classified as living in poverty attend clinic schools than non-clinic schools.

The variable FRLPCT represents students that are eligible for free and reduced-price meals or free milk according to the guidelines found in the table in Appendix B. For the purposes of this study, students in this category are also an indication of students living in poverty. As indicated in Table 1 in Chapter 3, there are gaps in the years this data is available in the main dataset provided in SCHMA. Although it is a panel that contains 20 years of data, the co-variate FRLPCT is missing data. The SCHMA codebook does not indicate the reason for the missing data. FRLPCT contains data for years 1999-2002, 2006-2009, and 2011-2012. If there are no observations for any variable in a model, Stata automatically drops the variable, reducing statistical power. In an effort to maintain consistent observations and maximize statistical power, the FRLPCT is not found in estimates, but is included in the descriptive statistics. The decision to omit it from the estimates was made because, as noted in table 1, it does not contain consistent

observations. FRLPCT provides a reasonable indication of the volume of students attending clinic schools in comparison to students who attend non-clinic schools for the years data is available. Descriptive statistics is the best method to use for making these comparisons.

Similarly, there is limited data for variable DMGPCTELLTOT, which represents ELL students. ELL data is available for the years 2006 to 2012. The Appendices include all tables generated using ELL data for reference. For the purposes of this discussion, ELL data was not used so that statistical power is not lost as in the case with the variable FRLPCT.

Student Performance Data and Analysis

The following identifies several of the outcomes that relate to my research questions.

ELA

In examining ELA results, (Table 5), there is a positive relationship between School-Based Health Clinics and student outcomes, and it is statistically significant.

ELA Models with Co-variates, no ELLs, and no FRLPCT

Difference-in-differences with Multiple Time Periods
Outcome model: least squares
Treatment model: inverse probability

Table 5

Average Treatment Effect on Treated

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
ATT	2.365097	1.108029	2.13	0.033	.1934008	4.536793

Note: Command in Stata - csdid STCELAPCTL34TOT SPEDPCT BLPCT AMIPCT ASIPCT HISPCT, ivar(IDNUM) time(YEAR) gvar(clinicopened) method(dripw)
*This table shows the overall Average Treatment on the Treated. This is across all cohorts and time periods. The estimate shows a positive coefficient that is statistically significant, and includes controls for special education and race/ethnicity.

Table 5 shows the overall Average Treatment on the Treated (ATT). As noted in Chapter 3, the effects by school and year are combined into a single estimate. An estimate such as this answers the question: do student outcomes improve overall after health services are received via a clinic in the building where their school is located? For ELA, this pooled treatment effect suggests a positive relationship between student outcomes and the treatment after the clinic opened, and it is statistically significant. An overall positive estimate is encouraging. It tells us that there was an increase in student proficiency in ELA in schools that contained School-Based Health Clinics. However, it does not tell us what the effect of the clinic was over time year by year. It was also important to see what the schools looked like before receiving a School-Based Health Clinic so you can see the real impact of the clinic. It must be determined if there is a change between the treatment and comparison groups after the treatment (SBHC) is implemented. A difference-in-differences determines whether the pre-intervention difference in outcome between the treatment and comparison groups changes after the intervention is implemented. It was important to see whether the difference post-treatment is larger or smaller than the difference pre-treatment, the difference in the differences. Pre-trends let us see if there were pre-intervention differences.

Table 6 provides Average Treatment Effects before and after schools receive clinics. The table represents an event study format that breaks up the average treatment effect over time by combining schools within each year of treatment.

Table 6

Average Treatment Effect on Treated by Periods Before and After Treatment

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
T-19	-1.176105	.6452264	-1.82	0.068	-2.440726	.0885152
T-18	-2.266771	1.095734	-2.07	0.039	.4.41437	-.1191723
T-17	-.2734632	.8557432	-0.32	0.749	-1.950689	1.403763
T-16	.2247637	.7676507	0.29	0.770	-1.279804	1.729331
T-15	-1.425827	.7821573	-1.82	0.068	-2.958827	.1071737
T-14	-1.021946	.7027229	-1.45	0.146	-2.399258	.3553653
T-13	1.030231	.7010032	1.47	0.142	-.3437095	2.404172
T-12	1.275822	2.109918	0.60	0.545	-2.859541	5.411185
T-11	3.146743	1.829684	1.72	0.085	-.4393716	6.732857
T-10	1.028514	1.048198	0.98	0.326	-1.025917	3.082944
T-9	.5114611	.8501261	0.60	0.547	-1.154756	2.177678
T-8	-.5503372	.7834848	-0.70	0.482	-2.085939	.9852647
T-7	.3474178	.6511972	0.53	0.594	-.9289052	1.623741
T-6	-.0336265	.6890583	-0.05	0.961	-1.384156	1.316903
T-5	.5160402	.6383812	0.81	0.419	-.735164	1.767244
T-4	.3503636	.884219	0.40	0.692	-1.382674	2.083401
T-3	.2502554	.9373931	0.27	0.789	-1.587001	2.087512
T-2	1.802241	.8088391	2.23	0.026	.2169453	3.387536
T-1	1.053914	.7470235	1.41	0.158	-.4102248	2.518053
T+0	.0704796	.9103145	0.08	0.938	-1.713704	1.854663
T+1	.4502612	1.010372	0.45	0.656	-1.530032	2.430554
T+2	-.0359232	1.152373	-0.03	0.975	-2.294534	2.222687
T+3	1.428425	1.134622	1.26	0.208	-.7953925	3.652243
T+4	2.581759	1.098912	2.35	0.019	.4279309	4.735588
T+5	3.346463	1.637046	2.04	0.041	.1379107	6.555015
T+6	4.95754	1.848888	2.68	0.007	1.333787	8.581293
T+7	6.403991	2.224735	2.88	0.004	2.043591	10.76439
T+8	3.504858	2.402416	1.46	0.145	-1.203791	8.213507
T+9	2.717059	3.338883	0.81	0.416	-3.827032	9.26115
T+10	4.216471	2.883056	1.46	0.144	-1.434215	9.867156
T+11	5.467593	3.668203	1.49	0.136	-1.721952	12.65714
T+12	9.963415	5.387099	1.85	0.064	-.5951048	20.52194
T+13	7.516159	3.91856	1.92	0.055	-.1640778	15.1964

Note: ELA Estimates: Event Study: Dynamic effects, with co-variates, no ELLs & no FRLPCT
*In comparison to the table with no controls (table 2), it shows that post clinics in years 4, 5, 6, and 7 the coefficient is positive and significant. The coefficient is positive and marginally significant in year 12 and again positive and significant in year 13. In year 12, the proficiency

rate almost doubled and was marginally significant and in year 13 it more than doubled in comparison to years 4 and 5. This is significant. There are pre-trends in this data. Pre-trends let us see if there were pre-intervention differences. The assumption in DID is that there shouldn't be differences. Not seeing significant estimates in pre-trends is good. Also, the strongest effects are in years 4-7. Estimates for later years are positive but imprecise, having large standard errors.

Table 6 shows the effect of the clinic year by year on student performance in ELA. It answers the question: how do student outcomes in ELA respond to the availability of a clinic, in each year the clinic is open? T+0 is the first year the clinic opens, T+1 is the 2nd year, and so on. The following rule was followed in order to establish the first year the clinic opens: if a center was established from January to June of a given year, then the year the clinic was established was the same calendar year. If the clinic was established from July to December, then the year the clinic was established was the following year. The Year variable was the year in the spring of the academic year. It was encouraging to see that prior to the schools receiving clinics, the coefficients were largely negative. When we look at T+0 and beyond, the coefficients are positive and get pretty large. T+12 represents 13 years after the clinic opens and ELA proficiency has increased almost 10%; it is marginally significant. T+13 shows a 7.5% increase in proficiency and is statistically significant. This is consistent with an effect that gets stronger over time.

Research Question #1

Does the presence of School-Based Health Centers impact the academic performance of students in New York City public schools?

The effect of School-Based Health Centers on student performance in ELA was analyzed using the Callaway and Sant'anna difference-in-differences estimator. The aggregated estimations for the Average Treatment on the Treated (ATT) are found in Tables 5 and 6 and suggest a positive relationship between ELA student outcomes and the treatment; it is statistically significant.

Math

In examining math results (Table 7), there is a positive estimate but it is not statistically significant.

Math Models with Co-variates, no ELLs & no FRLPCT

Difference-in-differences with Multiple Periods
Outcome model: least squares
Treatment model: inverse probability

Table 7

Average Treatment Effect on Treated

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
ATT	.296056	1.270439	0.23	0.816	-2.193958	2.78607

Note: Command in Stata - csdid STCELAMTHPCTL34TOT SPEDPCT BLPCT AMIPCT ASIPCT HISPCT, ivar(IDNUM) time(YEAR) gvar(clinicopened) method(dripw)
*This table shows the overall Average Treatment on the Treated. This is across all cohorts and time periods. The estimate shows a positive coefficient, and it is not significant. It suggests that there is a positive effect, but it is not significant. This estimate includes controls for special education and race/ethnicity.

Table 7 shows the overall Average Treatment on the Treated (ATT). This estimate indicates that there is a very small positive estimate that is not statistically significant. An estimate such as this doesn't necessarily require deeper analysis. However, deeper analysis can shed more light on the Research Question. It is essential to see the effect of the clinic year by year. Table 8 provides these estimates.

Table 8

Average Treatment Effect on Treated by Periods Before and After Treatment

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
T-19	-1.866905	2.096421	-0.89	0.373	-5.975815	2.242004
T-18	.511513	.7620099	0.67	0.502	-.981999	2.005025
T-17	-.2774796	1.013178	-0.27	0.784	-2.263272	1.708313
T-16	-.1692088	.9262361	-0.18	0.855	-1.984598	1.646181
T-15	-1.359453	.8845255	-1.54	0.124	-3.093091	.3741855
T-14	-2.217536	.9144967	-2.42	0.015	-4.009917	-.4251555
T-13	.2109006	1.048705	0.20	0.841	-1.844523	2.266324
T-12	-1.361068	1.302818	-1.04	0.296	-3.914544	1.192409
T-11	5.891761	4.39029	1.34	0.180	-2.71305	14.49657
T-10	8.523277	5.482436	1.55	0.120	-2.2221	19.26865
T-9	1.626895	2.254707	0.72	0.471	-2.79225	6.04604
T-8	-2.071988	3.485582	-0.59	0.552	-8.903604	4.759628
T-7	.9682485	.9045884	1.07	0.284	-.8047122	2.741209
T-6	.9234942	.8246136	1.12	0.263	-.6927188	2.539707
T-5	1.358562	.7484176	1.82	0.069	-.10831	2.825433
T-4	.4099899	1.078795	0.38	0.704	-1.704409	2.524389
T-3	.0609736	1.252397	0.05	0.961	-2.393678	2.515626
T-2	.5269622	1.137944	0.46	0.643	-1.703367	2.757292
T-1	1.859689	.8535645	2.18	0.029	.1867336	3.532645
T+0	-2.802718	1.009033	-2.78	0.005	-4.780387	-.8250502
T+1	-2.820498	1.147852	-2.46	0.014	-5.070247	-.5707487
T+2	-2.229656	1.304955	-1.71	0.088	-4.787321	.3280079
T+3	-.466915	1.50567	-0.31	0.756	-3.417975	2.484145
T+4	-.4579628	1.760357	-0.26	0.795	-3.9082	2.992274
T+5	1.571424	2.331909	0.67	0.500	-2.999033	6.141882
T+6	2.4308	2.240476	1.08	0.278	-1.960452	6.822051
T+7	5.328602	2.588	2.06	0.039	.2562159	10.40099
T+8	4.45721	3.291941	1.35	0.176	-1.994877	10.9093
T+9	4.308571	3.54796	1.21	0.225	-2.645303	11.26244
T+10	3.451953	3.054059	1.13	0.258	-2.533894	9.437799
T+11	4.215797	4.025313	1.05	0.295	-3.673671	12.10526
T+12	7.416188	6.793759	1.09	0.275	-5.899335	20.73171
T+13	5.332123	3.519059	1.52	0.130	-1.565107	12.22935

Note: Math Estimates: Event Study: Dynamic effects, with co-variates, no ELLs & no FRLPCT
*In comparison to the table with no controls (Table 12), T+0 and T+1 have negative coefficients and are significant, suggesting a decrease in proficiency in the first two years of a school receiving a clinic. Coefficients are positive T+5 and beyond and are significant only in T+7.

Table 8 shows the effect of the clinic year by year on student performance in math. It answers the question: how do student outcomes in math respond to the availability of a clinic in each year the clinic is open? Initially, there is a big decrease that becomes positive but imprecise over time. Students in years T+0 and T+1 experienced a decline in proficiency, and it was statistically significant. When we look at T+5 and beyond, the coefficients are positive and statistically significant in T+7 only. This specification is not significant when it is collapsed into an average treatment on the treated as indicated above, but the coefficients become positive after T+5. As the researcher I based my assessment on the data, and it is consistent with a meaningful effect. Because estimates are so mixed, it should be explored in a future study.

Research Question #1

Does the presence of School-Based Health Centers impact the academic performance of students in New York City public schools?

The effect of School-Based Health Centers on student performance in math was analyzed using the Callaway and Sant'anna difference-in-differences estimator. The aggregated estimations for the Average Treatment on the Treated (ATT) are found in Tables 7 and 8 and suggest a weak, positive estimate that is not statistically significant.

Attendance Data and Analysis

In examining attendance results (table 9), there was a very small positive association between School-Based Health Clinics and student attendance, and it is not statistically significant.

Attendance Models with Co-variates, No ELLs, and No FRLPCT

Difference-in-differences with Multiple Time Periods
Outcome model: least squares
Treatment model: inverse probability

Table 9

Average Treatment Effect on Treated

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
ATT	.0832727	.2645389	0.31	0.753	-.435214	.6017594

Note: Command in Stata - csdid ATTPCTTOT SPEDPCT BLPCT AMIPCT ASIPCT HISPCT, ivar(IDNUM) time(YEAR) gvar(clinicopened) method(dripw)
*This table shows the overall Average Treatment on the Treated. This is across all cohorts and time periods. The estimate shows a positive coefficient, and it is not significant. It suggests that there is a positive effect, but it is not statistically significant.

Table 9 shows the overall Average Treatment on the Treated (ATT). This estimate indicates that there is an even smaller positive estimate that is not statistically significant. As was the case with math, an estimate such as this requires deeper analysis. It is important to see the effect of the clinic year by year. Table 10 provides these estimates.

Table 10

Average Treatment Effect on Treated by Periods Before and After Treatment

	Coefficient	Std. err.	z	P>|z|	[95% conf.	interval]
T-19	.1201657	.6119907	0.20	0.844	-1.079314	1.319646
T-18	.0090453	.3245656	0.03	0.978	-.6270915	.6451821
T-17	.4266377	.2426385	1.76	0.079	-.0489251	.9022005
T-16	-.0730329	.2026713	-0.36	0.719	-.4702614	.3241956
T-15	-.335363	.2671365	-1.26	0.209	-.858941	.188215
T-14	-.3043929	.246989	-1.23	0.218	-.7884824	.1796966
T-13	.308094	.5557808	0.55	0.579	-.7812165	1.397404
T-12	-.2780127	.2753448	-1.01	0.313	-.8176786	.2616531
T-11	-1.022942	.7007132	-1.46	0.144	-2.396315	.3504302
T-10	.8870202	.7874052	1.13	0.260	-.6562656	2.430306
T-9	.028579	.4178277	0.07	0.945	-.7903483	.8475064
T-8	.4177489	.2346289	1.78	0.075	-.0421153	.8776132
T-7	-.3811582	.2387463	-1.60	0.110	-.8490923	.086776
T-6	-.2150554	.2357426	-0.91	0.362	-.6771024	.2469915
T-5	-.1604543	.2189137	-0.73	0.464	-.5895173	.2686086
T-4	.1302658	.2734941	0.48	0.634	-.4057728	.6663043
T-3	.5094357	.4665422	1.09	0.275	-.4049703	1.423842
T-2	-.4603419	.2205245	-2.09	0.037	-.8925621	-.0281217
T-1	-.4425461	.2468603	-1.79	0.073	-.9263835	.0412913
T+0	-.0482977	.2044511	-0.24	0.813	-.4490146	.3524192
T+1	-.1311267	.3435911	-0.38	0.703	-.8045528	.5422995
T+2	-.3675817	.3496805	-1.05	0.293	-1.052943	.3177794
T+3	-.0683572	.485839	-0.14	0.888	-1.020584	.8838697
T+4	.0591769	.3779012	0.16	0.876	-.6814958	.7998496
T+5	.0104274	.4648783	0.02	0.982	-.9007173	.9215721
T+6	.214871	.4526736	0.47	0.635	-.6723529	1.102095
T+7	1.219654	.4878225	2.50	0.012	.2635392	2.175768
T+8	1.705478	.6126484	2.78	0.005	.5047096	2.906247
T+9	.2973197	.6368026	0.47	0.641	-.9507905	1.54543
T+10	.2326434	.5907607	0.39	0.694	-.9252263	1.390513
T+11	.311279	.7639509	0.41	0.684	-1.186037	1.808595
T+12	.3381866	.8070024	0.42	0.675	-1.243509	1.919882
T+13	-1.11871	1.743285	-0.64	0.521	-4.535485	2.298065

Note: Attendance Estimates: Event Study: Dynamic effects, with co-variates & no ELLs
*Estimates have a negative coefficient up until T+3 and are not significant, suggesting that attendance is negatively associated with School-Based Health Clinics. Subsequent estimates are

positive with the exception of T+13 and largely not significant with the exception of T+7 and T+8.

Table 10 shows the effect of the clinic year by year on student attendance. It answers the question: how does student attendance respond to the availability of a clinic in each year the clinic is open? After year T+3, coefficients remain consistently positive until T+13. It is also statistically significant only in years T+7 and T+8. School-Based Health Clinics have less of an effect on attendance than student performance.

Research Question #2

Does the presence of School-Based Health Centers impact the attendance of students in New York City public schools?

The effect of School-Based Health Centers on student attendance was analyzed using the Callaway and Sant'anna difference-in-differences estimator. The aggregated estimations for the Average Treatment on the Treated (ATT) are found in Tables 9 and 10 and suggest a weak, positive estimate that is not statistically significant.

Summary

This chapter presents a descriptives statistics analysis for non-clinic and clinic schools. Based on the data presented, clinic schools disproportionately serve students of color. Black and Hispanic students make up most of the students attending clinic schools, whereas the mean for the percentage of White students attending clinic schools is significantly lower than the mean for Black and Hispanic students attending clinic schools individually. The data also show that more students classified as living in poverty attend clinic schools than non-clinic schools.

Student performance and attendance data were also analyzed and presented for clinic schools. The relationship between student performance in ELA and School-Based Health Clinics

was positive and statistically significant. Although the relationships in math and attendance were not significant, the event study in mathematics showed meaningful but not significant effects.

In Chapter 5, a discussion of the implications of the results presented in this chapter is provided. All findings will be discussed within the context of existing literature. Limitations of the data and the study, in general, will be presented, and implications for future research will be explored.

Chapter 5: Summary

Introduction

Because public schools in New York City are highly segregated by race, ethnicity, and income, the prevalence of issues impacting students living in poverty is more concentrated in schools serving disadvantaged communities. Residential segregation has exacerbated the concentration of poverty in some communities and hence segregated and concentrated poverty in classrooms. Particular health problems are experienced by Black and Latino students living in poverty that interfere with their ability to learn. Some of these are attributed to living conditions or lack of healthcare. There is consensus that an intervention is needed to mitigate some of the consequences that come from concentrated poverty and a lack of healthcare for Black and Latino students (Basch, 2011; Geierstanger et al., 2004). The literature suggests that disparities may be reduced if there are coordinated efforts to mitigate them (Basch, 2011; Berliner, 2009; Bishop & Noguera, 2019; Richardson, 2007). School-Based Health Clinics can be one of the strategies used to mitigate health disparities experienced by students of color who live in poverty. These on-site services are predominantly intended to serve students who live in low-income communities (Knopf et al., 2016). This is consistent with what was found in the data for New York City public schools. School-Based Health Centers in New York City public schools predominantly serve students of color, as demonstrated in Tables 2, 3, and 4.

The purpose of this study was to determine if School-Based Health Clinics directly impact the academic performance and attendance of Black and Latino students living in poverty. Researchers have reported positive relationships between School-Based Health Clinics and the children receiving services (Keeton et al., 2012). However, there was no study found that demonstrates School-Based Health Clinics have a direct impact on student performance in New York City.

Research Questions

The research questions used for this study were the following:

Research Question #1: Does the presence of School-Based Health Centers impact the academic performance of Black and Latino students in New York City public schools?

Research Question #2: Does the presence of School-Based Health Centers impact the attendance of Black and Latino students in New York City public schools?

Summary of Findings

Research Question #1:

Does the presence of School-Based Health Centers impact the academic performance of Black and Latino students in New York City public schools?

ELA: There is a relationship between student performance in ELA and School-Based Health Centers in New York City public schools.

Math: There is no relationship between student performance in math and School-Based Health Centers in New York City public schools.

Overall, there was a positive relationship in ELA between student performance and School-Based Health Clinics. The descriptives statistics showed that most of the students attending clinic schools are Black and Latino, and that more students attending clinic schools live in poverty compared to students attending non-clinic schools. Based on this data, it can be inferred that Black and Latino students who attend clinic schools are experiencing an increase in performance in literacy. It is important to note that anything below proficiency is not in the dataset used for this study. Therefore, any positive results in the data are encouraging because there is student growth that a proficiency rate will not pick up. It is also important to mention that the unit of analysis used is *school* and not *students*. All achievement data used for this study

was school-level and not student-level. Even with this low-resolution data, there are positive estimates.

Research Question #2:

Does the presence of School-Based Health Centers impact the attendance of Black and Latino students in New York City public schools?

Attendance: There is no relationship between attendance and School-Based Health Centers in New York City public schools.

The event study indicated a statistically-significant relationship with attendance after a school had a clinic for seven years. Although, in general, the association was largely positive after a clinic opened as opposed to largely negative before a clinic opened, the relationship was not significant until years 7 and 8. It can be concluded that clinics impacted student performance more than attendance.

Implications of Findings

Conceptual Framework

The findings of this study did not necessarily negate the convenience theory. The convenience theory is a marketing theory, and it asserts that consumers make decisions about the purchase of goods or services based on convenience. It was hypothesized that the convenience and accessibility (Farquhar & Rowley, 2009) of School-Based Health Clinics in schools would be necessary for the academic success of Black and Latino students living in poverty. Although there was not a very strong relationship between School-Based Health Clinics and overall student performance, there was a small positive relationship in ELA, supporting the importance of convenience and accessibility.

The second theory is based on the premise that health is associated with a student's academic performance. Health and student performance theory rely on the connection between

health status and a student's performance in school. Because clinic schools are primarily attended by Black and Latino students, the issue of health disparities comes into play. Basch makes a strong point about the likelihood of the inequitable distribution of health programs in schools that serve this population (2011). In this study, the data showed that students of color make up the majority of clinic schools. School-level data in ELA showed a positive relationship between School-based Health Clinics and student performance. The event study in mathematics showed encouraging trends after a clinic was in place for five or more years in the form of positive estimates, with only year 7 being statistically significant. Student-level data may have provided more positive results based on the trends in school-level data, confirming the need for deeper analysis. Based on these assumptions, the health and student performance theory cannot be negated. A small positive relationship was detected in ELA, and that confirms that School-Based Health Clinics may have a positive influence on student performance.

This study has contributed to the current research involving School-Based Health Clinics, student performance, and attendance in New York City public schools. Many gaps exist in the current knowledge of the direct impact the clinics have on student performance and attendance. There is consensus among researchers that the general well-being of children influences student performance (Basch, 2011; Bradley & Greene, 2013; Ickovics et al., 2014; Taras & Potts-Datema, 2005). This study focused on the impact these clinics have on students in New York City public schools. The data showed that most students attending schools with clinics in New York City are students of color. The well-being of students of color living in concentrated poverty in New York City may be compromised due to circumstances related to poverty. If we accept the consensus of the researchers, then we are also accepting the possibility that these poverty-related circumstances may influence their well-being and, hence, influence

student performance. Interventions such as a School-Based Health Clinic can be a proven strategy in positively impacting the student performance of Black and Latino students living in poverty in New York City public schools. This study has confirmed that most students attending clinic schools are students of color, Black and Latino students specifically. This study has also confirmed a small positive relationship between School-Based Health Clinics and student performance in ELA. There was no relationship determined in math and attendance overall, but event studies showed some positive relationships after a clinic was received, and some were statistically significant in specific years. This study also highlighted the need for student-level data analysis. Proficiency is not the only measure for student progress. Because only school-level data were analyzed, it prevented a close look at individual students who received services.

Limitations

Achievement Variables

Achievement variables are only measured by student proficiency. NYC DOE did not allow for individual student-level data. As a result, the research focused on school-level data. Therefore, the unit of analysis shifted from the student to the school. Based on school-level publicly-available data, I could not determine if the treatment had a positive or negative effect on students scoring below proficiency on New York State ELA and mathematics tests. Any improvement toward proficiency or decline below proficiency will not be noticed since that data is not publicly available. Proficiency rates do not pick up the growth that would put the student over the proficiency line. Proficiency ratings will not measure the growth of students who are below proficiency. Anything below proficiency is not in the dataset used for this study. Therefore, there is student growth that a proficiency rate will not pick up.

Variable: FRLPCT

The variable FRLPCT has observations for the following years only: 1999-2002, 2006-2009, and 2011-2012. Therefore, it was not used to determine the estimates since leaving it in the panel would result in the loss of statistical power. POVINDPCT is another variable that represents poverty and has observations for the years 2015 and 2016 only. However, both variables were used to generate descriptive statistics.

In this study the attendance data available is daily attendance, and because it is not student-level data, it is all collapsed to the school level. Therefore, if there is improvement in daily attendance in the form of some students coming to school a few more days a year, the data will not be evident.

Recommendations for Policy and Practice

Schools that serve Black and Latino students are unlikely to see improvement in educational outcomes unless policies are developed to counteract the poverty-induced factors that can interfere with student achievement. Researchers agree that a coordinated effort to mitigate these disparities is the best approach to reducing them. Educators, policymakers, and medical professionals must re-evaluate their approach to ensuring the health and well-being of students of color in New York City public schools. All children deserve access to quality healthcare and quality education regardless of their zip code. In segregated neighborhoods of poverty, schools are unlikely to be prepared to meet the unique needs of their students. Suppose we accept the notion that poverty creates conditions such as inadequate healthcare. In that case, it is also true that children living in these conditions may not realize their full educational potential due to this disparity. Increasing the number of School-Based Health Clinics in schools located in communities with concentrated poverty may be effective in advancing health equity and allowing students to maximize their potential in school. Demographically, these clinics will

essentially serve Black and Latino students, since they are the majority who attend schools with clinics.

Continuing the discussion regarding coordinated efforts, let's focus on New York City public schools. It is likely that schools located in communities in high-poverty areas in New York City are experiencing challenges with their facilities. Space, lack of electrical and plumbing upgrades, and overall condition of the building may make it more difficult to optimally build the facilities needed to house these clinics in schools. If significant repairs are necessary to bring a space up to code, or if there is not enough space, it may make the school ineligible for a clinic due to the additional expense. The reality is that, if denied a clinic, the children in that particular building are prevented from accessing and receiving the services they desperately need. Space and the lack of appropriate facilities must never be barriers to providing children with access to their basic needs. If a building does not have the space for a clinic, and the students in that school need these services, there must be an option to build additional space on the grounds or a similar, more appropriate option based on the physical plant. In other words, if the need exists, then space constraints must never be an obstacle. Experts of facilities such as the School Construction Authority must partner with educators and policymakers to ensure that communities that need them the most receive the resources. Therefore, their school buildings will have adequate systems to sustain a clinic.

If schools are being held accountable for the well-being of the "whole" child, then educational policy must be broadened to address the conditions that interfere with students' achievement in poor communities. For that reason, it is urgent for Black and Latino students living in poverty that policies designed to address factors that interfere with student achievement accompany test-based accountability requirements. Additional resources must be aligned to the

needs of that particular community. Test-based accountability requirements must accompany the funding needed to provide for the unique needs of the students for that specific community. This means that funding restrictions must not become an obstacle for that school leader.

Recommendations for Future Research

Policy is influenced primarily by research, so the first recommendation is to replicate this study but use student-level data. Are School-Based Health Clinics more effective for students of color? It is more likely that a researcher can answer that question with student-level data. If researchers take a combined approach, quantitative and qualitative, they can ask questions as they notice trends surfacing. The inability to ask these questions becomes a limitation. The more evidence researchers have, the stronger the case for a policy change. The second recommendation is to conduct a quantitative study to measure the effectiveness of School-Based Health Clinics with high school students. High school students have unique challenges, and parental consent to use a clinic is not always necessary after a certain age. The third recommendation is to explore further the findings of this study's mathematics data. Interestingly, School-Based Health Clinics had a negative relationship with student performance in mathematics for the first five years after a clinic opened, and it was largely statistically significant. The question is: Why did the presence of a School-Based Health Clinic negatively impact student performance in mathematics? The fourth recommendation is to measure the long-term impact of clinics beyond graduation from high school. This can include a qualitative study involving a case study. The final recommendation is to make provisions for NYC DOE educators to conduct research without obstacles that hinder the ability to influence policy that will positively impact the lives of children of color.

Lessons Learned

Publicly-available data can be just as useful as student-level data that is not publicly available. Unfortunately, the bureaucracy of the New York City Department of Education prevented the use of student-level data for this study. However, despite their efforts, the bureaucracy could not prevent the reportable trends that surfaced for students of color attending New York City public schools. Therefore, the New York City Department of Education must partner with researchers interested in addressing and reducing the mitigating circumstances caused by the consequences suffered by students of color in a highly-segregated school district.

Conclusion

This quasi-experimental quantitative study aimed to analyze the effect of School-Based Health Clinics on student performance and attendance in New York City public schools. A relationship was determined between School-Based Health Clinics and student performance in ELA. Accepting the convenience and health and academic performance theories helps explain why School-Based Health Clinics are a viable strategy for improving academic outcomes for Black and Latino students living in poverty. Previous studies have determined that the well-being of children influences their performance in school (Basch, 2011; Bradley & Greene, 2013; Ickovics et al., 2014; Taras & Potts-Datema, 2005). For poor Black and Latino students in New York City public schools, coordinated efforts to mitigate disparities are critical for their well-being.

In New York City public schools, 73% of students are economically disadvantaged, and over 65% are Black and Latino (DOE, 2022). The data in this study has confirmed that most students served by clinic schools are economically disadvantaged. This study has also confirmed that New York City schools that get clinics serve mostly Black and Latino students. A positive relationship between School-Based Health Clinics and student performance, which is statistically

significant in ELA using school-level data, strongly indicates a much larger phenomenon. If the NYC DOE had authorized the use of student-level data for this study, I would have been able to make more substantial claims after comparing students who received health services in school with students who did not receive these services. This study confirms the need for student-level data to determine to what extent School-Based Health Clinics directly impact student performance.

This dissertation acknowledges the importance of analyzing student-level data to confirm that School-Based Health Clinics are a viable strategy to help mitigate health inequities for students of color. Further, this dissertation acknowledges the concern for Black and Latino students in New York City public schools and the lack of research permitted to address the barriers that prevent the leveling of the playing field.

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Appendix A

Acknowledgment Notice

The analyses reported in this dissertation are based on the School-Level Master File 1996-2016, a dataset compiled by the Research Alliance for NYC Schools at New York University' Steinhardt School of Culture, Education and Human Development (www.ranycs.org). All data in the School-Level Master File are publicly available. The Research Alliance takes no responsibility for potential errors in the dataset or the analysis. The opinions expressed in this dissertation are those of the authors and do not represent the views of the Research Alliance for NYC Schools or the institutions that posted the original publicly available data.

Appendix B

2021–2022 Income Eligibility Guidelines for Free and Reduced-Price Meals or Free Milk

Free Eligibility Scale						Reduced Price Eligibility Scale					
Free Lunch, Breakfast, Milk						Reduced Price Lunch, Breakfast					
Household Size	Annual	Monthly	Twice per Month	Every Two Weeks	Weekly	Household Size	Annual	Monthly	Twice per Month	Every Two Weeks	Weekly
1	$ 16,744	$ 1,396	$ 698	$ 644	$ 322	1	$ 23,828	$ 1,986	$ 993	$ 917	$ 459
2	$ 22,646	$1,888	$ 944	$ 871	$ 436	2	$ 32,227	$ 2,686	$ 1,343	$ 1,240	$ 620
3	$ 28,548	$ 2,379	$ 1,190	$ 1,098	$ 549	3	$ 40,626	$ 3,386	$ 1,693	$ 1,563	$ 782
4	$ 34,450	$ 2,871	$ 1,436	$ 1,325	$ 663	4	$ 49,025	$ 4,086	$ 2,043	$ 1,886	$ 943
5	$ 40,352	$ 3,363	$ 1,682	$ 1,552	$ 776	5	$ 57,424	$ 4,786	$ 2,393	$ 2,209	$ 1,105
6	$ 46,254	$ 3,855	$ 1,928	$ 1,779	$ 890	6	$ 65,823	$ 5,486	$ 2,743	$ 2,532	$ 1,266
7	$ 52,156	$ 4,347	$ 2,174	$ 2,006	$ 1,003	7	$ 74,222	$ 6,186	$ 3,093	$ 2,855	$ 1,428
8	$ 58,058	$ 4,839	$ 2,420	$ 2,233	$ 1,117	8	$ 82,621	$ 6,886	$ 3,443	$ 3,178	$ 1,589
Each Add'l person add	$ 5,902	$ 492	$ 246	$ 227	$ 114	Each Add'l person add	$ 8,399	$ 700	$ 350	$ 324	$ 162

Please note: *Incomes indicated on the free and reduced-price eligibility scales are maximum amounts.*

Note. Adapted from *2021–2022 Free and reduced-price income eligibility and policy information.* (n.d.). Retrieved January 17, 2022 from http://www.cn.nysed.gov/book/export/html/2908

Appendix C

Description of Variables

Dependent Variables:
STCELAPCTL34TOT - ELA Percent Proficient
STCMTHPCTL34TOT - Math Percent Proficient
In this study, the variables utilized for student achievement were measured using New York State standardized tests in ELA and mathematics. Results for these tests are measured on a scale of 1 to 4, with 4 being the highest score and indicating performance above grade level (NYSED, 2022). Level 1 indicates a student is performing below grade level; level 2 indicates the student is partially proficient, and level 3 indicates grade level proficiency. (NYSED, 2022). In this study, achievement is only measured by percent proficient. An explanation of this is provided in the limitations section of this chapter.

ATTPCTTOT - School Attendance Rate Total
According to Chancellor's Regulations, A-210, in New York City Public Schools, regardless of grade level, if a student is present for at least one instructional period, they are considered present for the day and absent for any class periods not attended (Attendance NYCED, 2022).

Independent Variables:
FRLPCT - Free and Reduced-Price Lunch
Students eligible for free and reduced-price lunch must meet income guidelines. The table found in Appendix B represents the maximum income required in order to qualify for free and reduced-price lunch (2021-2022, NYSED). Students with no income, participating in income assistance programs, homeless, runaway, migrant, foster, and those that meet the income guidelines are eligible for the free and reduced-price lunch program. For the purposes of this study, students in this category are also an indication of students living in poverty.

POVINDPCT - Poverty Indicator Percent
According to the data available in SCHMA, NYU is saying this variable represents the poverty indicator. The data for this variable are available in 2015 and 2016 only.

DMGPCTELLTOT - Percent of ELLs
A student identified as an English Language Learner or an ELL is a student whose home language is a language other than English and needs support learning English (English Language Learners, 2022). In New York City Public Schools, a Home Language Identification Survey is provided to the family, and they must indicate which language the student speaks at home. If it is determined that a student speaks a language other than English at home, then the New York State Identification Test for English Language Learners will be administered (English Language Learners, 2022). The child will be identified as an English Language Learner if the test shows the child needs support learning English. Students who fall in this category will be remembered as ELLs and represented in this variable for this study.

SPEDPCT - Percent of Special Education
All students in New York City Public Schools with a disability with an Individualized Education Plan (IEP) are identified as receiving special education services (Special Education, 2022).

BLPCT - Percent of Black
Students enrolled in a New York City Public School and indicated they identified as Black during the registration process is represented in this variable.

AMIPCT - Percent of American Indian
Students enrolled in a New York City Public School and indicated they identified as American Indian during the registration process are represented in this variable.

ASIPCT - Percent of Asian
Students enrolled in a New York City Public School and indicated they identified as Asian during the registration process are represented in this variable.

HISPCT - Percent of Hispanic
Students enrolled in a New York City Public School and indicated they identified as Hispanic during the registration process are represented in this variable.

WHTPCT - Percent of White
Students enrolled in a New York City Public School and indicated they identified as White during the registration process is represented in this variable.