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An Analysis of New Small High Schools' On-Time Graduation Rates in New York City

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AN ANALYSIS OF NEW SMALL HIGH SCHOOLS' ON-TIME
GRADUATION RATES IN NEW YORK CITY

By
Nathan Dudley

Submitted in fulfillment of the requirements for the degree of

Doctor of Education

Department of Education, Management, Leadership and Policy

Under the Supervision of Dr. Elaine Walker
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SETON HALL UNIVERSITY
COLLEGE OF EDUCATION AND HUMAN SERVICES
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APPROVAL FOR SUCCESSFUL DEFENSE

Nathan Dudley, has successfully defended and made the required modifications to the text of the doctoral dissertation for the **Ed.D.** during this **Spring Semester 2017**.

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ABSTRACT

Beginning in 2002, with the election of Mayor Michael Bloomberg, New York City's Department of Education undertook an unprecedented overhaul of the largest school district in the United States. Over the next 10 years the Department of Education closed more than 25 large, underperforming high schools, and created almost 200 new, small high schools, which, by the end of the decade, were serving approximately 30% of public high school students in the city. The first classes began graduating in 2006, and many of the "New Small Schools" graduated more students on time than many of the large schools they had replaced, in some cases even surpassing the citywide average. These increased graduation rates played a role in the increase in New York City's overall 4-year graduation rate from consistently around 50% in the late 1990s to more than 66% by 2012.

This study analyzed the graduation rates and the odds of on-time graduation for all students attending the 172 New Small Schools created between 2002 and 2009 and Other High Schools. This study also examined the graduation rates and odds of on-time graduation for student-population subgroups across race and ethnicity, English-language ability, and other sociodemographic and student-ability characteristics. The study looked at the 4 incoming 9th-grade cohorts from 2006 to 2009 and found that the Other High Schools had a slightly higher overall graduation rate than the 172 New Small Schools. However, when controlling for individual- and school-level factors, the odds of graduating on time for Individualized Education Program, English Language Learner, Black, and Latino students were between 10% and 12% higher at the New Small Schools than for students at the Other High Schools.

The analysis raises many areas that require further research, as many factors could have influenced the results, including changes to admissions policies, the long-term sustainability of

the New Small Schools' graduation rates, and the effects of small schools deflecting students with special needs to surrounding large high schools. Finally, this study informs policies on small-school creation, particularly regarding the systemic supports necessary for new small schools to establish structures at scale to achieve higher on-time graduation rates.

DEDICATION

This work is dedicated to many people. It is dedicated to the teachers and students in New York City. I have encountered countless inspiring students throughout my 28 years in education. I have also been privileged to work with many committed people in education, and I dedicate this work to them in the hope that we will always be working to improve education outcomes to help students reach and fulfill their potential in our society.

This dissertation is also dedicated to my wife, Stephanie Jones, and to my daughters, Emerson and Jillian, who make me proud to be a husband and a father. Their encouragement and support allowed me to continue my own learning, and they never gave up on me.

Finally, this study is dedicated to my mother, Shirley S. Dudley, whose constant learning in her own life has always inspired me, and to my father, the late Reverend Carl S. Dudley, who was always searching to understand the world and community around him to make it a more just place. Thank you, mom and pops.

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The entire school community I worked with at the Urban Assembly New York Harbor School enabled me to grow as a leader and to think about the school world in New York City in new and exciting ways. “Pull your weight, pull together” was one of our mottos at Harbor School, and this study has been a prime example of living that sentiment. Thank you Harbor School. Particularly, I give thanks for the inspiring hard work of the educators of the special needs students at Harbor School: Abbey Lewis, Rebecca Grussgott, Awilda Madera, Liv Dillon, Joe Gessert, Marybelle Marrero-Colón, and many others in the school and all over the city. Your planning, patience, and dedication were a big part of the reason that our students graduated, many of them on time. The work our teachers did with our students led me to undertake this study.

Several other people cited in this study have been consistently encouraging and helpful. Dr. James Kemple at the Research Alliance for New York City Public Schools and Dr. Aaron Pallas at Columbia University both provided invaluable scholarly assistance and advice.

My Department of Education extended family includes my fellow principals Terry Byam and Dr. Monique Darrisaw-Akil, who shared the Bushwick Campus with me as we grew our small schools starting in 2003. They are now my friends for life, and I would not be doing this work if not for their love and support. Many other Department of Education colleagues have supported me as well, asked hard questions, and made suggestions to help me think about this study. They include Saskia Thompson, Joshua Good, Sandy Miller, Rivky Broyde, Melissa Gurney, Judith Gouraige, Alan Dichter, Michael Alcoff, Cyndi Kerr, Andrew Gallagher, Ayisha Fullerton, and Alice Bajana-Vega.

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TABLE OF CONTENTS

ABSTRACT.....	iv
DEDICATION.....	vi
ACKNOWLEDGEMENTS.....	vii
LIST OF TABLES.....	xi
LIST OF FIGURES	xii
LIST OF ABBREVIATIONS.....	xiii
PROLOGUE	xiv
CHAPTER	
I. INTRODUCTION	1
Background.....	1
Statement of the Problem.....	4
The Purpose of this Study	4
Significance of the Study	5
Research Design.....	6
Philosophical Foundations of Small Schools.....	6
Thesis	8
Research Questions	9
Limitations	10
Delimitations.....	11
Definition of Terms.....	12
Conclusion	13
II. A REVIEW OF THE HISTORY AND THE LITERATURE.....	14
Setting the Stage: The Historical Background of the Small Schools Movement	15
The Literature on Small High Schools and the Small High School Movement	20
School Reform and Small High Schools in New York City.....	26
The Scope of the Small-School Reform in New York City.....	34
The Literature Focusing on New York City Small Schools	37
Special Education Students and New Small Schools in New York City.....	65
A Note on the Literature Regarding High School Graduation Rates.....	69
Conclusion	71

III. DATA AND METHODOLOGY	73
History of Data Collection	74
The Data Set.....	75
Creating Groups of Students and Schools	76
Measures	80
Dependent Variable	81
Covariates	82
School-Density Variables	82
Analytic Strategy: Comparing Schools and Graduation Rates	83
IV. RESULTS	86
Summary of Research Methodology	86
Student Outcomes	86
Graduation Outcomes	89
The Odds of Graduating On Time for Student Subgroups	93
New Small Schools compared to Other High Schools	95
New Small Schools in Comparison With MDRC Schools.....	99
V. DISCUSSION AND CONCLUSIONS	103
Research Questions	103
Discussion and Connections to the Literature	107
Limitations of the Study.....	112
Recommendations for Further Study	113
Implications for Policy and Practice	116
Conclusions.....	119
REFERENCES	122
APPENDIX	
A. ADDITIONAL BACKGROUND ON SPECIAL EDUCATION STUDENTS IN SMALL HIGH SCHOOLS.....	135
B. NEW SMALL SCHOOLS ANALYZED IN THIS STUDY CREATED BETWEEN 2002 AND 2009 IN NEW YORK CITY AND MDRC SMALL SCHOOLS OF CHOICE USED IN MDRC STUDIES.	145
C. A DESCRIPTION OF HIGH SCHOOL ELIGIBILITY AND ADMISSION IN NEW YORK CITY HIGH SCHOOLS.....	149
D. TECHNICAL APPENDIX REGARDING LOGISTICAL REGRESSIONS	152

LIST OF TABLES

1	New York City New Public School Openings by Year	35
2	Shifting High School Enrollment Toward Small Schools 1996–2012	36
3	Baseline Characteristics of Target SSC Enrollees, All HSAPS Enrollees in Study SSCs, and All First-Time Ninth-Grade Students in New York City: First Year of High School, Cohorts 1 to 4.....	52
4	Estimated Effects of SSC Enrollment on Graduation: Fourth Year of High School, Cohort 1	55
5	Percentage (%) and Total n of Students by Subgroup Enrolled in New Small High Schools and Other High Schools in New York City (Entering Classes of 2006– 2009)	87
6	On-Time Graduation Rates Entering Cohorts 2006–2009 (%) and Total Number of Graduates	90
7	Logistic Regression of On-Time Versus Not-On-Time Graduation at New Small Schools.....	93
8	Logistic Regression Models for On-Time Graduation in All Schools, New Small Schools, Other High Schools Controlling for Individual-Level and School-Level Characteristics.....	96
9	Logistic Regression for MDRC and Small Schools for cohorts 2006–2009, Presented in Odds Ratios, Controlling for Individual- and School-Level Factors	100

LIST OF FIGURES

1	New York City graduation rates, 1992–2010	42
2	Graduation rates at New Small Schools versus the schools they replaced	43
3	The percentage of special needs entering ninth graders in small schools versus existing schools 2002–2009	50

LIST OF ABBREVIATIONS

DOE	New York Department of Education
ICT	integrated coteaching
IEP	individualized education plan
NCES	National Center for Education Statistics
NYC	New York City
OCR	U.S. Office of Civil Rights
SC	self-contained
SSC	Small Schools of Choice

PROLOGUE

I began the summer of 2003 as the founding principal of a newly approved, small high school that was to open in September of that year. I asked for a program copy from the recent graduation of the large high school in our building. The program listed fewer than 100 graduates—from a school of close to 1,700 students. According to NYC Department of Education (2009) statistics, the high school had a 22% graduation rate at the time, one of the lowest rates of any large high school in the city school system.

In September 2003 William Galvez¹ entered one of the New Small Schools that was considered in this study. William had been a special education student in junior high school and was openly told by his guidance counselor that he would never graduate from high school. At the New Small School, William received team teaching in his classes and extra time on tests. Four years later, William was one of close to 70% of his class to graduate on time in our new small school. He was accepted to Ithaca College—a tremendous accomplishment for William and for the school. Several other special education students graduated on time, but some never did, despite the new school's best efforts. On the surface, this should not be remarkable or even of interest, but William's graduation story is part of a major educational change that has occurred in New York City over the last decade. This change meant a tremendous growth in the number of high schools. The results of this change have resulted in claims of success and higher performance outcomes, as well as disputes, divisions, and disagreements about the meaning of the changes that took place, among Department of Education officials, administrators, teachers, policy makers, union delegates, parents, and education advocates. This study examined the

¹ William Galvez is a pseudonym.

aggregate outcomes of all students and subgroups of students at New Small Schools, focusing on William and other students.

CHAPTER I

INTRODUCTION

Background

As an educational outcome, graduating from high school is one of the most important and fundamental cornerstones of the education system in the United States. High school graduation is the gateway to a college education, but the value of graduating is also understood as preparing students for entry into larger society. In 1900, 6.4% of the population graduated from high school, and, by 1940, approximately 50% of students graduated high school (Editorial Projects in Education Research Center, 2010). By the 1970s, high school graduation rates reached 77% but declined slightly for the next 30 years. The first decade of the 21st-century brought a significant uptick in graduation rates. The nationwide graduation rates reached 81% in 2013, the highest level since states adopted a new, uniform way of calculating graduation rates in 2010 (U.S. Department of Education, 2015).

As the economy of the United States has changed over the last 50 years, high school graduation has assumed even more importance. Graduation has become much more than just a rite of passage. Since the 1970s, the loss of lower skilled manufacturing jobs has meant many fewer options for prospective workers without a high school diploma. High school graduation has taken a larger role in creating human capital for the changing economy of the 21st century and has become a de facto minimum for economic survival. According to a 2011 study at the Georgetown Public Policy Institute, the median lifetime earnings for a college graduate was \$2.27 million, whereas the median lifetime earnings of high school graduates was \$1.3 million. People who did not graduate from high school earned 33% less over their lifetime than high school graduates (Georgetown University, 2014).

In addition to its importance for the students, graduation is understood as the fundamental indicator of a high school's success, as well as an indicator of the success the entire school district. With the expectations of the No Child Left Behind law of 2001 and the Every Student Succeeds Act of 2015, the performance outcomes (including graduation rates) of all student subgroups have been scrutinized much more publicly, forcing school districts countrywide to enact policy changes to increase their graduation rates.

By the latter part of the 20th century, the graduation rates at large, comprehensive, urban high schools had stagnated in many cities in the United States (Heckman & LaFontaine, 2011). In New York City (NYC), the overall citywide graduation rate was around 50% every year for 15 years before 2002. This meant that many schools—the vast majority being large high schools—had graduation rates below 50%, sometimes significantly so, year after year (NYC Department of Education [NYC DOE], 2010).

By the 1990s, some research had shown that large school size often had a negative effect on student achievement (Lee & Smith, 1995, 1997;Sizer, 1996). Indeed, findings on national dropout rates indicated that they increased as schools became larger (Rumberger, 1995; Rumberger & Thomas, 2000). By the turn of the 21st century, school leaders, researchers, policy makers, and some important funders, including the Bill and Melinda Gates Foundation (hereinafter Gates Foundation), increasingly called for a fundamental overhaul of large, urban high schools in the United States (Gates, 2005). Kirsch, Braun, Yamamoto, and Sum (2007) compared U.S. high school graduation rates to those in other industrialized countries and found that the U.S. ranked 16th of 21. One study showed that, in 2002, only 71% of U.S. students graduated high school on time (Greene & Winters, 2005), and the America Diploma Project (2004) declared that only 34% of students nationwide graduated ready for college. Moreover,

these low graduation numbers were only exacerbated in the urban areas, where, nationally, only 52% of Latinos and 56% of African Americans graduated on time in 2002 (Greene & Winters, 2005). Daniels, Bizar, and Zemelman (2001) laid down the gauntlet: “America’s high schools are failing all of our kids some of the time and some of our kids all of the time” (p. 22). Although one could argue with placing the blame only on high schools, it was clear that by the early 2000’s high school graduation rates in many large urban areas hovered around 50% (Heckman & LaFontaine, 2011).

Given the low graduation rates at many large urban high schools, educators and policy makers in cities nationwide began to see smaller high schools as one solution to the problems facing large schools, particularly for improving graduation rates and lowering dropout rates. They pointed to the increased personalization that was inherent in small schools, demonstrating that students would not “fall through the cracks” and drop out because adults in small schools know their students (see, for example, Darling-Hammond, 2002). Under Mayor Michael Bloomberg and Chancellor Joel Klein, NYC became the public school system that most aggressively created new, small high schools, establishing almost 200 new schools in 12 years. Given that this reform began in 2002, researchers in education now have several years of performance data from these “New Small Schools.”² In the present study, 15 years after the wave of New Small Schools began, I investigated how many students at these schools graduated relative to other schools in the City. I also asked whether all students, including special education students and other subgroups, graduated as well.

² In this dissertation, the term *New Small Schools* refers to the small high schools created during the reform that began in 2002. See chapter 3 for a more detailed description of these schools.

Statement of the Problem

This study explored the on-time graduation rates of students enrolled in new, small high schools in NYC. The New Small Schools each had 500 hundred or fewer students. They were created under the Bloomberg administration between 2002 and 2009 and were part of an overall school reform that was one of the biggest changes to a large city school system in history.

Although research has shown that overall citywide graduation rates improved in NYC beginning in 2003 (Abdulkadiroğlu, Pathak, & Roth, 2009; Kemple, 2013), overall graduation outcomes of students enrolled specifically in the city's New Small Schools were not part of these studies. In addition, although research has shown that a large sample of students at some New Small Schools graduated at higher rates than did students at other high schools (Bloom, Thompson, & Unterman, 2010), research on small school student outcomes has not focused on the graduation outcomes of subgroups of students. The studies have also not examined the odds of graduating on time for the special needs students and other important subgroups of students attending the New Small Schools, such as ELL students, free- or reduced-lunch students, and students from various racial groups.

The Purpose of this Study

Many studies have examined NYC's New Small School reforms as well as the schools themselves. Some of this research has demonstrated overall improved graduation outcomes for the city's high schools during this period. The present study examined, questioned, and built upon one important other study, which was conducted by the research organization MDRC. MDRC researchers published several reports on new small schools in NYC from 2010 to 2014 (Bloom et al., 2010; Quint, Smith, Unterman, & Moedano, 2010). Using 105 "Small Schools of Choice," they examined cohorts of students who began high school in 2005, 2006, and 2007. The

present study extended and identified gaps in the MDRC research, including outcomes for special needs students, other student subgroups, and the entire New Small School student population (i.e., not merely the 105 schools considered in the MDRC studies).

The purpose of this study was to empirically investigate the graduation outcomes for students who entered new, public, small high schools in NYC during 2006–2009 and who were part of the graduating classes of 2010–2013. The study focused on graduation outcomes for several subgroups of students, such as special education students, ELL students, free- and reduced-lunch students, female students, and racial groups. This study is unique in that it examined *all student outcomes* in the new small high schools created by the Bloomberg reforms between 2002 and 2009.

Significance of the Study

New York City was an extremely relevant setting for closely examining the effectiveness of small high schools, especially in areas of high poverty. New York City’s urban school system is the largest in the country, and it is ethnically diverse, meaning that results in New York could be relevant to other urban school systems with similar levels of poverty and student populations. NYC also provided an extremely large sample of small high schools—more than 170. The large numbers of schools and enrolled students have enabled researchers, and this study, to examine performance both within the New Small Schools and among the entire population of high school students in the city. Examining outcomes for the entire population of high school students added significance to the findings and to the possible policy choices that could be inferred from those findings.

As noted above, urban areas throughout the United States have struggled with low graduation rates in some large high schools. This study extended the field’s collective

understanding of small-school performance in NYC, within the context of an extensive urban high school reform. Understanding whether NYC's small schools were able to improve student performance outcomes, and for which groups, might offer lessons and recommendations for other large urban districts and schools.

This study is significant in that it adds to the body of literature regarding small schools and their outcomes, particularly related to special education students and other subgroups of students. Depending on the graduation outcomes of special needs and other student subgroups, this study might also inform policies related to districts investing in small-school creation. Additionally, this study might have implications for policy makers in many districts that are reforming their high schools and must wrestle with the challenge of how best to educate their many subgroups of students who traditionally have had lower graduation rates.

Research Design

This study used a design in which on-time graduation rates for students enrolled in New Small Schools were compared to students in other high schools. The numerous small schools created in New York and the multitude of students enrolled in those schools provided a large data set, which enabled this study to draw some possible conclusions regarding the efficacy of the New Small Schools and of the overall reforms in NYC. The study used logistic regression to estimate the odds of graduating on time.

Philosophical Foundations of Small Schools

Research on small high schools has demonstrated some gains in graduation rates, attendance, and achievement (Policy Studies Associates, 2008; Lee and Smith, 2016; Kemple, 2013), but other research has shown that the creation of small schools does not necessarily translate to higher student achievement among all students (Hemphill, Nauer, Zelon, & Jacobs,

2009). Much of the research on small schools has argued that school size does indeed matter, but many researchers also argue that simply being small is not by itself the answer to improving performance (Fine & Somerville, as cited in Cotton, 2001).

Many small schools were created based on principles adhered to by a group or network of schools. The Coalition of Essential Schools, an organization founded in 1984 by Theodore R.Sizer, was one of the first small-school networks. The coalition's principles were based largely on Sizer's books *Horace's Compromise* (1984) and *Horace's School* (1995), which described the school size and the school structures and culture needed to enable the adults in a school to know their students well. The Coalition for Essential Schools established the following set of common principles, which their member schools agreed to adhere to: learning to use one's mind well; less is more (in terms of curriculum depth over coverage); goals apply to all students; personalization; student as worker, teacher as coach; demonstration of mastery; a tone of decency and trust; commitment to the entire school; resources dedicated to teaching and learning; democracy and equity (Coalition for Essential Schools, 2016).

One recurring theme throughout all small schools' literature and principles is "personalization." Another organization, New Visions for Public Schools, a NYC-based nonprofit organization, created and supported many small schools. New Visions developed 10 principles of effective schools, including "a personalized learning environment." Research on small-school outcomes in NYC also identified three common features of small schools: academic rigor, community partnerships, and personalization (Darling-Hammond, 2002; Fine, 2005). Numerous organizations and small-school researchers and proponents have repeatedly cited personalization, or knowing your students well, as a fundamental principle in the formation of small schools. Wasley et al. (2009) emphasized that the "opportunity for greater personalization

in the learning experience of students has long been seen as one of the primary advantages of small schools” (p. 9). Students have cited personalization as one of the major advantages of small schools (Conchas, Rodriguez, & Mehan, 2007). Highly personalized school environments tend to assess the needs of each student and then organize programs or services to meet those needs.

Reform efforts to create small schools, particularly high schools, have taken place where current school structures are seen as failing. But as noted, successful small high schools must have more than just a lower number of students (Cotton, 1996). Personalization, innovative curricula, strong leadership, and new and different assessments are all elements of successful small schools (Cotton, 1996; Darling-Hammond, 2002). Michelle Fine (2005), a professor of Urban Education at City University of New York and a strong advocate for small schools, reaffirmed the framework and vision of small schools in an article entitled, “Not in Our Name: Reclaiming the Democratic Vision of Small School Reform.” Fine asserted that the small schools must commit fully to democratic access and equity in schools, and to sophisticated assessment systems that better support teaching and learning.

Thesis

Graduation rates are a fundamental outcome of any school system. Between 2002 and 2013, the NYC Department of Education (DOE)³ increased overall high school graduation rates, partly due to higher graduation rates at the city’s New Small Schools, which, by the end of that period, accounted for 30% of all high school students. This dissertation’s thesis is that, from 2010 to 2013, compared to other high schools in the city, NYC’s New Small Schools graduated,

³ In this dissertation, for brevity, the abbreviation DOE is used to refer to NYC’s Department of Education, and not the United States Department of Education.

on time, a higher percentage of students overall, special education students, ELL students, Black students, Latino students, and free- and reduced-lunch students. This thesis derives from assertions in the research literature that the personalization of small schools leads to improved outcomes. In addition, the thesis is based on a historical understanding of the political and financial support that the New Small Schools received from the Bloomberg administration.

Research Questions

The research questions for this study focused on determining 4-year graduation rates for new small public high schools in NYC for the cohorts and subgroups of students who entered high school from 2006 to 2009. The five research questions that guided the study are enumerated below:

1. What population differences of entering students exist when comparing New Small high schools to other high schools in NYC? (special education, English language learners, African American, Latino, free- and reduced-lunch, etc.)
2. During the study period of (Cohorts 2006 to 2009), did the new small high schools enroll special needs students at rates that were different from other high schools?
3. How have various student subgroups graduated at New Small Schools compared to other high schools?
4. Controlling for other factors, what are the odds of special education and other subgroups of students graduating on time at a New Small School relative to Other High Schools?
5. What were the on-time graduation rates of all students and students in various subgroups at New Small High schools for Cohorts 2006 to 2009 compared to the graduation rates in other high schools in NYC during this same time period?

Limitations

This study's sample consisted of all NYC students who entered high school from 2006 to 2009. In certain instances, the biographical data was limited, as the DOE only provided full student biographical data for the study period, making it impossible to determine numbers and percentages of special needs students and other subgroups in New Small Schools prior to 2006. In addition, the limitations of the data set made it necessary to logically infer when a student began ninth grade for the cohort of students who began high school in 2006; specifically, I was not able to definitively determine the exact percentage of "holdover" ninth graders and had to extrapolate the entering cohort of those students. Therefore, the student graduation outcomes in this study might differ slightly from those officially published by the DOE during this time period, but the size of the population used in this study helped mitigate this discrepancy.

The evaluation of small schools was made more difficult because the New Small Schools might have received students who were more motivated with involved parents, given that "limited unscreened" meant that a school gave preference to those who attended information sessions or open houses (see Gootman, 2006b). As a result, selection bias might have influenced the effects of the New Small Schools, as it would in any sample of school models. To obtain a seat at a small high school, a student had to apply via the NYC high school matching process, a centralized process that assigned all entering high school students to city schools (Abdulkadiroğlu et al., 2009; Abdulkadiroğlu, Hu, & Pathak, 2013). Unlike other NYC public high schools, which screen applicants and choose their incoming students, limited unscreened schools used random selection if there were more applicants than seats. If two students ranked a particular school as their top preferred choice and were in the same school priority group, then

the student with the more favorable lottery number was offered the seat before the student with a less favorable lottery number.

Finally, this study was not able to delineate between types of special education students—self-contained (SC), collaborative consultation teaching (CTT), integrated coteaching (ICT), Resource Room. This limitation means that I could not establish graduation outcomes for separate types of individualized education plans (IEPs), only for the aggregate of students with an IEP.

Delimitations

This study looked only at empirical graduation outcomes for high schools, focusing on a group of new, small high schools created after 2002 relative to other high schools in the city. For the purposes of this study, the other high schools excluded schools that were for special needs only (known as District 75 schools). The analysis also excluded transfer (“second chance”) high schools, as well as the eight specialized test-in schools in NYC. This group of other high schools did include all other high schools, which meant that this group included many screened and “educational option” schools that were able to select all or half of their students. The New Small Schools received their entering students through a lottery, which, in theory, was based on “informed choice.” Because no graduation data were available in the data set for the New Small Schools that were created by the DOE in 2010 and after, those new schools were excluded from the New Small School group used in this study. In sum, the New Small Schools in this study included all limited unscreened small high schools created between 2002 and 2009 in NYC.

This study focused primarily on the graduation outcomes of all NYC public high school students in the New Small Schools and other high schools. It did not examine credit accumulation or New York State Regents examination passing rates. This study did not examine

all of the reasons or factors related to why New Small Schools obtained the graduation outcome results that they did; rather, it examined the empirical results and the actual odds of on-time graduation in New Small Schools, relative to other high schools.

Definition of Terms

For labeling purposes, the *NYC Department of Education* will be referred to as DOE.

New Small Schools (see chapter 3) were defined as all high schools Grades 9–12 with fewer than 500 students and all secondary schools Grades 6 to 12 with fewer than 800 students that were created by the NYC DOE between 2002 and 2009. Furthermore, to qualify as New Small Schools for this study, they had to meet the DOE student eligibility requirement of “limited unscreened,” meaning that students were matched with schools in a lottery based on “demonstrated interest,” with students ranking the school among their top 12 choices on a high school application.

Other High Schools were defined as all other high schools in NYC, with the following exceptions. Eight Specialized test-in high schools, all transfer (second chance) high schools, and all District 75 schools for special education students only were excluded.

Graduation rate is a percentage determined by on-time June and August graduation for students who entered a school 4 years earlier.

An *IEP student* is a student who has an individualized education plan and who attends school in a general education setting, not an IEP-only school (District 75). For this study, IEP students included all of the following classifications: SC, team taught (ICT), and Resource Room.

Conclusion

As schools and school systems around the United States work to find the best outcomes for students, small high schools are seen as one way to provide improved outcomes for more students. This study looked at the small high schools created during NYC's district-wide reform to determine whether those schools actually improved on-time graduation outcomes for all students. The stage is set. But before analyzing the outcomes, a review of the background literature on small schools is in order, which follows in chapter 2.

CHAPTER II

A REVIEW OF THE HISTORY AND THE LITERATURE

This chapter describes the history and reviews the recent literature covering two primary areas—small schools and their development—with a focus on NYC’s small-school reform. In particular, the review discusses the performance of several important subgroups of students in these new small high schools, including special education, ELL, free- and reduced-lunch, Black, and Latino students. The chapter also briefly touches on graduation rates and their calculations.

Sources that were reviewed for this chapter include dissertations, published articles from journals in the field, published reports from several education research and advocacy organizations, related blogs by invested parties, and several books in the field. To determine which of these studies, reports, and writings to review, research was conducted primarily using search criteria related to small high schools, small-school performance outcomes and graduation rates, NYC small high school reform, and high school graduation outcomes in NYC. Generally, relatively few studies have focused specifically on graduation rates in the new small high schools, particularly graduation rates of various subgroups of students at small schools compared to other high schools.

This chapter is organized into several subtopics. First, I review the literature describing the history of small schools, particularly small high schools, as well as how these small high schools received a growing focus in the literature over the course of the 1990s. Second, I provide a history and review of literature related to NYC’s school reform in the first decade of the 21st century. New York City’s reform was based in part upon the foundation of the research literature on small schools, especially the studies demonstrating greater personalization in the small

schools. Third, we will examine more closely the recent literature on the small schools, specifically in NYC, with a deeper analysis of the studies and reports produced by the research group MDRC, which were prominently used by the Bloomberg administration and NYC DOE officials to justify their creation of small schools and their closing of large under-performing schools. In addition, we will look at several critiques of the MDRC studies. Fourth, we will look at literature related specifically to certain subgroups of students in the new small high schools in NYC.

Setting the Stage: The Historical Background of the Small Schools Movement

Much of the current philosophy undergirding the movement toward small schools harkens all the way back to John Dewey's child-centered, progressive schools and philosophy of the early 20th century. Dewey and his followers emphasized inquiry-based problem-solving, both individual and group learning, and relevant curricula (J. Dewey, 1915). Indeed, educators achieved early successes with these types of progressive learning approaches in the 1930s. The *Eight Year Study* followed a large sample of students through a diverse group of small and large high schools that practiced a more progressive pedagogy and, then, tracked them into college to analyze postsecondary success. This study found that students from the progressive more student-centered schools had higher performance outcomes than students from other more traditional of schools (Aiken, 1942). Not all of the schools in the *Eight Year Study* were small, but the ideas surrounding personalization, teaching the whole child, and curriculum relevant to the real world have informed much of the small school literature and philosophy ever since.

The history of the more contemporary "small-schools movement," or small-school reform, is still being written today. After beginning slowly in the 1970s and growing steadily in

the 1990s as more small-school research was done, the early 2000s saw a precipitous rise in the number of small schools, particularly high schools, throughout the country.

The rise of small schools, especially in urban areas, is, in some ways, a rejection of the large, comprehensive high school, which was the most common high school model for most of the 20th century. By the 1950s, and for the next 50 years, one of the most profound changes in U.S. education was the creation and implementation of large, comprehensive high schools. In 1950, 24,500 high schools were operating in the country, educating 5.7 million students. By 2000, even though the nation's high school population had tripled to 18 million, only 1,900 more high schools were in existence. Schools with over 1,000 students accounted for more than 25% of high schools (Abdulkadiroğlu et al., 2013; Lawrence, 2002). This consolidation into larger schools was driven by a more industrial model of a comprehensive, large high school, championed by Harvard University President James Conant, who called for eliminating small high schools when the large schools became more comprehensive, beyond traditional academic areas (as cited in Abdulkadiroğlu et al., 2013).

In 1959 Conant issued his historic report, *The American High School Today*, a clear call to consolidate small schools and school districts to create large, comprehensive high schools. Most school districts heeded this recommendation. Conant contextualized these comprehensive high schools with the goal of helping to develop democracy, given that the schools would offer a variety of academic, vocational, and elective course offerings. Much of the political will that supported Conant's call for reorganizing into and reemphasizing the large, comprehensive schools was driven by the fear that gripped the country after the Sputnik launch in 1957, as well as the quest for efficiency of course offerings, because large schools were seen as offering economies of scale (Conant, 1959).

Between 1940 and 1990, schools grew larger. The number of public schools of all grades in the United States dropped from 200,000 to 62,057, a 69% decline (Cotton, 1996). The average enrollment during the same period more than quadrupled, from 127 in 1940 to 653 in 1990. This school consolidation also was accompanied by an exponential constriction of the number of school districts, dropping 87% from 117,102 in 1940 to 15,367 in 1990 (Wahlberg, 1992). This school enrollment growth was even more pronounced in urban schools, where high school averages were between 2,000 and 3,000 students and some schools in various cities even topped 5,000. In the 1990s the trend toward declining numbers of schools reversed, and, by 2002, 94,112 public elementary and secondary schools were serving the United States (U.S. Department of Education, National Center for Educational Statistics [NCES], 2016). Most, however, were still large urban and suburban schools.

During this period of large school consolidation since the 1960, educators and policymakers have continued to discuss and debate the benefits and shortcomings of large and small high schools (Arnold et al., 2015). Large-school proponents consistently pointed to economies of scale, educating more students with the same staff and facilities, and the ability to offer a wider range of curricula. But, beginning slowly in the 1970s and leading up to the major reforms in NYC, a growing body of studies promoted the idea that small-school personalization helped lead to higher attendance rates, lower dropout rates, enhanced student motivation, and a sense of belonging (Darling-Hammond, 2002; Fowler & Walberg, 1991; Lee & Smith, 1997; Powell, Farrar, & Cohen, 1985).

Buttressed in part by this research and financed in part by several major foundations, one of the largest and most comprehensive national policy changes in public education has taken place since the 1990s. This policy shift toward small schools closed the large, “underperforming”

high schools and put smaller, separate high schools in the same building. These closures have taken place in many large cities in the country, including New York, Chicago, Philadelphia, and Los Angeles. Since 2001, more than 1,600 small high schools have been created, and more than half of the largest urban districts in the country have undertaken this type of reform (Abdulkadiroğlu et al., 2013; Toch, 2010). The Gates Foundation, in particular, financially supported this type of reform in more than 275 districts nationwide. By far the largest of these reforms took place in NYC.

By the 1990s some policy advocates had emerged with research backing their smaller school recommendations, which questioned the value of high school consolidation and rising enrollments. They argued that, especially in cities, the large schools alienated students and discouraged student engagement (Haller, 1992; Lee & Smith, 1995). Additional research showed that large schools often negatively impacted student achievement (Lee & Smith, 1995, 1997; Sizer, 2004). Other studies pointed out that dropout rates increased as schools became larger (Rumberger, 1995; Rumberger & Thomas, 2000).

Although my study focused on student outcomes, a major theme in the small school literature is economy of scale, or the cost, efficiency, and effectiveness of small schools. As a result of the challenges and falling performance of many large, urban schools, researchers began trying to find the optimal size for a school. Howley (1989) looked at schools using business models, examining inputs, such as costs, curriculum, and credentials, versus outputs, such as achievement, graduation, and attendance. Howley found that small schools tended to improve equity in achievement among all students. Some small-school advocates have argued that small schools improved student achievement and, thus, helped lower costs per graduate (Howley, 1989; Lee & Smith, 1997). However, one study on New York City schools in 2000 argued,

“there is no evidence from the body of cost studies we examined that small schools cost less per pupil than those with enrollments of around 900” (Steifel, Berne, Iatarola, & Frucher, 2000). Fowler and Walberg (1991) found that, while school size affected student achievement, student poverty and socioeconomic factors were still the variables most associated with effects on student achievement, not school size. Many studies focused on students with lower socioeconomic status (Jewel, 1989; Wahlberg, 1992). In one study the authors found that, as school size increased, the student achievement of economically disadvantaged students decreased (Bickel, Howley, Williams, & Glascock, 2001).

A theory of change began to emerge among some educators and researchers, especially for urban areas that have large high schools. This theory of change drove policy advocates to call for the creation of small, more personalized schools that would improve instruction. One reform advocate from the research group MDRC summarized this theory of change: “*structural changes improve personalization and instructional improvement* are the twin pillars of high school reform” (Quint, 2006, p. iii; italics original). An emerging consensus in the research suggested that elementary schools should remain under 400, and that secondary schools could range from 400 to 800 (Cotton, 1996, 2001; Oxley, 2001). A Carnegie report on American high schools indicated that 600 students was the maximum total enrollment for a school to be able to create a school culture where students felt known (cited in NASSP, 1996). As early as 1993, Sergiovanni called for the creation of small educational communities of no more than 300, and VanderArk (2002) recommended that high schools have no more than 100 per grade level, or 400 total. Researchers Newmann and Wehlage (1995) also called for smaller, more personalized schools.

Some of the early moves toward small schools did occur in NYC in the 1970s, under Superintendent Anthony Alvarado in East Harlem. It was there that educator Deborah Meier and

others created Central Park East Elementary School in 1974 and Central Park East High School in 1985. Several other smaller, “alternative” schools were created in the 1970s, such as the second-chance transfer school Satellite Academy. These schools showed some improvement in graduating students, relative to the lower graduation rates in larger schools. By the early 1990s, NYC’s Chancellor Ramon Cortines and the board of education allowed the creation of several small schools. In 1993 the large Julia Richman High School on Manhattan’s Upper East Side was closed; the building was divided, and six small schools were created, several of which were colocated in the Julia Richman building. The number of small schools created during the 1990s was limited, and most students still attended large, zoned high schools.

As discussed in chapter 1, by the turn of the 21st century, only 71% of U.S. students graduated high school on time (Greene & Winters, 2005). Moreover, in many large urban school districts, the on-time graduation rate hovered around 50% during the 1990s. New York City found itself in this graduation reality, where roughly half of its incoming high school students graduated in 4 years. A new mayor was elected in 2001 who promised to be the “education mayor.” The stage was set for one of the largest school-system reforms in U.S. history.

The Literature on Small High Schools and the Small High School Movement

Much research has been done, especially since 1990, on small schools and their effects on student performance. Some of this work has provided significant rationales and support for the small-school reform movement and policies supporting smaller schools across the country. In some cities, such as New York and Chicago, this reform was an explosion. Some research has been done, but much still needs to be learned over the long term, as the new small high schools created in this century grow to maturity and are not “new” anymore.

As noted above, the past 20 years of research and writing on small-school size and outcomes has generated a reluctant consensus on what constitutes a “small school.” In the 1990s, during an early wave of small-school creation, research on the costs of small high schools in NYC, as well as the then-current local policy, determined that schools with 600 students or fewer were considered small (Stiefel, Berne, Iatarola, & Fruchter, 2000). Lee and Smith (1997) found that schools with 600 to 900 students were the most effective for minority students. The U.S. Department of Education, through its “Small Schools Initiative,” determined a limit of 300 students (as cited in Schwartz, Stiefel, & Wiswall, 2013), and the Gates-funded New Century initiative in NYC considered 500 students the upper limit for small high schools, with most of the New Small Schools having set 432 students as a target (Gootman, 2006b). A more recent study in Chicago set a 600-student cutoff (Barrow et al., 2010). Additionally, an impactful MDRC study, funded by the Gates Foundation, used 550 as the limit for the small schools in their sample (Bloom et al., 2010).

The literature in the 1990s and early 2000s proposed several clear reasons and indicators for how small schools could affect student outcomes. Most of this work focused on student participation and personalization in small schools. Even before the 1990s, researchers hypothesized that small schools would be particularly effective for disadvantaged students because of their personalization, perceived high expectations for all students, ability to nurture students’ needs, and improved student behavior due to engagement (Barker & Gump, 1964; Lindsay, 1982). Page also promoted the view that small schools experience higher student participation for extracurricular activities and more positive teacher and student attitudes (Page, as cited in Schwartz et al., 2013).

Policy makers and reformers seized on the relatively positive research regarding student personalization in small schools, but not all findings on the impacts of small schools has been positive. For instance, in their study on small schools in Chicago, Hess and Cytrynbaum (2002) found that, although small schools might enhance engagement, they showed no consistent impacts on student achievement. Rhodes et al. (2005) found that while student participation had increased in small schools, there was cause for concern regarding improved instruction in Years 2 and 3 of a startup school, and they noted a particular drop off in terms of math instruction. A review of the literature from the middle of the first decade of the 21st century showed mixed results in terms of instructional gains in small schools (Kahne, Sporte, de la Torre, & Easton, 2008; Stevens, Sporte, Stoelinga, & Bolz, 2008). In addition, Haller, Monk, Bear, Griffith, and Moss (1990) and Watt (2003) found that large schools are more likely to offer more academic options and a social climate that is more accepting of diversity.

Prior to 2000, empirical work on small-school outcomes was based mostly on correlational data analysis, and, for the most part, did not factor in student selection. These studies suggested that achievement scores and attendance rates were higher and that dropout rates were lower in small schools compared to large schools (Fowler & Walberg, 1991; Lee & Smith, 1997). Lee and Smith (1997) examined optimal school size and found that the best size for maximizing student performance would be between 600 and 900 students.

Besides considering overall performance, early small-school research focused on effects for particular subgroups. The research offered some evidence that smaller schools had improved outcomes for students in poverty. According to Fowler and Walberg (1991), small schools with fewer than 1,500 students demonstrated stronger outcomes for minority and poor youth, and Howley, Strange, & Bickel's (2000) findings suggested that larger schools might have a negative

effect on disadvantaged students. McMillen (2004) found that small schools might better serve disadvantaged students, not only for student achievement but also to help close the so-called achievement gap among student subgroups. Still, other empirical analyses suggested that all student subgroups benefited from being in a small school and that student gains across race and class were more equitable in smaller schools (Lee & Smith, 1995). Schwartz et al. (2013) pointed out, however, that these earlier studies, mostly prior to the turn of the 21st century, did not address the potential selection bias of how the students ended up in a small school, and the issues regarding admission based on student achievement, motivation, parental involvement, or geography, etc.

Between 1990 and the early 2000s, many studies of small elementary and secondary schools demonstrated that smaller schools were associated with improved student achievement and lower dropout rates (Darling-Hammond, Aneess, & Ort, 2002; Haller, Monk, & Tien, 1993; Holland, 2002; Howley, 1989; Howley et al., 2000; Lee, 2002). Additional research has indicated that small-school benefits might include increased attendance, elevated teacher satisfaction, and an improved school climate (Supovitz & Christman, 2005). Darling-Hammond et al. (2002) also found that improved instructional quality and working conditions at small schools played a role in greater job satisfaction among small school faculty. Further, Lawrence (2002) demonstrated that small schools were even more cost effective and efficient than large schools, as the cost per graduate can be considerably less than that for larger schools. Early evidence also suggested that small schools promote more equitable access to demanding or advanced course work (Bryk, Lee, & Holland, 1993). However, Moore (2013) studied advanced course work in Texas and showed that larger schools had a higher percentage of students doing college-ready work. Still, numerous other studies, such as Kahne et al. (2008), Shear et al.

(2005), and SRI International (2006) found that smaller schools were associated with supportive environments for students.

Several dissertations have looked specifically at school size and academic achievement, mostly analyzing data at the state level. Machesky (2006) studied Michigan high school graduation results using a multilinear regression analysis in which school size was one of the predictors. He found that, although school size did seem to impact student achievement (based on state exams and graduation rates), other factors still had a greater influence on achievement, including percentage of students receiving free or reduced lunch and pupil–teacher ratios (Machesky, 2006)

Alimohamed’s dissertation (2009) examined dropout and graduation rates in South Carolina, examining school size as a factor. Her study found differences among subgroups. African Americans with subsidized meals had significantly lower dropout and higher graduation rates at smaller schools, whereas school size did not seem to affect White students. Her findings were inconclusive regarding the relation between school size and student achievement as measured by the South Carolina State High School Assessment Program (Alimohamed, 2009).

In an attempt to offer explanation about the high national dropout rate, Schultz (2011) used a case study to describe a school in Indiana that overcame demographic factors to sustain a graduation rate above the state average 4 years in a row. He found that a student-centered focus on social-emotional needs and academic needs enabled the school to overcome high-poverty factors.

In a dissertation on the Texas public schools, Greeney (2011) found that large schools maintained higher test scores than small schools. He also found that the small schools in his study had more minority students who were poorer—and still had stronger school-climate

outcomes. Another study in Texas did seem to support higher outcomes for larger schools, finding that African American, Hispanic, and White students in large schools had significantly higher college readiness in ELA and Math than their peers in midsize and small schools, although socioeconomic status was not considered prominently in this study (Moore, 2013).

The researcher who laid much of the groundwork for small schools to become an active policy choice in NYC was Linda Darling-Hammond. The clearest advocacy for the creation and development of smaller high schools can be found in Darling-Hammond, Alexander, and Price's (2002) policy article "Redesigning High Schools: What Matters and What Works." In this piece she and her coauthors acknowledged that being small doesn't necessarily make schools become high performing, but, overall, their work is a clarion call for the benefits of small schools. They reference many specific small schools in New York and California and list 10 characteristics of good small schools, including personalization, continuous relationships, high standards and performance-based assessment, authentic curriculum, adaptive pedagogy, multicultural and antiracist teaching, knowledgeable and skilled teachers, collaborative planning and professional development, family and community connections, and democratic decision-making. Given these elements, and the research related to them, Darling-Hammond (2002) made the case for small schools very clear:

A growing number of educators and policymakers believe that existing assembly-line schools that inhibit our students' and teachers' potential need to be replaced by smaller schools that are better designed to support teaching and learning. And we have evidence that small schools are indeed better for our children: All else equal, they produce higher achievement, lower dropout rates, greater attachment, and more participation in the curricular and extracurricular activities that prepare students for productive lives. There is real potential for the current small schools movement to transform the educational landscape in America for the better. (p. iii)

Darling-Hammond and others had stimulated public and political discourse on shifting to small schools, and the policymakers who took office in NYC in 2002 agreed with her and other small-school proponents and put this call into action to a historic and unprecedented extent.

School Reform and Small High Schools in New York City

New York City is the largest school district in the United States. Every year, approximately 75,000 eighth graders apply to enter public high school. Between 1990 and 2002, the 4-year graduation rate in NYC public high schools fluctuated between 48% and 51% (NYC DOE, 2010). This means that, 4 years after entering high school, approximately 37,000 of those eighth graders did not graduate high school during the 15 years leading up to 2002. Many of the large public high schools in NYC had well below 50% of their students graduating in 4 years, and several were below 40%. After 6 years, the city's graduation rate did improve somewhat but was still seen as unacceptable to Mayor Michael Bloomberg's incoming administration in 2002. The low graduation outcomes, relative to national averages, were among the reasons invoked by the new chancellor and leaders of the NYC DOE in 2002 and 2003 to implement an overall school reform of the school system in NYC that included developing and implementing hundreds of other new, small, themed high schools in all boroughs.

Mayor Bloomberg won election in November of 2001 and declared himself the "education mayor." One of his first acts was to pursue mayoral control of the school system and to do away with the previous board of education. After strong lobbying in the state capitol by the mayor's office, in 2002 the New York State legislature disbanded the board of education and granted control of the NYC public schools to the new mayor. With mayoral control secured, one of his first moves was to hire the former federal prosecutor Joel Klein as Chancellor of the Department of Education. Klein's previous position had been leading the Clinton

Administration's anti-trust case against Bill Gates's Microsoft Corporation. Ironically, in his first year as chancellor, Klein helped to secure \$100 million from the Gates foundation to assist in the creation and implementation of one of his signature initiatives, the creation of small high schools (Klein, 2014). Over the next 5 years, the Gates Foundation committed \$3.5 billion to education projects throughout the United States, with a strong focus on creating small schools (Kahne et al., 2008). Educators in New York who had supported the city policies to create and implement new, small schools now had the funding and the political commitment from the top to go forward with the initiative, and they rushed in to the yearlong school-creation process.⁴

Mayor Bloomberg's primary watchword was "accountability" (Hentoff, 2008). He charged his new Chancellor, Joel Klein, with significantly improving the overall performance of NYC's one million plus public school students and more than 1,100 schools at that time. As part of a series of reforms to the system, one of the new Chancellor's major initiatives was to create and establish new, small high schools and to close and replace many large high schools that were considered dysfunctional. This initiative also meant providing public school students and their families with a portfolio of schools they could choose to attend. An elaborate selection process was used to determine ninth-grade matriculation; the process was modeled after physician residency placement, complete with complex algorithms.

Beginning in 2002 the Bloomberg administration created and implemented a comprehensive, system-wide high school reform that was unparalleled in scope and size to any

⁴ In 2002, when I worked with New Visions for Public Schools to create the school in Brooklyn where I was principal, school planning teams submitted over 56 original school proposals, which, over a 6-month process, were whittled down to 18 finalists, who presented their proposals to both DOE and foundation representatives. Eventually, eight new schools, including ours, were approved to open in September 2003. And that was merely in Brooklyn. Additional schools would open in Manhattan and the Bronx.

other major city's school reform. Under Klein, the NYC Chancellor's Office created an Office of New Schools, which offered a streamlined process and more supportive environment for the New Small Schools established after 2002, compared to the older smaller schools that had been in existence before that time (Bloom et al., 2012). Potential New Small School leaders were required to complete a competitive application process in which they created rigorous curricula, demonstrated how they would implement those curricula, and detailed how they would partner with community organizations (New Visions for Public Schools, 2005). All new schools were expected to form partnerships with nonprofit organizations, such as New Visions for Public Schools, which helped gestate and create more than 80 New Small Schools over the next decade.

O'Day, Bitter, and Gomez (2013) provided a comprehensive context with a series of analyses that framed these New Small Schools as part of a series of overall reforms, which were interlocking and had as their stated goal to enhance "leadership, empowerment, and accountability." Among the many changes and reforms, Klein's DOE created a training institute for school principals, the NYC Leadership Academy, and expanded a program for teachers called NYC Teaching Fellows, which would attract and train second-career educators to teach in NYC schools. Under Klein, the DOE also overhauled and centralized the student admissions process for middle and high schools. Through the decade the management team that Klein assembled also reorganized and reconfigured the entire system's management structure from one of 32 elected district leaders to 10 Regional Superintendents of Klein's choosing; by 2007, school principals were able to choose their own network support organizations, which became known as Children's First Networks (Kemple, 2011; O'Day et al., 2013). Klein also negotiated with the teachers union and secured a change in the hiring policy that previously had forced principals to hire teachers based on seniority to one in which principals had more hiring

discretion.⁵ Responsibility for decisions about hiring, instruction, and budget was shifted away from district offices and directly to the principals and schools themselves, giving principals much more autonomy than in previous years.

The structural school reforms carried out under Mayor Bloomberg and Chancellor Klein were profound and diverse, but they all shared the common, stated goal of improving student outcomes and achievement through enhanced and enforced accountability structures. To this end, a school progress report, or report card, was created, and schools were given letter grades spanning A to F in various categories and an overall letter grade. In addition, schools were ranked relative to each other. Further, in 2007 schools began to receive a 2-day Quality Review, which was also part of the accountability structure. It is within the context of these overall structural reforms and rising accountability context that the creation of the New Small Schools must be placed (Abdulkadiroğlu et al., 2013; Bloom et al., 2010; Kemple, 2011, 2013, 2015; Nadelstern, 2013; O'Day et al., 2011).

One of the architects of the reforms under Klein was Eric Nadelstern, who was a founding principal of a small school in 1985 and who eventually became deputy chancellor, and now teaches at Columbia Teachers College. Nadelstern's (2013) book *10 Lessons From New York City Schools: What Really Works to Improve Education* described and justified the school-system's transformation in a series of essays. Much of Nadelstern's work describes remaking a system to become accountable at the school level, but he devoted a chapter to the creation of the small schools. He noted that close to 60 small high schools had been created in NYC over the course of the 1990s with support from the Annenberg Foundation. In Nadelstern's (2013) view,

⁵ As I was principal of my school from the beginning of these reforms in 2003, I have never known another system of hiring.

“The creation of a critical mass of New Small Schools was the single most important breakthrough strategy of the Klein Administration” (p. 33). He listed the two most important lessons he learned from 25 years working with small schools: “1. Large failed organizations, including schools, never reinvent themselves. 2. Small schools are the most important strategy for promoting educational reform” (Nadelstern, 2013, p. 36). Nadelstern argued that the 80 New Small Schools created in the Bronx under Chancellor Klein—and Nadelstern himself when he was a Superintendent there—provided much better educational opportunities for poor students than the 22 large and mostly failing high schools that were there previously, most of which were closed between 2002 and 2010.

The New Small Schools were placed directly under the chancellor’s authority. The chancellor supported, through the DOE’s Office of New Schools, the developing schools and communicated their importance to the rest of the organization. Nadelstern (2013) justified the opening of the New Small Schools by citing performance outcomes:

Buildings that had graduated as little as 30% of their students were now seeing graduation rates, in the best cases, of more than 70%. That this occurred during a time when the New York State Department of Education was raising the passing score requirement for the Regents Exams in five subject areas for graduation, represents a tremendous increase in a relatively brief period of time. As such, replacing large failed schools with new small ones was a breakthrough reform. (p. 35)

Nadelstern (2013) argued that the New Small Schools were successful in NYC for several reasons. First, they were under the direct control of the chancellor. Second, the schools were phased in one grade at a time and allowed to “take root and grow.” Most relevant to the present study is that success was due to limiting certain students: “The third reason was more controversial. We did not require New Small Schools to admit special education students or English Language Learners (ELLs) for the first 2 years” (Nadelstern, 2013, p. 37). The reason, he argued, is that new principals, and six or seven, potentially new teachers, should not be

expected to address the most complex issues in the schools during their first 2 years, and the incipient schools do not have a resource base big enough to offer the correct programs and services. By the time they reached Year 3 of their start-up process, he wrote, New Small Schools were required to take special needs students.

In his book Nadelstern (2013) went on to recognize that many advocates objected to this decision and that the Justice Department investigated but “did not find cause for concern” because, by that time, “most of our schools were at least 3 years old and accepting all comers” (p. 38). He also recognized that the ELL graduation rate did drop during this initial period from 35% to 29%, but then rose again to 45%. He did not, however, mention what happened to special education students. Nadelstern (2013) concluded his small-schools defense and justification by stating, despite the controversy of doing so, that “sheltering these fledgling schools during their initial growth and development was key to their success,” (p. 38).

Under the leadership of Klein and his eventual Deputy Chancellor Nadelstern, the DOE closed many schools between 2002 and 2010, including many large high schools that were deemed to be failing. Overall, according to Bloomberg’s (2016) personal website, during his tenure as mayor, the city closed 168 schools and opened 654 total elementary, middle, and high schools, including 173 charter schools. The sheer number of new schools dwarfed the size of most districts in the country. Additionally, as a part of this massive reform, the DOE also reformed and centralized the admissions process for all incoming ninth graders and opened hundreds of new secondary schools, most of which covered Grades 9–12, but also many that spanned Grades 6–12 (O’Day et al., 2011).

Another fundamental part of this high school reform was the creation of a “portfolio model” of many New Small Schools. This model provided students some choice of school in the

admissions process, eliminating almost all of the geographical zoning considerations in admissions. Between 2002 and 2013, the DOE created close to 200 such schools that had similar characteristics: small (usually fewer than 450 students for 9–12 schools and fewer than 700 for Grade 6–12 schools); nonselective on paper (what the DOE called “limited unscreened”); and district, not charter, high schools. Most of these New Small Schools were colocated in the buildings that had housed the large high schools, which were phased out and closed over 3 years as they ceased taking incoming ninth graders. These large high school buildings eventually housed anywhere from three to nine colocated, new, small high schools.

The DOE leadership created these New Small Schools primarily to serve the students who would have attended the large high schools they were closing, many of which had significantly lower graduation rates than the city average. These New Small Schools were expected to serve the city’s most disadvantaged students and were touted as being more personalized than the larger schools, which Chancellor Klein and other DOE leaders saw as failing because of their persistently low graduation rates.

At that time, critics of the Bloomberg–Klein reforms claimed that the small schools were established with advantages designed to support the policy choice of closing the large high schools. In many cases, the New Small Schools were receiving more money per pupil, as well as more resources than the schools they were replacing, because of the new “Fair Student Funding” models that the DOE was implementing. In addition, critics argued that the exclusion of special needs students from the New Small Schools caused a ripple effect by displacing these students to large high schools that had difficulty handling the influx of students who required more resources. In Brooklyn, Manhattan, and the Bronx, the boroughs where most small high schools were created, 26 of 34 large high schools saw their enrollments rise as other large high

schools were closed, and 14 of those schools subsequently experienced declines in both attendance and graduation rates between 2002 and 2007 (Hemphill et al., 2009).

Critics such as Hemphill et al. (2009) charged that the policy of excluding special needs students led to a self-fulfilling policy prophecy of school closure, producing “collateral damage” and a “ripple effect,” as many of the remaining large schools became more overcrowded and had to absorb larger numbers of special needs students displaced by the school closures. According to this critique of the reform, the displacement led to overall lower student performance outcomes, and some of the other schools were eventually closed by the DOE in favor of small schools (Hemphill et al., 2009, p. 35). Several critics have argued that the Bloomberg administration’s displacement of students without accompanying resources set large schools up to fail in a self-fulfilling, domino-like manner in order to continue to create more New Small Schools (Haimson, 2011; Hemphill et al., 2009; Ravitch, 2015a; Rubinstein, 2012). Unfortunately, the secondary effects of the DOE school closure policy have not been thoroughly studied and remain in need of further analysis necessary to more completely understand the full effects of the Bloomberg–Klein school reform.

As Nadelstern noted, for its part, the DOE was clear about its open political support for its New Small School initiative. The DOE created the Office of New Schools specifically to support the incubation, creation, and implementation of new schools. The chancellor openly backed the initiative and regularly visited the New Small Schools. A Leadership Academy was created to train the numerous new principals needed after the creation of so many new schools. The New Century Foundation, with large amounts of grant money from the Gates, Carnegie, and Open Society foundations, provided an additional \$1,000 per student in start-up money per year during the New Small Schools’ first 4 years of operation. The DOE itself provided start-up

funding and resources through its Fair Student Funding formulas. Finally, overall per-pupil spending for all schools rose precipitously between 2002 and 2008 (O'Day et al., 2011).

The Scope of the Small-School Reform in New York City

No other city's school system in the United States approaches the size of the NYC system. Despite the size of the system, speed of the city's small school growth was extremely rapid, as the New Small Schools were placed in the same buildings as the closed large schools.

Interesting findings from the Research Alliance for NYC Schools revealed that overall high school enrollment in NYC dipped slightly at the outset of the small-school reform in 2002–2003, only to rebound strongly with approximately 30,000 new students, which put additional pressures on the school system. Before the Bloomberg administration took office, overall enrollment had fallen from close to 270,000 students in 1996 to fewer than 255,000 students. Once the reforms began in earnest in 2002, overall high school enrollment spiked to close to 280,000 students in under 3 years, including transfer schools and specialized high schools (Research Alliance for New York City Schools, 2013). It is not clear what drove this increase, although speculation at the time was that more people had gained the confidence to return to the public schools.

The growth in the number of high schools was driven by New Small Schools opening at a precipitous rate, while several larger schools were closed. Table 1 demonstrates total new, public, noncharter school openings by year between 1996 and 2012.

Although Table 1 includes all levels of district schools, it does demonstrate the rapid overall growth of new schools begun in 2003. Over just four Septembers between 2003 and 2006, a total of 138 new district schools opened their doors to students. The NYC DOE also established a new, citywide high school admissions system during this time.

Table 1

New York City New Public School Openings by Year

Year	<i>n</i>	%	Cumulative %
1997	9	3.09	3.09
1998	11	3.78	6.87
1999	3	1.03	7.90
2000	12	4.12	12.03
2001	1	0.34	12.37
2002	9	3.09	15.46
2003	22	7.56	23.02
2004	35	12.03	35.05
2005	58	19.93	54.98
2006	23	7.90	62.89
2007	13	4.47	67.35
2008	19	6.53	73.88
2009	27	9.28	83.16
2010	16	5.50	88.66
2011	17	5.84	94.50
2012	16	5.50	100.00
Total	291	100.00	

Note. Data provided to the author by the Research Alliance for New York City Schools.

In addition to the vast number of new school openings, the DOE closed numerous schools during this same period. Most of the closures were larger high schools or middle schools. Between 2004 and 2007, 34 schools were closed, most of them replaced by the New Small Schools. In most cases, high schools were gradually phased out over 3 years; that is, the closing high school would not receive an incoming ninth grade and was given 3 years to graduate its current students. Kemple (2015) has begun to examine the effect of these school closures on the surrounding communities as well as the displacement that occurred in many neighborhoods, but it is an area that requires additional research.

Citywide data for high schools demonstrate that, as the number of small schools rose, they were, as an aggregate, serving a growing percentage of students in NYC (see Table 2).

Between 2002 and 2012 the number of students attending small high schools increased ninefold, from 8,436 to 72,978. These students accounted for 28.4% of the high school students in the city, up from just 3% in 2002. This growth cannot be overstated, as it thoroughly reshaped the organization of the NYC school system. The median school population fell from 2,663 in 2005 to only 1,032 by 2012—a tremendous change. However, despite the rapid growth of small schools, large schools still accounted for more than 70% of the city’s high school students in 2012, demonstrating, if nothing else, the vast scale of NYC’s district. Furthermore, the majority of students still attended large schools.

Table 2

Shifting High School Enrollment Toward Small Schools 1996–2012

Year	Enrollment (NYC)	Enrollment in small schools	Enrollment in large schools	% Enrolled in small schools	<i>Mdn</i> school population
1996	265,212	6,742	258,470	2.54	2,802
1997	269,168	6,383	262,785	2.37	2,957
1998	268,808	6,910	261,898	2.57	2,747
1999	264,376	7,807	256,569	2.95	2,661
2000	262,413	8,355	254,058	3.18	2,615
2001	254,905	7,772	247,133	3.04	2,560
2002	254,954	8,436	246,518	3.30	2,472
2003	258,748	10,041	248,707	3.88	2,488
2004	272,941	14,791	258,150	5.41	2,636
2005	278,499	23,699	254,800	8.51	2,663
2006	276,699	32,679	244,020	11.81	2,489
2007	274,544	42,505	232,039	15.48	2,195
2008	271,621	50,258	221,363	18.50	1,791
2009	265,813	56,889	208,924	21.40	1,591
2010	265,625	62,688	202,937	23.60	1,396
2011	262,597	67,520	195,077	25.71	1,198
2012	256,567	72,978	183,589	28.44	1,032

Note. Data provided to the author by the Research Alliance for New York City Schools.

The Literature Focusing on New York City Small Schools

The research and reports on NYC New Small Schools generally fall into two somewhat opposing camps: (a) those whose findings generally support the outcomes of the DOE's massive reform and creation of small schools and (b) those that question the reform's disruptive costs, the findings supporting the reform, and in general the creation of small schools and its effects on schools and communities. Even some of the more supportive studies also call for additional research, which still remains to be done. The researchers who can be seen as the more supportive of the DOE include Quint et al. (2010), Bloom et al. (2011), Unterman (2012), Kemple (2013), and Schwartz et al. (2013). In my review of this body of literature, those researchers and writers who have been critical of the DOE reforms in their studies, papers, and reports do not refute the overall performance achievements of the DOE reform, but they do raise important questions of just how the reforms accomplished these outcomes, as well as some of the ancillary effects of the reforms. These researchers include Pallas and Jennings (2010), Hemphill et al. (2009), and Rubinstein (2012). All of the studies, reports, and critiques examined later in this chapter clearly agree with one thing: that NYC's small-school reform deeply and fundamentally changed the school landscape in NYC. In sum, both camps of researchers might have valid arguments because their focus tends to be on different aspects of the overall reform.

In terms of its political influence and policy implications, the most important recent research on the effects of the small-school reform in NYC has been produced by the social policy research firm MDRC, as well as the Research Alliance for NYC Public Schools, and researchers at Teachers College at Columbia University. Some of these publications were financed by the Gates Foundation, which provided \$100 million dollars to develop New Small Schools in NYC

soon after Klein began his role as chancellor.⁶ The Gates Foundation's initial support for small public schools waned later in the decade as the foundation became more openly supportive of charter schools and moved away from supporting small district high schools.

MDRC issued several reports between 2010 and 2014 on the New Small Schools in NYC, which were funded in part by the Gates Foundation. In their first report, in 2010, MDRC researchers described the overall scale of the school reform and the new admissions procedures that the New Small Schools (and all high schools) had begun to follow. The researchers also examined demographics of the students entering the New Small Schools, which were often located in the same buildings as the zoned schools they were replacing. In this report, *New York City's Changing High School Landscape: High Schools and Their Characteristics, 2002–2008*, authors Quint et al. (2010) reported the following key findings:

- By September 2007, the new small schools collectively served almost as many students as the closing schools had served in September 2002. In general, student enrollment patterns largely reflect the changes sought by the planners of the reforms, with enrollment declining in large schools as increasing proportions of students enrolled in small schools.
- Students at the small, nonselective high schools across the five boroughs of New York City tended to be more disadvantaged than students attending other kinds of schools along a number of socioeconomic and academic indicators.
- On average, the students who were entering the large, academically nonselective schools that were still open in September 2007 were no longer at exceptionally high risk of academic failure. (Quint et al., 2010, p. iii)

⁶ **Full disclosure:** As a so-called New Century High School, started through the organization New Visions for New Schools, my school received \$1,000 per incoming new student every year for the first 4 years of our existence from a fund created by the Carnegie, Gates, and Open Society foundations. The total was around \$110,000 per year for 4 years, enough for two teachers (temporarily); however, we chose to spend it on students. This start-up money ended after 4 years, which could also have contributed to overall school performance.

This first MDRC report covering the basic aspects of the small-school reform laid the groundwork for the reports that followed, and for their policy use by NYC DOE administrators and the mayor's office.

The most publicly prominent of the MDRC reports was its second, *Transforming the High School Experience: How New York City's New Small Schools Are Boosting Student Achievement and Graduation Rates*,⁷ which looked specifically at performance outcomes of students in the New Small Schools, compared them to other schools, and even followed students in a control group (Bloom et al., 2010). This MDRC study was more thorough than the first report, analyzing student performance with a focus on ninth-grade student credit accumulation and 4-year graduation rates. The second MDRC report has particular importance because of its repeated public use by NYC DOE leaders and Bloomberg administration officials in defense of their closure of large schools as well as to tout the success of the New Small Schools. In 2012 Klein's successor, Chancellor Dennis Walcott, wrote an op-ed in the *New York Daily News* stating, "A study by the independent education research group MDRC confirmed how well our new schools are working. Among other things, the study found that they 'markedly improved graduation rates for a large population of low-income, disadvantaged students of color'" (Walcott, 2012, p. 1).

Given the DOE's and the Bloomberg administration's overt use of this study to justify its policies, this MDRC study merits a deeper analysis in this literature review. Bloom et al. (2011) focused on what they labeled "small schools of choice (SSC)," that is, schools enrolling fewer

⁷ One of the authors of this report, Saskia Levy Thompson, soon after the report was released, left MDRC and joined the New York City Department of Education central office, eventually becoming the Chief Executive Office of School Support of all schools in the city, and eventually Deputy Chancellor in 2013.

than 500 students that eighth graders chose through the admissions process. The authors received access to student-level data from the NYC DOE and were able to track eighth graders through the new admissions process through graduation. Beginning with the entering high school class of 2005, MDRC researchers studied the admissions lotteries for seats in “oversubscribed” New Small Schools created by NYC’s high school application processing system. They focused on a relatively large sample of 105 schools, all Grade 9–12 schools created after 2002, from 2005 to 2008. They found that some students who were not chosen through the lottery by one SSC could have been placed into another similar, but older, small school or even another New Small School that was not “oversubscribed.” This finding means that the SSCs studied by the MDRC had more applicants than potential student matches. Students who had not been admitted into new SSCs in the MDRC sample and who attended other NYC high schools, which might have been small or large schools, served as the control group in their study. The MDRC researchers followed the 2005 cohort and found that these students had statistically significantly higher graduation rates (6.8% higher) if they had enrolled in a new SSC than if they had not. Furthermore, as ninth and tenth graders, the students had more credits toward graduation in the SSCs than students in the control group, providing some limited evidence on the effectiveness of a large, select group of new small high schools—ones that were newly formed after 2002 and that were oversubscribed for some of their seats—that is, New Small Schools that were sought after.

The second MDRC study included a few key findings for their SSCs:

- By the end of their first year of high school, 58.5 percent of SSC enrollees are on track to graduate in four years compared with 48.5 percent of their non-SSC counterparts, for a difference of 10.0 percentage points. These positive effects are sustained over the next two years.

- By the fourth year of high school, SSCs increase overall graduation rates by 6.8 percentage points, which is roughly *one-third the size of the gap in graduation rates* between White students and students of color in New York City.
- SSCs positive effects are seen for a broad range of students, including male high school students of color, whose educational prospects have been historically difficult to improve. (Bloom et al., 2010, p. iii)

The authors of the MDRC study called their findings “encouraging” because of the performance results and because they stemmed from what they called an “unusually large and rigorous study” (Bloom et al., 2010, p. iii) of a sample of 105 New Small Schools. The MDRC report compared academic progress through a statistical approach called instrumental variables analysis, through which the researchers found “robust” effects for the academic outcomes of students in the small schools, as well as their academic transition to high school, credit accumulation in the ninth grade, and graduation rate (Bloom et al., 2010).

The MDRC reports did not openly or directly compare the graduation rates of the small schools with the large schools that they replaced. The NYC DOE, however, in public reports and press releases throughout 2007 to 2013, went to considerable effort to highlight those direct comparisons. The DOE even had the mayor or the chancellor lead the press conferences, complete with PowerPoint presentations. In most cases the DOE officials pointed out that the direct percentage comparisons showed double or even triple the graduation rates of the larger schools that were closed—often for schools located in the same building where the previous, large school had resided (NYC DOE, 2008, 2009, 2010).

In 2010 the NYC DOE publicly announced that graduation outcomes had surged by 40% since 2005. Figure 1 is a line graph from the NYC DOE that distinguishes between the state graduation rate and city rate for 2005 to 2010 (NYC DOE, 2010b). These data made a clear case

that the DOE had raised overall graduation rates, and officials pointed to the New Small Schools as a fundamental aspect of this increase.

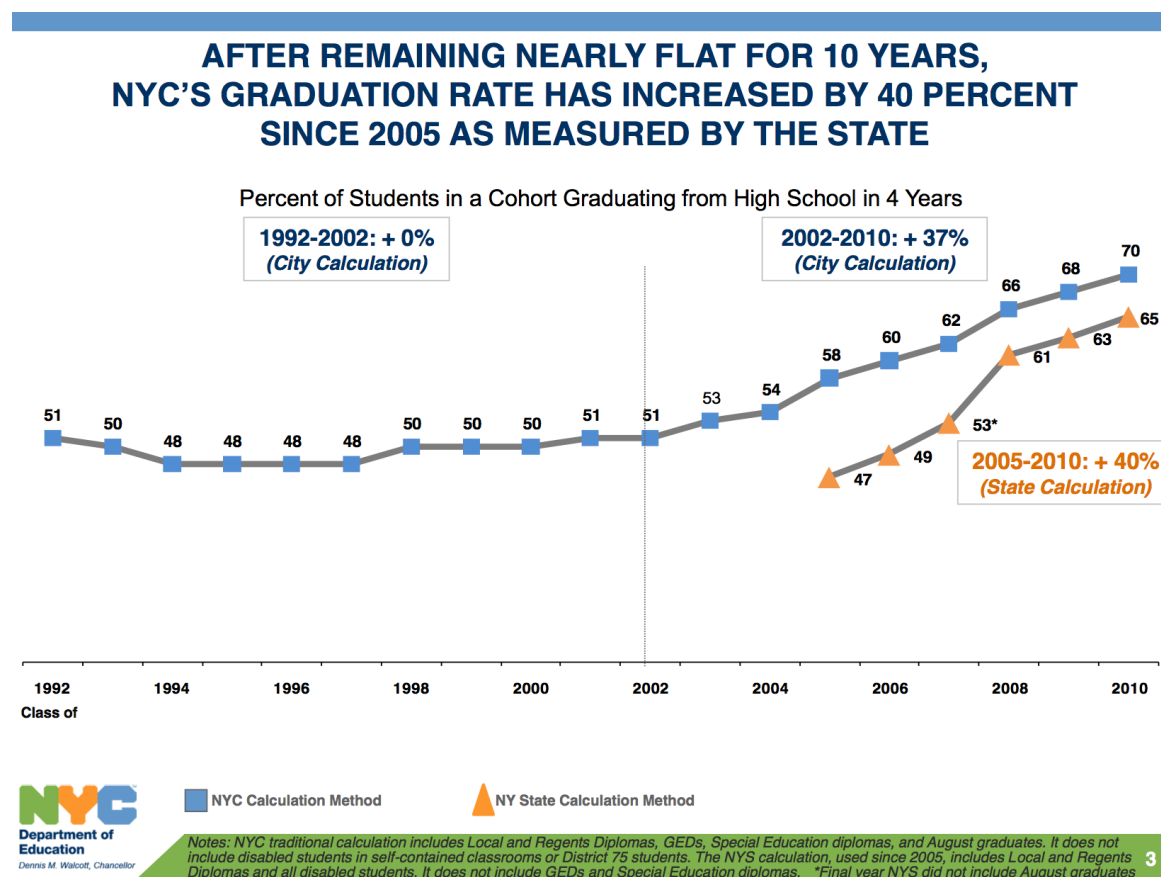


Figure 1. New York City graduation rates, 1992–2010. From Graduation Outcomes (slide 3, by NYC Department of Education, 2010b, New York, NY: Author. Copyright 2010b by the NYC Department of Education. Reprinted with permission (public domain). Data are updated annually on website. Retrieved on August 25, 2012 from slide 3 of <http://schools.nyc.gov/Accountability/data/GraduationDropoutReports/default.htm>

In another graph taken from the official PowerPoint that the NYC DOE released to the media when the department's leadership announced its 2010 graduation rates, DOE officials directly compared the 2002 graduation rates of closing schools and the 2010 graduation rates of the New Small Schools that replaced them (see Figure 2).

GRADUATION RATES AT NEW SCHOOLS ARE HIGHER THAN THE HIGH SCHOOLS THEY REPLACED

As a school phases out one year at a time, impacted students may stay and work towards a diploma (e.g., the following year it will not admit new students but will continue to support its remaining students).

Conversely, new schools are phased in one year at a time, and largely serve the same general population of students from the phase out schools.

Every school in NYC, those that are phasing out and the new schools, is funded through the same fair student funding model.

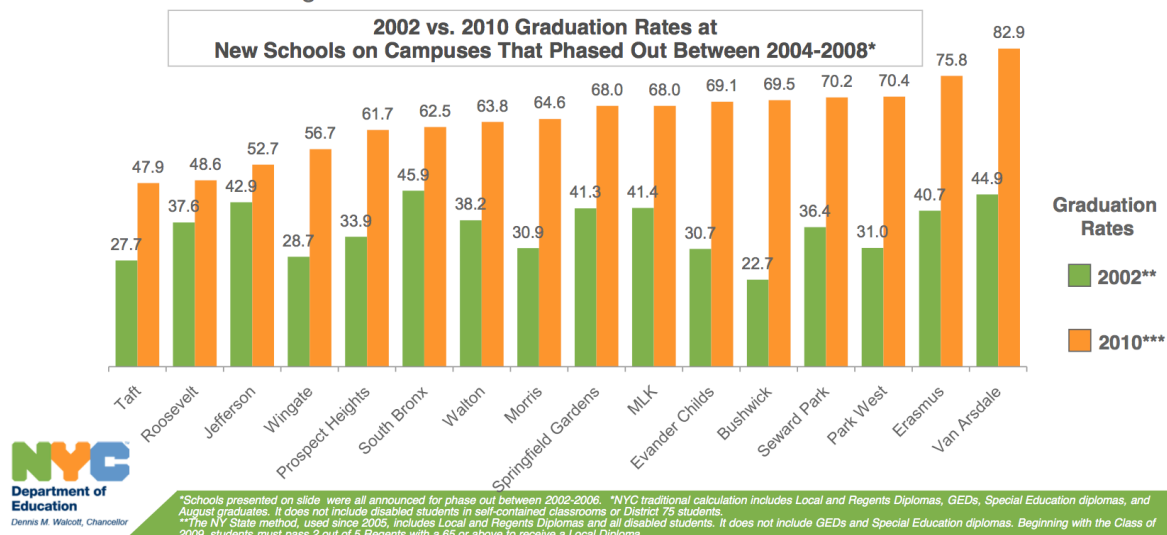


Figure 2. Graduation rates at New Small Schools versus the schools they replaced. From Graduation Outcomes (slide 8), by NYC Department of Education, 2010b, New York, NY: Author. Copyright 2010b by the NYC Department of Education. Data are updated annually on website. Reprinted with permission (public domain). Retrieved on August 25, 2012 from <http://schools.nyc.gov/AboutUs/schools/data/stats/default.htm>

Many aspects of this NYC DOE slide deserve comment, including that the “same fair student funding model” did not include the 4 years of start-up funding that came from the New Century Schools fund. But a key claim embedded in the footnote of this informative slide is that the New Small Schools “largely serve the same general population from the phase out schools” (NYC DOE, 2010b). New York City DOE officials made the case that the New Small Schools were working with “the same general population,” which was a claim that has been called into question by Pallas and Jennings’s (2010) study, discussed below.

In terms of admissions criteria, NYC DOE press releases never clarified whether the schools that were being closed had previously admitted students using different admissions criteria, because they were “zoned” high schools before their closure. Those New Small Schools that were opened were “schools of choice,” with an entirely new and very different admissions process, often drawing students from a much wider geographic or catchment area than the previous geographic zone of the zoned schools (Hemphill et al., 2009). As early as 2007, after only 2 years of New Small School graduations, the *New York Times* (2007) published an article stating that New Small Schools’ performance was “validating” the Bloomberg policy of school closure, and included a figure, similar to the one above, that compared the campuses of closing schools and New Small Schools (Bosman, 2007).

The Bloomberg/Klein administration made its case consistently, and very publicly, to justify and sustain its policies, even as many state-required public hearings on school closures grew increasingly raucous with dissent and more and more schools were closed. Klein (2010) himself penned an article, saying,

Our new small high schools have transformed lives, and in many cases whole communities, where schools had previously failed generations of students. In 2009, our new small schools had an average four-year graduation rate of 73%, which is 10 percentage points higher than the citywide average of 63%. This is even more remarkable considering that the schools continue to serve some of the city’s highest needs students, similar to those in the large failing schools they replaced. In 2002, when the phase-out of Bushwick High School in Brooklyn was announced, the school had an abysmally low 23% graduation rate. Today, the average four-year graduation rate for the schools on that campus is 72%—a 49-point increase. The Evander Childs campus in the Bronx is similar: the 2009 Evander campus graduation rate, which includes Bronx Lab, was 80%, compared with a 30% 2002 graduation rate for the former Evander Childs High School. (p. 257)

Before leaving office in December 2013 Mayor Bloomberg’s personal website took a clearly valedictory tone regarding the overall improved graduation rates, once again relying on the MDRC report for evidence:

These exceptional results come after a decade of boosting accountability, raising standards, and creating more options. Over the past 12 years, the City has opened 656 new, small schools... New schools, on average, serve the same general population of students, but have consistently outperformed existing schools. The non-profit, non-partisan research group MDRC has put out multiple reports validating the City's new school strategy, and MIT and Duke researchers provided clear evidence last month that New York City's new schools have a positive impact on student performance and are graduating higher number of students than those open before 2002. (City of New York, 2013)

The MIT and Duke researchers that Bloomberg's site referenced were Atila Abdulkadiroğlu, Weiwei Hu, and Parag Pathak, economists from their respective universities who published the working paper "Small High Schools and Student Achievement: Lottery Based Evidence from New York City" in 2013. In their study the authors used an econometric model using the "lottery" of the NYC high school admissions system and estimated the effects of attending a New Small School on student achievement. Their analysis found that "lottery estimates show positive score gains in Mathematics, English, Science, and History, more credit accumulation, and higher graduation rates." Using these findings these researchers also made some claims, "the results show that school size is an important factor in education production and highlight the potential for within-district reform strategies to substantially improve student achievement" (Abdulkadiroğlu et al., 2013, p. 1).

Like the MDRC analysts before them, the Duke and MIT researchers recognized that they were not explicitly counting special education and English language learners. They did not address, however, how this omission might or might not have affected their results. They mainly agreed with the DOE policy and with Nadelstern's perspective, discussed earlier in this chapter:

Because small high schools did not have resources needed to serve special education students requiring self-contained classes and English-language learners adequately, they were allowed to be added over a three-year time span. . . . *As a result no students who are special education and limited English proficient are in the lottery sample* [of their study]. (emphasis added; Abdulkadiroğlu et al., 2013, p. 15)

Further study is needed to understand how not including SC special education students or English language learners impacted the Duke/MIT findings.

The MDRC studies initially faced some public criticism, but the critiques did not receive nearly the major media attention that the original MDRC study had garnered. In fact, most of the coverage of the MDRC study followed the lead of the *New York Times*, which published an article in 2012 stating that the MDRC study “appeared to validate the Bloomberg administration’s decade-long push to create small schools to replace larger, failing high schools” (Hu, 2012, p. A26). Some critics of the MDRC report have questioned, however, whether the timing of the report was more than coincidental because, at the time of its release, the DOE was in the process of applying for large federal School Improvement Grants for several of the SSCs and might have needed a justification for its proposals. (Rubinstein, 2012).

In 2012 the MDRC released another report, which added students who entered high school in 2006 to its originally reported 2005 cohort. This report found that the difference in graduation rate for those who attended its sample SSCs was even higher in the second cohort they studied, as 67.8% of SSC students graduated versus 59.7% in the control group. Several critics of the study at the time, including Pallas and Jennings, pointed out that, although the sample SSC schools had higher percentages of students in poverty, the studied cohorts had lower percentages of special needs students on average, especially ELL and special education students (Haimson, 2011; Pallas & Jennings, 2010; Rubinstein, 2012). President of New York’s powerful United Federation of Teachers union Michael Mulgrew criticized the report in the *New York Times*, openly questioning whether the small schools had admitted fewer special education students and how this might have affected the graduation rates (Hu, 2012, p. 26).

Others pointed out that the SSCs were allowed to openly exclude special needs students during the first 2 years of their existence (Rubinstein, 2012). Critics also questioned why the MDRC reports did not recognize or consider the positive peer effects for the graduation rate of the students in their SSCs, as these New Small School students were grouped with fewer special needs and ELL students overall. Leonie Haimson, founder of the advocacy organization Class Size Matters, and a frequent critic of Bloomberg administration policies, argued that, on average, the MDRC SSCs were allowed to have smaller classes and were far less overcrowded than the large high schools, which could have also influenced student performance outcomes (Haimson, 2012). A Policy Studies Associates (2008) report on the New Small Schools supported this critique, demonstrating that, during these start-up years, the schools had only 13–20 students per class.

The MDRC reports contain other potential biases that have never been thoroughly addressed. Bloom et al. (2010) discussed the process by which the New Small Schools were created but failed to discuss the political machinations and connections that may have led to some new schools actually coming to fruition and others not being chosen. Bloom et al. (2010) also did not look at other differences across New Small Schools, such as varying special needs populations, which may have affected performance outcomes. Bloom et al. (2010) did note that the additional start-up monies that the New Small Schools received, both foundation money and DOE money, might have affected their early graduation rates, which were part of the MDRC study.

Another aspect of the DOE's admissions policies that might have biased the MDRC studies, indeed all studies related to the New Small Schools, is that the SSCs prioritized students for admission that they "knew," meaning students who had contact with school in some form,

such as attending a recruitment open house. This approach could have biased the sample of students from the SSCs and the New Small Schools in general because those who contact small schools are from families who might already be more motivated or have knowledge of the admissions process. If families were reaching out to the school, then those students might have been self-selecting, which could have biased the data in the MDRC studies.

The 2012 MDRC study found that students at the SSCs had a 9% higher graduation rate than those who were in the control group. However, the study also mentioned overall rising citywide graduation rates, which included the control group as well. An additional question to ask about the students in the MDRC SSCs would be why all of the “effect” of rising graduation rates should be attributed to the New Small Schools.

Other critiques of the Bloomberg/Klein reforms have cited additional elements that might have improved performance outcomes, such as graduation rates; one such factor could have been increased use of “credit recovery” courses or course “packets,” which schools used to provide students an opportunity to make up credit in short periods of time (Ravitch, 2015; Rubinstein, 2012). In addition, Hemphill et al. (2009) raised the question of the “ripple effect” of the New Small Schools on other larger schools in the area. She argued that, especially at the outset of the small-school reform, many nearby large high schools received larger numbers and percentages of higher need students, including the special education and ELL students who were not admitted to the New Small Schools during their early years of operation. This influx placed demands on the large schools to service these new special needs students, which caused a downward spiral in those schools (Hemphill et al., 2009).

Although MDRC researchers Bloom, Quint, Unterman, and Thompson and NYC DOE officials claimed that the students who were and were not admitted into the SSCs had similar

background characteristics, it is clear from other studies that these groups of students were not identical, especially with regard to incoming students' special education status and eighth-grade attendance. According to a study by Policy Studies Associates (2008), entering SSC ninth graders had far better eighth-grade attendance (91% compared to 81%) and were less likely to have been suspended as eighth graders compared to students at the schools they replaced.

About the same time the MDRC reports were receiving much media attention and the NYC DOE's public praise, other research emerged that called into question some of the MDRC assertions. Working with the Annenberg Foundation, Aaron Pallas and Jennifer Jennings (2010) studied the characteristics of the incoming students at the New Small Schools between 2003 and 2009. This important paper had the straightforward title "Do New York City's New Small Schools Enroll Students With Different Characteristics Than Other New York City Schools?" Looking at an array of data that included student subgroups, Pallas and Jennings found several significant differences in the students admitted to the New Small Schools compared to those admitted to other schools during their study period. Figure 3 illustrates several of those differences.

Pallas and Jennings (2010) found that, during the first 4 years of the new small-school reform (2002 to 2006), the New Small Schools admitted significantly fewer (as a percentage) special education students (4% fewer in 2004–2005), ELL students (5% fewer in 2004–2005) and over-age students (5.4% fewer in 2004-05). All of these student subgroups have traditionally demonstrated lower graduation rates, nationally and in NYC, and admitting fewer of them could significantly impact a school's, especially a small school's, overall on-time graduation outcomes.

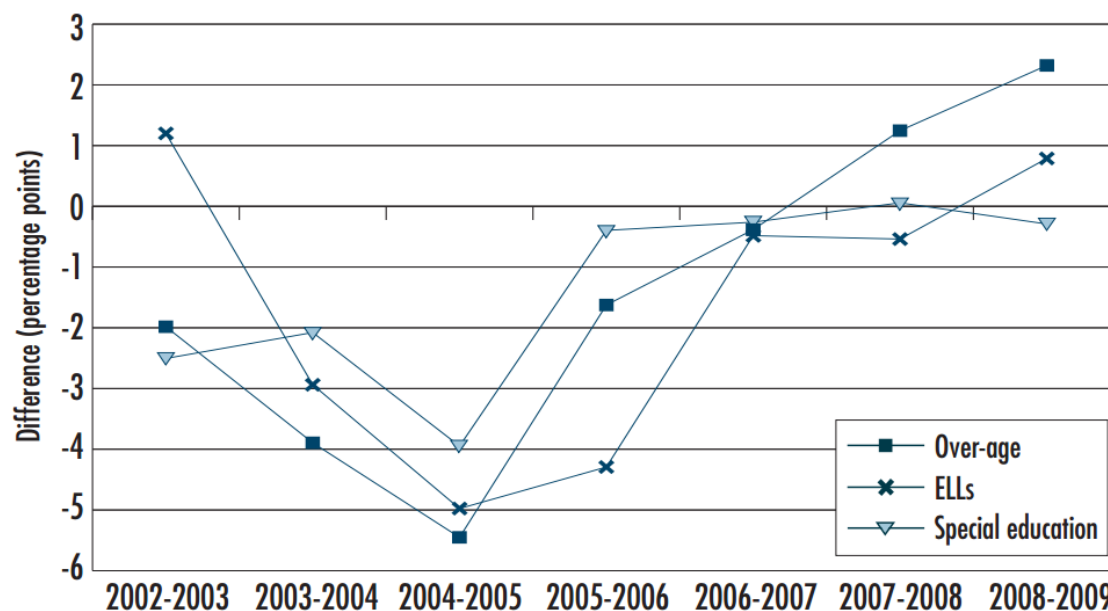


Figure 3. The percentage of special needs entering ninth graders in small schools versus existing schools 2002–2009. From *Do New York City's small schools enroll students with different characteristics from other NYC schools?* (p. 8), by A. M. Pallas and J. Jennings, 2010. Retrieved from Anneberg Institute for School Reform website: <http://annenberginstitute.org/sites/default/files/product/218/files/JenningsPallasRpt.pdf>. Reprinted with permission.

For the entering class of the 2006–2007 school year (those expected to graduate in 2010), Pallas and Jennings (2010) found that all three of these enrollment differences diminished to almost zero, and in succeeding years, the New Small Schools actually began to admit higher percentages of over-age and ELL students than other schools, whereas the percentage of special education students admitted was about the same as that of other schools. In other words, these findings indicate that, during the period of rapid growth of New Small Schools (2002–2006), the DOE enrollment offices sent fewer (as a percentage) special needs students to the New Small Schools—both special education students and English language learners. Pallas and Jennings's findings confirmed the policy pronouncements of Nadelstern discussed above.

In addition, for the years that the NYC DOE published special education data (only 2003–2006), Pallas and Jennings (2010) looked more closely at the type of special education services that New Small Schools provided to their students and found an even wider gap between

these schools and other schools. During the years in which data were available for their study, Pallas and Jennings found that New Small Schools admitted a significantly lower percentage of SC special education students—gaps of between 4.9% and 5.5% depending on the year—than other NYC high schools, whereas there was only a 1% difference (or less) in the percentage of part-time special education students admitted. Clearly, from this finding, the New Small Schools had, as raw number and a percentage, many fewer SC special education students than other schools in NYC. Self-contained students in NYC have historically had single-digit graduation rates in terms of percentage, so New Small Schools' graduation rates for their first graduating classes might have benefitted from this difference in the makeup of the admitted students.

The present study also extends the work of Pallas and Jennings' study, looking at students in small and other high schools in terms of types of students admitted to New Small Schools. This study not only looks at subgroups of students admitted, but it will go a step further to look at outcomes and odds of on-time graduation for those subgroups.

Clara Hemphill et al. (2009) noted that many other existing large school schools already had large SC special education populations, so the addition of those SC students who were not admitted into the New Small Schools and deflected to those other schools, may have put a higher demand on the resources and teaching staffs of the other schools. This effects of the deflection of these students on the other schools and their resources is an area for further research.

The initial MDRC report by Bloom et al. (2010) looked at the incoming cohort of 2005, and it, too, provides evidence regarding the difference in special education students between New Small Schools and other schools. Table 3 comes from the MDRC report and provides the baseline characteristics of the students in their sample as compared to other schools in the study and all incoming ninth grade students in NYC.

Table 3

Baseline Characteristics of Target SSC Enrollees, All HSAPS Enrollees in Study SSCs, and All First-Time Ninth-Grade Students in New York City: First Year of High School, Cohorts 1 to 4

Characteristic	Target SSC Enrollees	All HSAPS Enrollees in Study SSCs	All First-Time Ninth-Grade Students in NYC
Race/ethnicity			
Hispanic	48.9	48.4	39.8
Black	43.7	45.2	34.2
Other	7.3	6.4	26.0
Male	47.9	50.8	51.3
Eligible for free/reduced-price lunch	83.2	83.8	74.9
Special education ^a	6.7	15.5	14.0
English language learner	7.3	8.1	11.7
Overage for 8th grade ^b	21.2	24.4	21.7
8th-grade reading proficiency ^c			
Did not meet standards (level 1)	7.0	10.9	10.2
Partially met standards (level 2)	62.9	62.8	51.7
Fully met standards (level 3)	29.3	25.7	34.8
Met standards with distinction (level 4)	0.8	0.7	3.3
8th-grade math proficiency ^d			
Did not meet standards (level 1)	18.0	22.4	18.2
Partially met standards (level 2)	45.4	44.8	36.0
Fully met standards (level 3)	34.2	30.9	36.9
Met standards with distinction (level 4)	2.4	1.9	9.0
Total number of students			

Note. MDRC baseline characteristics of target SSC enrollees. From *Transforming the High School Experience: How New York City Small Schools Are Boosting Achievement and Graduate Rate* (p. 31, Table 2.3) by H. Bloom, S. L. Thompson, and R. Unterman, 2010. Retrieved from MDRC website: <http://www.mdrc.org/publication/transforming-high-school-experience>. Original table notes were as follows: SOURCES: MDRC's calculations use High School Application Processing System (HSAPS) and New York City Department of Education (DOE) state test data from eighth-graders in 2004-2005 to 2007-2008, as well as data from DOE enrollment files from the 2005-2006 to 2008-2009 school years. NOTES: Appendix A describes how values in the column labeled "Target SSC Enrollees" are estimated. Cohorts 1, 2, 3, and 4 consist of students in the study who were eighth-graders in the spring of 2005, 2006, 2007, and 2008, respectively. Previous year's enrollment files were used to determine whether or not a student was a first-time ninth-grader.

^a The target SSC enrollee sample includes special education students who can be taught in the regular classroom setting. Special education students classified by the DOE as requiring collaborative team teaching services or SC classes are not part of the sample but are enrolled in study SSCs and are thus included in the "All HSAPS Enrollees in Study SSCs" column.

^b Students are classified as "overage for eighth grade" if they were 14 or older on September 1 of the eighth-grade school year.

^c Students scoring at proficiency levels 1 and 2 are not considered to be performing at grade level for state math and reading exams. Due to missing test scores, the sum of levels 1 to 4 might not total 100%.

The most striking element of Table 3 is the special education row, which clarifies that SSCs in the MDRC sample admitted only 6.7% special education students as opposed to 15.5% in the overall student pool in the study and 14.0% of all students entering ninth grade in the entire city. From the table, it is clear that the SSCs in the MDRC's treatment sample took in fewer than 50% of the special education students, as a percentage, than the students in the school control group. Given these data, the question must be asked, could the difference in the percentage of special education students account for a significant portion of the 6.8% difference that MDRC found in graduation rates or do the small schools graduate at higher rates even with IEP students? In chapter 4, I discuss the odds of on-time graduation for students in the MDRC group of schools. My study adds to the work of MDRC by examining the population of New Small Schools and their special education enrollment percentages, graduation outcomes, and odds of on-time graduation.

In the MDRC report, the authors explain how special education students were treated in their sample:

The target SSC enrollee sample includes special education students who can be taught in the regular classroom setting. Special education students classified by the DOE as requiring collaborative team teaching services or self-contained classes are not part of the sample but are enrolled in study SSCs and are thus included in the "All HSAPS Enrollees in Study SSCs" column. (Bloom et al., 2010, p. 38; also, see Table 4, footnote *a* above)

In other words, the MDRC sample only included students who were classified for Resource Room or for occupational or physical therapy; it did not include students who were classified as needing collaborative team teaching (two teachers) or an SC classroom setting (mandated smaller classes, usually a 12:1:1 ratio of students, teacher, and paraprofessional). Both groups of students that were not included in the MDRC sample have traditionally lower graduation rates in NYC, and, in many instances, present student behavioral challenges that require more school resources. Consequently,

the MDRC studies were unable to fully explore differences in special education populations between the sample SSCs and the control group schools, so it is unclear how the differences they did find actually contributed to higher graduation rates in the MDRC treatment group SSCs. These omissions raise questions about the efficacy of the MDRC studies and their use by the NYC DOE to justify its policies (Rubinstein, 2012).

Another critique of the MDRC studies came from a math teacher in the city's school system. Gary Rubinstein, a teacher at the specialized test-in Stuyvesant High School, raised several questions that were not clearly answered by the MDRC studies— or by studies that found more positive impacts from the New Small Schools. Rubinstein (2012) noted that, as an isolated statistic, MDRC's finding of a 6.8% improvement for students who were admitted in one of the 105 SSCs "sounds moderately successful," as it meant that 2,700 more students graduated than would have otherwise in that year (2009). Rubinstein went on, however, to note that the study was funded by Gates, a small school supporter, and that one of the report's authors became a high-ranking official of the NYC DOE soon after the report was published. The funders of research do not necessarily disqualify the findings but should at least be noted. Rubinstein also pointed to the differences in incoming student populations as raising questions about the validity of the MDRC study. He stated that it is almost statistically impossible for only 6.7% of special education students to "win" the lottery and go to one of the sample SSCs given that they comprised 15.5% of the lottery pool. He claimed that the reason for the difference in the percentage is that most of the special education students who won the lottery were not able to attend those New Small Schools because they could not offer the accommodations that the students were entitled to, and the NYC DOE, as a matter of policy, deflected them to other schools. Rubinstein (2012) concluded, "This statistic, alone, should invalidate any conclusions

made in the study.” He further noted that entering ninth graders were also “better” in other categories (more level 3s, fewer level 1s), which could also have accounted for the 6.8% increase in the graduation rate (Rubinstein, 2012). Finally, Rubinstein posited that the peer effect of overrepresenting more motivated students in the SSCs could have accounted for the rise in graduation rate as well.

In addition, the initial MDRC report (from 2010) contained data that were not publicized as widely by Bloomberg administration officials, in part because their own data might have actually contradicted the political justification for the DOE’s policy of closing so many large high schools and opening close to 200 small schools. Table 4 comes from the June 2010 MDRC report.

Table 4

Estimated Effects of SSC Enrollment on Graduation: Fourth Year of High School, Cohort 1

Outcome (%)	Target SSC Enrollees	Control Group Counterparts	Estimated Effect
Graduation			
Graduated from high school	68.7	61.9	6.8*
Local diploma granted	24.6	21.9	2.8
Regents diploma granted	39.5	34.6	4.9
Advanced regents diploma granted	4.4	5.5	-1.1
College readiness			
Math A Regents exam score of 75 or above	22.2	22.8	-0.6
English Regents exam score of 75 or above	34.1	28.8	5.3*
Attendance			
Overall attendance rate	80.9	79.0	1.9
Regular attendance rate (90 percent or higher)	42.6	40.1	2.6

Note. MDRC baseline characteristics of target SSC enrollees. From *Transforming the High School Experience: How New York City Small Schools Are Boosting Achievement and Graduate Rate* (p. 53, Table 3.7) by H. Bloom, S. L. Thompson, and R. Unterman, 2010. Retrieved from MDRC website: <http://www.mdrc.org/publication/transforming-high-school-experience>.

* $p = .05$.

The students who did not attend the MDRC SSCs in the sample group ended up with a higher percentage of students scoring a 75 or better on the state Math A Regents exam. Those same students also were more likely to achieve an Advanced Regents Diploma, which required an additional three Regents exams beyond the five required for a Regents Diploma. Both of these results show that students who did not attend SSCs performed better in these areas. These findings raise questions about the use of the MDRC report as definitive proof that the small schools performed better than other schools and point to a more mixed message in the results (Bloom et al., 2010; Rubinstein, 2012).

Rubinstein also went on to question the level of achievement of the New Small Schools, pointing out that very few offered college-ready courses, such as physics, chemistry, or advanced math. He further noted that, by 2012, seven of the 105 schools in the MDRC sample of schools were closed by the same NYC DOE that had opened all of them since 2003. This percentage of school closings was similar to the overall percentage of schools shut down in the city. He concluded his critique of the MDRC report by noting that the 6.8% increase in graduation was an illusory bump that could also have been influenced by not having the distraction of repeater ninth graders in a start-up school. He ended with a policy pronouncement that will be argued about for the foreseeable future by those concerned with school reform: “But these increases are just a result of this dynamic and not from getting a crop of better teachers. In time these schools will likely begin to suffer the same problems that brought down the schools they replaced. This is not a scalable solution and it seems to be doing much more harm than it is good” (Rubinstein, 2012, p. 1).

Many of the critics of NYC’s reforms came together to write chapters for the book *NYC Schools under Bloomberg/Klein: What Parents and Policy Makers should know* (Ravitch et al.,

2009). Professor David Bloomfield of Brooklyn College wrote the chapter on small schools. He outlined the creation and advantages of the small high schools and called into question any comparisons of outcomes with other schools because of advantages that produced the desired results:

Simply put, no fair comparisons are possible between small and large New York City public high schools since at every turn the small schools were advantaged by central policies and their outside benefactors. They were better funded, were permitted capped enrollments, avoided upper grade transfers, and were not expected to educate those with the greatest instructional challenges. Additionally, small schools were accorded a designated development/advocacy office at DOE headquarters directly reporting to the chancellor, special staff recruitment, dedicated high school fairs, and a politically motivated public-relations effort. (Bloomfield, as cited in Ravitch et al., 2009, p. 52)

In Bloomfield's view, the advantages created by the overall nature of the DOE's reforms must be recognized and considered when discussing school outcomes and their performance.

A study by Schwartz et al. (2013) provided causal data on the relationship between graduation rates and school-background characteristics of all small schools in NYC, not just the New Small Schools (Schwartz et al., 2013). This study criticized the MDRC reports for not providing evidence on the broader issue of whether size itself was the critical feature of these schools. Schwartz et al. (2013) clarified that, because the MDRC's sample included neither older small schools nor undersubscribed small schools, it provided little insight into whether the new small schools were better performing because they were small or because were new and oversubscribed. In addition, according to Schwartz et al., the MDRC study did not provide a clear counterfactual argument to its claim of a 6.8% improvement in graduation rates. In particular, some students in the control group might have attended other small schools, including other New Small Schools or older small schools not included in the MDRC sample, not merely large ones, if they were not admitted to one of the SSCs in their study (i.e., their treatment group; Schwartz et al., 2013).

Schwartz et al.'s (2013) study looked at several variables, including distance, and found that "the likelihood of attending a school decreases as the distance to the school increases, perhaps because of higher costs such as those involving transportation." In other words, they concluded that distance strongly predicted attendance at a small school. The authors then used distance-based independent variables to relate small-school attendance and obtain independent-variable estimates of the effects of attending small schools.

But Schwartz et al. (2013) provided an even more important contribution to the literature. They distinguished between the older and newer generations of small schools in NYC. They did not assume that all small schools would have a common effect, and, instead, looked at two groups of small schools, those created before and after 2002, the year of the Bloomberg administration's small-school growth began. The authors noted several differences between the newer and older small schools, especially around their planning and implementation. For instance, the newer small schools were more effective than the older small schools at improving test scores and graduation rates, relative to large schools. This finding begs the larger question of whether the small schools can sustain their performance over time and whether the "newness" of the schools in the MDRC study had an effect; in particular, was the effect due mostly to initial enthusiasm surrounding the school's newness, and can that performance be sustained 5 or 10 years (Schwartz et al., 2013).

It should be noted that, although Schwartz et al.'s (2013) study offered a critique of the MDRC studies, it also built on them by providing a more nuanced contextual framework to understand small-school performance. It is interesting that Schwartz et al.'s findings came from a different empirical strategy, and, despite some limitations, supported the overall MDRC results of higher performance in the New Small Schools. Indeed, Schwartz et al.'s results amplified the

MDRC findings, as their study looked at a larger number of small-school types. However, they cautioned that the positive effects of the New Small Schools cannot be applied to all small schools. Small by itself was not necessarily better: “This is a crucial finding for policy: school size matters but it is not sufficient for affecting outcomes on its own. It also provides a cautionary tale for policymaking in general” (Schwartz et al., 2013, p. 39).

Using evidence from NYC’s small schools, Schwartz et al. (2013) went on to argue that the early policy enthusiasm for small schools was based on correlational studies that related size to outcome. They argued that “prior to 2002 there were no clear causal studies on effects of small high schools” (p. 28). In their study, Schwartz et al. used the “randomization” in the location of schools relative to students (or vice versa) to estimate a causal impact of attending a small school on a variety of outcomes.

Instead, Schwartz et al. (2013) argued for introducing instrumental variables and an instrument analysis into small-school studies, which, when done, might make initially positive outcomes disappear or even become negative. Their argument was that

correlational evidence alone is not enough to support major policy changes. The new small-school reforms, in the end, involved more than size reductions, but the rhetoric emphasized the effect of “‘being small,’ an effect that is not confirmed with econometric methods. (Schwartz et al., 2013, p. 39)

Although Schwartz et al. (2013) claimed that distance to school impacts school choice and admission to those schools, they also implied that it has no impact on student outcomes. In their instrumental variable model, outcomes must be impacted by the instrumented variable, but it is unclear that a long commute has no impact on student performance. It is probable that students who lived far from schools had to wake up earlier and got less sleep, which could have affected performance. In addition, they spent more time traveling to school, were more likely to be late for school, and probably were less likely to be involved in extracurricular activities.

Additionally, although Schwartz et al. (2013) did not discuss this, it should be noted that, in NYC, a student's actual commuting *time* is more important than physical distance to the school. Although the two factors are clearly related, access to a nearby subway line can mean that students who live a relatively long distance from school might actually have a faster commuting time, and vice versa. Furthermore, although the authors claimed to have controlled for SES by using a free-lunch variable, when possible, SES should be seen as far more than just an income threshold.

In sum, Schwartz et al.'s (2013) main contribution to the literature on small-school performance was their use of student- and school-level data to investigate the effects of attending small high schools and their deeper look at older versus newer small schools and multiple cohorts of students. The authors claimed that the instrumental variable method they used obtained unbiased estimates, was sensitive to the definition of size, and evaluated multiple outcomes. Their finding that small school size does not matter, *per se*, is important. But it is interesting that, in Schwartz et al.'s study, only *new* small schools made a difference, not older small schools. This finding implies that size alone is not sufficient to impact outcomes and that something else about these new schools is important. Schwartz et al. pointed to a number of key, intriguing differences: the New Small Schools have substantially more funding, smaller class sizes, and a smaller proportion of special education students and ELL students, all of which affected outcomes.

After 2002, as the number of small schools substantially rose nationally, a few researchers did begin to investigate causal explanations of student outcomes, using different statistical methods and experimental designs. Schneider Wyse, and Keesler (2006) examined the effects of small schools using the Educational Longitudinal Study of 2002 (NCES, 2002). They

found that attending an old or new small high school had little effect on achievement. These authors looked specifically at small-school students' postsecondary expectations and number of colleges applied to and demonstrated somewhat larger effects than the matching estimates. Contrary to MDRC's studies, Schneider et al. did not fully account for the manner of student selection and admission into the small schools.

Barrow et al. (2010) produced another study of location, examining the distance between the student's home and high school to evaluate the effect on performance of attending small high schools in Chicago. They found a positive effect on graduation, but their study included only 22 small high schools and did not distinguish whether the small schools were new or older.

Much of the literature and research regarding NYC schools has been produced in association with the Research Alliance for New York City Schools at New York University, led by James Kemple. The Research Alliance contributed numerous studies on many aspects of NYC schools, especially related to the overall reforms begun under Bloomberg. Much of the organization's research used methods similar to those in studies by the Consortium on Chicago School Research at the University of Chicago's Urban Education Institute. Kemple and his associate researchers have worked closely with the DOE data and have provided an ongoing series of publications related to the outcomes of NYC schools. Kemple himself delivered a major paper at a November 2010 symposium, which was published in a research compilation looking at the overall reforms enacted under Bloomberg and Klein. In the paper, Kemple (2011) focused on student outcomes under the NYC Children First Reforms. While much of the paper analyzed fourth- and eighth-grade test scores, Kemple also described NYC high school graduation rates and noted the presence of the New Small Schools as part of the rise in the city's overall graduation rate from 48% to 60% between 2001 and 2009.

The Research Alliance extended the research on NYC schools with a report that further pointed out the overall improved outcomes in NYC schools (Kemple, 2013). This report covered overall outcomes in NYC schools between 2001 and 2012. In this report, Kemple provided evidence of higher graduation rates for the system as a whole and pointed out the important finding that all subgroups of students had growing graduation rates during this time period, including all racial subgroups, lower income students, and special education students. The organization's report also emphasized the large increase in the absolute number of schools over this time period but did not differentiate outcomes between large schools and New Small Schools. Another major finding from the report was that, although achievement gaps closed in terms of graduation rates, large gaps remained in outcomes between Asian and White and between Black and Latino ethnic groups, as well as a relatively low results for students' "college readiness," especially when compared with the percentage of graduates (Kemple, 2013).

Over the 12 years of the study, Kemple (2013) found steady improvement in many indicators of high school performance and engagement: attendance, credit accumulation, Regents examination scores, staying on-track for graduation, graduation rates, and college-readiness rates (Kemple, 2013). His data demonstrated that overall graduation rates improved moderately faster for Black and Hispanic students eligible for free- or reduced-price lunch, English language learners, and students referred for special education services (Kemple, 2013). Despite these gains, Kemple also delineated the substantial gaps that remained between groups of students and the long-term targets of the public and school leaders (Kemple, 2013).

The Research Alliance findings were delivered with relative fanfare and support from the DOE. The 2013 report was unveiled at Hunter College's Roosevelt House, with the Dean and former New York State Education Commissioner presiding and a NYC Deputy Chancellor

commenting afterward. The delivery of the report and the subsequent comments of the deputy chancellor indicated that the Bloomberg/Klein administration saw the report's results as validating their reforms.

Kemple (2013) addressed some of the criticism and questioning of the overall high school performance outcomes under Bloomberg/Klein by noting that the trends can be viewed two ways: "First, particularly against a historical backdrop of stubbornly low high school performance, these numbers represent undeniable progress" (p. 5). He went on, however, to ask whether higher graduation rates mean that students are actually learning more or simply that schools are becoming more adept at helping students earn course credits and pass tests. Kemple answered his own question by arguing that the demonstrated improvement across a wide range of indicators—from attendance to credit accumulation to graduation rate—meant that high schools were, on average, being better serving their students. Kemple's report did *not*, however, look at the New Small Schools as a group, nor did it delineate the performance of the various subgroups of students in these schools.

Regarding the performance of special education and ELL students, the Research Alliance report described improved results over the study period. The report noted the growth and improvement of outcomes and did not focus on how low the performance outcomes were overall, relative to the general education population. Kemple compared between students who entered high school in 2001 with those who entered in 2007. The report noted that graduation rates more than doubled for ELL students, and, for entering classes from 2001 to 2007, graduation rates nearly tripled for special education students (Kemple, 2013). These increases resulted in somewhat narrower—but still significant—gaps between ELL and non-ELL students and a continuing gap between special education students and general education students. Kemple

(2013) concluded by noting that research is needed to understand the variation in performance inherent within these large categories of students and to develop targeted interventions that help more students succeed.

The Research Alliance's reports have generally presented empirical evidence of improved outcomes under the Bloomberg/Klein administration. Toward the end of the Bloomberg mayoral tenure, as political forces were aligning for a new mayoral election in 2013, Kemple challenged the critics, citing his main finding,

There is a tendency—more than a tendency—an obsession to rid the system of everything “Bloomberg,” without an assessment of the value of the idea/plan/initiative. Let's not fool ourselves: in 2001, the year of Bloomberg's election there were many, many high schools with graduation rates in the 30–40% range using the low skilled Regents Competency Diploma. As an example Taft High School had five, not 5%, but five kids who graduated with a Regents diploma. The closing and the conversion of large high schools to “small schools of choice” has resulted in higher graduation rates and larger percentages of kids moving on to college. (Kemple, 2014, p. 1)

In March 2014, MDRC researchers Bloom and Unterman published “Can Small High Schools of Choice Improve Educational Prospects for Disadvantaged Students?” in the *Journal of Policy Analysis and Management*. This was the first time they had submitted their MDRC research to a peer-reviewed journal. The article was a compilation and summary of all of their research at MDRC. It looked at 12,130 students, 5,020 of whom were assigned by an admissions lottery to a treatment group of 84 “oversubscribed” SSCs (down from 105 in their previous study). The other 7,110 students in the control group went to other schools. Bloom and Unterman analyzed performance indicators and found that the students in the SSCs had a 9.5% higher graduation rate than students who attended other schools. This study also looked at many subgroups of students and found increased performance outcomes for most groups, noting that these outcomes were important because the schools were graduating a “large population of

educationally and economically disadvantaged students of color without increasing annual operating costs.” (Bloom & Unterman, 2014, p. 290)

Studies on small-school reform in NYC that have criticized or questioned the reform have not refuted the claim that overall performance outcomes have risen. What is clear from the studies reviewed here is that they showed evidence of growth in many outcome measures, including overall graduation rates citywide. Researchers who have criticized the reforms have, therefore, focused their work on other aspects of the reforms, such as how the small schools deflected and displaced special needs students, which might have created a domino effect of closures at other large schools (Hemphill et al., 2009). Another critique of the reforms has been to question the value of the diploma, pointing to the use of “credit recovery” and lack of college readiness as indicators that the rise in graduation rates was artificial (Haimson, 2011). These all remain areas of further study.

For the present study, I posited that both “sides” in this literature debate could be correct: that the New Small Schools did help improve student outcomes and that the creation of the New Small Schools did have ancillary effects on some students and on other school communities. Moreover, given this reality many other areas require further research, which I describe in chapter 5.

Special Education Students and New Small Schools in New York City⁸

This study focused on graduation outcomes for several subgroups of students in NYC. However, given the critique that small schools did not admit special education students at similar

⁸ For a more in-depth description of Special Education in New York City, see Appendix D.

levels as other schools did, it is important to specifically examine this history and studies related to special education.

The literature covering special education and school choice makes several main points. First, Jennings (2010) found that the New Small Schools, which could be small district schools or charter schools, for example, are choosing not to offer the full range of special education services for students with special needs. The schools often justify this decision by their small size and lack of resources or their desire to create a “fit” for the community within the chosen school. Jennings also found that schools often have incentives and motivation to limit their higher need student populations to meet their accountability performance expectations, and special education students could hinder meeting these performance goals. As a result, some schools engage in practices that might restrict special education students from applying, including “steering away” and “counseling out” (Jennings, 2010). Further, Jessen (2013) found that much of the literature has not looked at the active role that parents and students play in limiting their own school selections because of their lack of understanding of schools. Given that special education services changed radically over the previous decade, Jessen examined this lack of parental understanding in her work.

To understand the context of special education in the New Small Schools, it is important to look at the timeline of special education policies that were in place in these schools during the time of this study. In 2006 officials from the DOE Office of New Schools reported to the NYC Council on Education that they had told the principals of New Small Schools that they could “opt to delay accepting certain special needs student[s] . . . until their third year of development when it has the full capacity to serve them. . . . We give schools what we call an ‘optional waiting period’” (U.S. Office of Civil Rights, 2009, as cited in Bloomfield, 2012 p. 136). According to

this statement, New Small Schools were given official leeway to accept fewer or no students requiring special education services from their schools during their first 2 years. This meant that all the New Small Schools in existence had operated under this policy for up to 4 years.⁹

In response to this exclusionary policy, Brooklyn College Professor of Educational Leadership, David Bloomfield, filed a complaint on behalf of the Citywide Council on High Schools to the U.S. Office of Civil Rights (OCR) against the DOE. When interviewed for the present study, Bloomfield contended that the “optional waiting period” violated the civil rights of students with disabilities, based on statutes of the Americans with Disabilities Act. In his complaint (2006, as cited in Bloomfield, 2012), Bloomfield wrote,

While we understand that not all schools in a district need to be fully inclusive of all special needs and LEP students, this broad, methodological exclusion. . . appears to be a blatant violation of federal, State, and City anti-discrimination and education law. This is especially true in a situation where the DOE touts the Small Schools as superior to other existing high schools. (p. 127)

Almost 3 full years later, in January 2009, the OCR ruled on this complaint. In one of President George W. Bush administration’s last acts, the OCR concluded that there had been no violations of the rights of students with special needs or English Language Learners in the New Small Schools’ admissions processes because the students were actually being placed in small schools during the time of their investigation. In other words, when the OCR investigated, they found that the DOE had already rectified—or, at least, they said that they had begun to rectify—the situation and had changed the exclusion of special education students. The OCR cited three reasons for their ruling. First, using NYC DOE data, they ruled that special education students

⁹ My own school operated under this 2-year exclusionary policy for start-up schools, or, at least the understanding that the policy would be enforced. As principal, I never asked not to receive special education students. Despite this policy, the Office of Enrollment still sent us several team-teaching and SC students, although many fewer than the former school in our building had traditionally received.

were getting their choice of schools more often than general education students. According the OCR ruling, 84% of disabled students requiring SC or CTT services were matched to one of *their* first three choices, compared with 76% of general education students (OCR, as cited in Bloomfield, 2012). Second, the OCR argued that special education students were being placed in the majority of the New Small Schools. In particular, the OCR said that, for the 2007–2008 school year, 89% of the new, small high schools that opened in 2006 enrolled disabled students requiring SC or CTT; 81% that opened in 2007 did so; and 85% that opened in 2008 took these students. In addition, the OCR said that the data revealed that new small high schools moving into their third year of operation were accepting students requiring SC or CTT services (OCR, as cited in Bloomfield, 2012). The OCR held that, while many of the New Small Schools had been delaying enrollment of students with special needs, the more years that the schools were open, the more likely they were to accept these students. And third, the OCR ruled that small schools that had been open more than 3 years “were accepting a higher percentage of disabled students requiring SC or CTT services than other high schools” (OCR, as cited in Bloomfield, 2012).

In other words, the OCR ruling stated that the DOE and the New Small Schools were already rectifying the exclusion of special needs students by the time the OCR began investigating the 2006 complaint and had continued to do so over the 3-year course of the investigation. The ruling made little reference to the admission of special needs students in the New Small Schools between 2003 and 2006 because, when the complaint had been brought, it had merit, according to the research of Pallas and Jennings (2010). Very little research examined this displacement of special needs students from the New Small Schools between 2002 and 2009, especially its effects on other schools.

One important study that looked at the admission of special needs students was done by Sarah Jessen (2012). In her *Educational Policy* journal study, “Special Education and School Choice: The Complex Effects of Small Schools, School Choice and Public High School Policy in New York City,” Jessen (2013) examined the 2009 OCR ruling using available data. She questioned several of the reasons used to justify the ruling. Jessen (2012) conducted an in-depth analysis of the types of special educational services provided in the city and in the New Small Schools. She examined the citywide admissions-choice process, and the results demonstrated that the OCR findings did not show the whole picture; rather, they indicated that some small schools had fewer students who were considered SC students. For a more complete explanation of the historical context and literature regarding special education students, please see Appendix A.

A Note on the Literature Regarding High School Graduation Rates

A variety of studies have reviewed graduation rates and their calculation. As high schools became more prominent in the national education reform agenda, researchers and educators looked more deeply to try to understand the most significant indicator of a high school’s performance: the rate of students who graduate. This importance is due to the especially strong argument that a high school diploma is the minimal qualification needed to survive in today’s society (Bracey, 2009). Surprisingly, however, education scholars debate how many students actually earn a diploma, and studies have calculated graduation rates differently. Prominent educator and columnist Gerald Bracey wrote extensively on the subject of graduation rates. He examined how rates were calculated in different states. Bracey noticed that, depending on the political agenda of the policy makers, some reports might cite national graduation rates as low as 70%, whereas others might claim rates as high as 83%. States’ perspectives were even more

varied: 36 states reported graduation rates between 80% and 97%, but the Center for Public Education (2006) used a different calculation and found that the real rates in these states ranged from 58% to 86%, thus demonstrating the dramatic differences depending on the formula used.

Independent of how the graduation rate is calculated, policy makers and school leaders at the school and district levels must determine the actual rate, and, where it is low, they must create policies to improve it. The Center for Public Education found that some states calculated graduation rates with relatively weak methods, for example, determining the rate based on the number of graduates who entered 12th grade in the fall. This method did not account for dropouts in ninth, 10th, or 11th grades, and only told part of the story. According to the Center for Public Education (2006), some state methods miscalculated the percentage of graduating students by more than 20 percentage points, purporting to be higher than they actually were.

In 2005 the National Governors Association developed the Graduation Counts Compact. The governors had been spurred by the federal No Child Left Behind Act, which compared graduation rates across state lines to improve the quality of calculating and reporting graduation rates. The new Compact also, for the first time, created a 4-year cohort formula for measuring graduation rates that would be used by all states, including New York. This formula included the total number of students graduating divided by the number of students who had enrolled in that school in ninth grade for the first time 4 years earlier—plus the students who joined this cohort of students and minus the students who left. Although this would seem to be a standard way to calculate a graduation rate, in reality, this method was not previously used in most states.

While states continue to work to improve their accountability systems, statisticians have developed a way of estimating graduation rates that produces an approximate picture of how many students complete high school in 4 years. This approach estimates graduation rates based

on grade-by-grade enrollment counts from the NCES's Common Core of Data to approximate how many ninth graders make it to graduation 4 years later. This holistic approach cannot track individual students but can demonstrate attrition year by year. And it is very important to note that neither the 4-year cohort model nor the 4-year enrollment estimate approach included students who took 5 or 6 years to earn a diploma or students who earned alternate credentials such as the GED or certificates of completion (Center for Public Education, 2006).

Although a high school graduation rate varies based on how it is calculated, many researchers agree that the number of students graduating with a regular high school diploma has remained fairly consistent throughout the past 10 years. According to an annual report published by *Education Week*, the percentage of students who have graduated from high school with a regular diploma has ranged from 65.7% to 68.8% since 1997. Data compiled by the NCES also show a fairly consistent graduation rate since 2001–2002, although the rate is higher because of how it is calculated (Chapman, Laird, & Kewal Ramani, 2010). Between 2001 and 2009, national high school graduation rates varied from 72% to 75%. Overall, as evidenced by all of the different calculations, a significant number of students are still dropping out of school before earning a diploma, particularly among various subgroups (Chapman et al., 2010).

Conclusion

The literature regarding small schools in general and New Small Schools in NYC in particular has a clear dividing line. On one side are the studies that focus on outcomes and provide evidence of improved outcomes brought about by the Bloomberg/Klein reforms. On the other side are the studies that question the many effects of those reforms and raise doubts about gaps in the literature. The literature review in this chapter has noted one clear gap in the extant literature: few studies have focused on outcomes of subgroups of students in the New Small

Schools, including special needs students, free- and reduced-lunch students, and racial groups of students. Much of the current literature has focused on overall outcomes but not the graduation outcomes of student subgroups. This study begins to address that gap. The next chapter presents the data sources and methodology used for this study.

CHAPTER III

DATA AND METHODOLOGY

This chapter discusses the data and methodology used in this study. First, I describe the data set and how it was collected, obtained, and curated. Second, the chapter describes the variables chosen for inclusion in this analysis. Third, the chapter details the logistic regression procedures employed in this study.

This study used an administrative data set of individual student data covering four cohorts of all NYC high school students who entered high school in 2006, 2007, 2008, and 2009 and who were slated to graduate 4 years after entering. The population from this data set was more than 263,000 students. Using these four cohorts of high school students, I examined New Small School graduation outcomes in NYC, focusing on several subgroups of students, such as special education students, ELL students, and free- or reduced-lunch students. The purpose of this study was to investigate whether students who attended the newly created small high schools (New Small Schools) demonstrated higher graduation rates when compared to students who attended other high schools in NYC. Additionally, the study compared the graduation rates of several subgroups in the New Small High Schools with the graduation rates of the same subgroups in other high schools. I used logistic regression to examine the odds of graduation for all students attending the New Small Schools during this time period and the odds for students in various subgroups, controlling for student socioeconomic status and other covariates, both at the individual level and at the school level.

One of the biggest challenges in any educational study is the possible selection of students into the education intervention, or, in this case, those attending a New Small School created between 2002 and 2009. Such selection could bias simple comparisons of outcomes for

those who attended New Small Schools and those who attended other high schools. In this study I addressed selection bias in two ways. First, I used student biographical characteristics, including gender, race, and free- or reduced-lunch status to control for many of the observable differences between students attending the New Small Schools and the other high schools. However, as in other studies and evaluation contexts, the observed student characteristics in this study's graduation outcome data were unlikely to completely eliminate unobserved or unmeasured differences in student characteristics that affected student outcomes, which I could not control (Schwartz et al., 2013).

History of Data Collection

When research for this study began in 2013, Dr. James Kemple, Director of the Research Alliance for New York City Schools (hereinafter Alliance), whose work was cited extensively in chapter 2, offered the support of his research organization. The Alliance has worked to encourage research on NYC schools and, since 2008, Dr. Kemple and the organization have developed a close relationship with the NYC DOE and had obtained access to all public school-related data that helped inform this study. As part of their mission, and to extend the research opportunities for researchers in the field, the Alliance collected data from various DOE systems, which they used to create a publicly available data set for NYC schools that could be used by any researchers interested in NYC schools.

However, as I worked with this data set, it became clear that the data had some limitations relevant to the present study that could not be overcome. Although the data set did consist of the school years in question for this study and had been compiled from various NYC DOE sources, it included only school-level data and did not fully delineate all student subgroups (e.g., ELL status, free- or reduced-lunch status) that this study proposed to examine. When

analyzed, the Alliance data provided general conclusions related to the purpose of this study, and these conclusions were sometimes inconsistent with other published NYC DOE special education percentages in schools and special education graduation outcomes. Because of these limitations, I used this Research Alliance data set only for descriptors of the schools and the citywide reforms discussed in chapter 2; these data helped establish the parameters of the size of the school reform in NYC public schools. However, for performance outcomes at the individual-student level, the data set the data set's limitations made it insufficient for this study's regressions or conclusions regarding students' odds of graduating.

The determination to set aside the initial data set and continue this study by other means required establishing, requesting, and collecting a new data set more appropriate for the purpose of the study. The goal of this process was to look beyond school-level data, to student-level data. To do the type of analysis necessary to answer the research questions posed in this study, it was necessary to formulate a specific data request directly to the data division of the NYC DOE. With assistance from Professor Aaron Pallas at Columbia University, who had extensive experience submitting formal data requests to the NYC DOE, a formal request was submitted for anonymous, student-level performance and biographical data. The NYC DOE Division of School Performance approved this request.

The Data Set

The data employed in this study were drawn entirely from the comprehensive Automate the Schools data file of all students enrolled in NYC schools managed by the DOE. Because the NYC public school system has more than one million students, the multiple data files provided were immense. The multiple data files generated from the Automate the Schools database contained the following characteristics of students:

- Biographical data per student: gender, ELL status, ethnicity, IEP (special education) status, home language, credit level, and free- or reduced-lunch status;
- Regents examination information per student;
- Attendance data per student;
- Credit accumulation data per student; and
- Graduation outcome data per student.

In fact, this NYC DOE data provided a set of attendance and credit information larger than the scope that this study required. However, instead of Cohorts 2002–2009, which had been requested, the DOE data provided full biographical data for only 4 years of student high school cohorts—for students entering high school from 2006 to 2009. I therefore determined to limit the study to the cohort years for which I did have both biographical data and graduation data.

Creating Groups of Students and Schools

Because the data set was delivered in separate files containing the many biographical and other characteristics listed above, it was necessary to first merge the files to create a usable data set containing the information of interest to this study. I merged files that contained biographical information, as well as school and graduation data, and established a data set of the student population that included more than 280,000 students. When I eliminated the specialized (test-in) high schools and the transfer high schools, the final data set included more than 260,000 students.

Establishing the student cohorts was an element of this study that provided some difficulty. To examine on-time, 4-year graduations, I needed to create cohorts of students based on when they entered ninth grade. In the case of this data set, I created a ninth-grade cohort that

consisted of students who first enrolled in ninth grade in 2006.¹⁰ To make this cohort, I examined each student's eighth-grade status in 2005 to determine if he or she entered high school in ninth grade and analyzed the students who were in ninth grade in 2006, 2007, 2008, or 2009. I then reviewed students who were considered eighth graders in one year and then new to the ninth grade the following year to estimate the percentage of "holdover" students from year to year, given the data provided. I was able to create cohorts in this manner that closely tracked the DOE's published data. Despite my estimates of the holdover students, the lack of an exact number of holdover ninth-grade students in 2006 is a limitation of the data set. After determining the cohort year that the students entered high school, I took the merged biographical data file and defined and assigned the expected graduation cohort year for each student by adding 3 school years to the ninth-grade start year.

To create the group of students of interest for this study, I first narrowed the data set to just the students who would have started ninth grade in 2006, 2007, 2008, and 2009 and for whom I had biographical information. I then determined the list of schools I would consider "small." For most of the NYC DOE New Century small schools that received start-up funding from the Gates, Carnegie, and Open Society foundations, the upper limit was considered 500 students, and most new schools had a target of 432 students, or 108 per grade. In this study I used 500 students as the limit for new schools that consisted of Grades 9–12, and, for new

¹⁰ The NYC DOE assigns a cohort label (letter of the alphabet) to all students entering ninth grade. For example, students entering high school in 2006 were assigned to Cohort H, those entering 2007 were assigned to Cohort I and so on. In the case of our supplied data set, the NYC DOE did not provide a cohort label, thus we had to determine student level cohort for ourselves, given our data set.

schools with a 6–12 secondary configuration, I set a maximum enrollment limit of 700, or 100 students per grade.

After creating the cohort of ninth-grade students and establishing school-size limits, I added several filters to create a group of students of interest from the study population. I began with a list all NYC high schools that had graduated a 4-year cohort on or before 2013. I then filtered the list of my schools of interest, which were “new,” that is, which opened between 2002 and 2009. I began with the small high schools that had been studied in the MDRC treatment group—105 oversubscribed New Small Schools—as a base list. The schools also needed to be “limited unscreened” in terms of eligibility, as all the New Small Schools created under Klein and Bloomberg were expected to be. When these filters were applied, I had a list of 172 schools, including all of the schools of the MDRC study, because those schools also fit these criteria, as explained below. In sum, the inclusion criteria for this study were as follows. Each school had to:

- be new (opened between 2002 and 2009);
- be small (fewer than 500 students for 9–12 and fewer than 700 students for 6–12);
- have limited-unscreened eligibility; and
- have graduated a 4-year cohort on or before June 2013.

To determine which of the New Small Schools were created between 2002 and 2009, I reviewed the publication that listed all public high schools in NYC, the NYC DOE *High School Directory*, for 2009, 2010, 2011, and 2012. I culled the directory for New Small Schools, as determined by enrollment numbers, expected year of first graduation, and first appearance in the directory. Creating this list of New Small Schools was complicated by the fact that several of the New Small Schools that opened during this time period were not considered successful and were later closed by the DOE, just as many of the large schools had been closed. In an effort to obtain

a complete list of New Small Schools during this time period, I also included any unsuccessful small schools that were closed during this time period but that did graduate at least one or two classes of students. Please see Appendix B for a complete list of schools that I considered in the group of interest: New Small Schools.

New York City high schools also consider selection, or eligibility, criteria when placing students in schools. I also considered the eligibility category of admissions for this study's list of New Small Schools and determined that all of the schools in the group of interest would have limited-unscreened eligibility. This approach ensured that all of the schools of interest would have the same eligibility criteria for students.

New York City high schools admit students through various methods, which amount to entrance requirements for incoming ninth graders. The categories of these entrance requirements, called "selection criteria" by the DOE, are referred to be the following names: specialized, audition, screened, screened for language, educational option, charter High Schools, Limited Unscreened, and Zoned. In effect these selection criteria tier the public high schools in NYC, and schools that have a more stringent selection criteria consistently demonstrate higher levels of performance outcomes, such as graduation rates. For a complete explanation of these eligibility criteria for the high schools in NYC, please see Appendix C.

After selecting 172 New Small Schools for the sample, I then created a comparison group of schools for this study. The comparison group of schools consisted of almost all other high schools in NYC, although, given NYC's tiered school system, some schools in the comparison group might have very different eligibility and entrance requirements. In this dissertation, I refer to this comparison group as "Other High Schools." These schools included several eligibility categories: zoned, limited unscreened, Educational Option Programs (i.e., Ed.Opt.), screened,

and auditioned. To avoid skewing the findings by comparing schools that were too dissimilar, I removed four groups of schools from the comparison group to compare more similar schools, although many still do have some eligibility differences. Specifically, the comparison group of Other High Schools excluded the following schools:

- eight specialized test-in schools (Stuyvesant, Brooklyn Tech, etc.);
- alternative transfer high schools and other alternative high schools, such as schools for pregnant students;
- schools designed to serve only special education students (District 75 schools); and
- charter schools.

Specialized test-in schools were excluded because they all had 98–100% graduation rates, and this would have skewed the data in the comparison group. Transfer schools were excluded because they are not 9–12 high schools. District 75 schools were excluded because they serve students who need a more restricted special education environment. Charter high schools were excluded because they were not included in the DOE’s district data. After excluding these schools, this study’s comparison group of Other High Schools contained 209 schools. It is very important to note that the students in this study’s school group of interest, the New Small Schools, were compared to a group of students in the Other High Schools, which, historically, have had higher performance outcomes because they often employ more restrictive admissions criteria and admit students with higher performing academic records.

Measures

Graduation from high school is the primary outcome examined in this study. In New York State during this period of time students graduated from high school with three types of diplomas: Regents, local, and IEP. To graduate, all students had to meet certain credit

requirements and pass NY State Regents exams. Regents diplomas were granted to students who met their credits and scored 65 or higher on the five required Regents exams. Local diplomas were granted to students who met credit requirements and scored at least a 55 on a certain number of Regents exams. IEP diplomas were granted to students who met the requirements on their IEPs, independent of Regents exam results. During the period of this study, in an effort to raise graduation standards, the DOE undertook a process of phasing out the Local Diploma and set the expectation that all students needed to meet the standard of at least a 65 on the five required Regents exams. For the purposes of this study, on-time graduation included all students who graduated high school with either a local or a Regents diploma, without distinction. I combined graduation types into one variable in the study because the changing nature of the New York State graduation criteria during the study period meant that the New Small Schools had to meet the same criteria for graduation as all other high schools. In addition, local and Regents diplomas were counted officially in city and state graduation rates.

Dependent Variable

The outcome variable for this study was on-time graduation. First, I assigned a ninth-grade cohort year to all students in the data set. As discussed above, the idea was that this cohort year would be equal to the year in which the student was first enrolled in ninth grade. I also captured students who transferred into a school after ninth grade. Then, I generated a variable called gradclass, which was the ninth-grade cohort year plus 3 years (i.e., graduating on time in 4 years). I then created an on-time-graduation dummy variable using the previous graduation data for each year. This provided all of the students who graduated on time for all cohorts. For example, if a student entered high school in 2006, he or she would be expected to graduate in

2010. Students who graduated on time were given a value of 1, and students who did not graduate on time were given a value of 0.

Covariates

I also included in the analytic models several independent variables, or covariates, which included race, gender, IEP status, ELL status, and free- or reduced-lunch status. I chose these covariates based on the study's focus on graduation outcomes and odds of on-time graduation for various subgroups of students that were identified through a review of the literature.

In this study, the independent variables were as follows.

- ELL status was a dummy variable indicating whether the student was an English language learner (coded 1) or not (coded 0).
- Free or reduced lunch was a dummy variable indicating whether the student received free or reduced-priced lunch (coded 1) or not (coded 0). Free- or reduced-lunch status is often used as a proxy for socioeconomic status of the student, and I used this proxy in this study as well.
- IEP status was a dummy variable indicating whether the student was a special needs student with an individual education plan (IEP; coded 1) or not (coded 0).
- Female was a dummy variable indicating whether the student was female (coded 1) or not (coded 0).
- Race was categorical variable that included White students (reference category, coded 0), Asian students (coded 1), Black students (coded 2), and Latino students (coded 3).

School-Density Variables

To control for the demographics of different student populations across schools, this study included variables that reflected the density of certain school-level characteristics. These

characteristics included the respective school densities of ELL students, free- and reduced-lunch students, IEP students, Asian students, total Black and Latino students, and female students.

To create these variables, for each school year, I divided the number of students with a certain characteristic, for example, those who received free or reduced lunch, ELL students, IEP students, and so forth, by the total number of students enrolled in the school to determine a percentage. By creating this variable, I controlled for individual or multiple characteristics at the school level, relative to student outcomes. Creating the variable to describe density is important, especially to control for school effects, because it is traditionally done in research on school outcomes to control for the influence of school effects and school culture on graduation rates (Ballou, Sanders, & Wright, 2004; Johnson, Crosnoe, & Elder, 2001; Poverty and Race Research Action Council, 2009).

I established school-level characteristics for the school where the student attended in ninth grade. As discussed, the density of racial/ethnic breakdown I set as the proportion of Black and Latino students in the school (American Psychological Association, 2016) and the proportion of Asian students in the school. I established the gender breakdown as the proportion of female students. The IEP density was the proportion of students in the school with an IEP. The ELL density was the proportion of students in school who were designated as ELL students. Finally, free- or reduced-lunch density was the proportion of students in school who received free or reduced-priced lunch.

Analytic Strategy: Comparing Schools and Graduation Rates

This study used separate logistic regression models with several independent variables. The models measured changes in the probability of on-time graduation for New Small Schools based on demographic factors, IEP status, ELL status, and free- or reduced-lunch status. These

variables were used because they were found to influence graduation rates in related research (Poverty and Race Research Action Council, 2009). Because gender has often been studied in related research and because preliminary bivariate analyses of the present data showed gender to be a significant predictor of New Small School on-time graduation, I ran analyses of the entire population and separate analyses of female students. The findings from the regression models were analyzed. In looking at graduation outcomes for New Small Schools and Other High Schools, I considered students to either have graduated on time or not. Logistic regression models were used here because of the dichotomous nature of the dependent variables, as the outcome variables were binary.

Several logistic regression models were conducted on the New Small Schools, and several steps were necessary to examine the odds of on-time graduation for IEP students and other student subgroups. First, I compared descriptive results from the data to determine the demographic density, or composition, of these subgroups within the schools (results can be found in Table 5 in Chapter 4). Then, I determined the graduation rates for New Small Schools and compared them with the rates for Other High Schools (see Table 6). Third, I proceeded to determine the graduation rates and odds of on-time graduation for the various student subgroups in this study, including IEP, ELL, free- or reduced-lunch, and so forth.

We then conducted three separate logistic regression analyses. Looking solely at the New Small Schools, I examined on-time graduation for the student subgroups (Table 7). Then, I compared New Small Schools to Other High Schools (Table 8). These analyses contained three models. The first model included all schools as a reference group. The second model examined New Small Schools only. The third model analyzed Other High Schools only (Table 9).

Because this study focused much of its attention on the research done by the MDRC, I also ran one additional analysis, comparing on-time graduation odds of students in the larger group of 172 New Small Schools with the on-time graduation odds of students in the MDRC's sample of 105 schools that they called SSCs. These results are found in Table 10 in Chapter 4. All of the technical formulas for this study's analyses can be found in Appendix D.

To look at the odds of on-time graduation, the first regression model was run on New Small Schools only, with no controls. Then, I added individual-level controls. Finally, I added school-level control variables. I repeated this process for every group of students: White, Asian, Black, Latino, female, male, IEP, ELL, and free- and reduced-lunch students. This resulted in 27 separate regressions to examine the odds of graduating on time for New Small Schools.

The next chapter presents the outcomes of the analyses.

CHAPTER IV

RESULTS

Chapters 1 and 2 discussed the history of the development of small high schools, particularly in NYC, and examined factors that previous studies identified as important to student outcomes. Chapter 3 detailed the methodology used to examine the data for student outcomes at NYC high schools. This chapter presents the findings regarding those student outcomes. The analyses focused on graduation outcomes for students who entered NYC high schools between 2006 and 2009, using aggregate individual-level student data provided by the DOE.

Summary of Research Methodology

As discussed in detail in chapter 3, this study analyzed data covering the population of NYC high school students in New Small Schools and Other High Schools. First, I analyzed the data for descriptive results, including percentages of students of various subgroups in both groups of schools. Then, I analyzed the data for graduation rates of all schools, New Small Schools, and Other High Schools. Finally, I conducted logistical regressions to determine the odds of graduating on time from a New Small School compared to Other High Schools.

Student Outcomes

Given the huge scope of NYC's small-school reform, as outlined in chapter 2, and the large student-level data set obtained from the NYC DOE, I was able to look more deeply at the breakdown of student outcomes in NYC's New Small Schools and Other High Schools by various subgroups. Table 5 provides the percentages of student subgroups in the New Small Schools and Other High Schools across the four cohorts of this study.

Table 5

Percentage (%) and Total n of Students by Subgroup Enrolled in New Small High Schools and Other High Schools in New York City (Entering Classes of 2006–2009)

	Cohort 2006		Cohort 2007		Cohort 2008		Cohort 2009	
	Other HS	New Small	Other HS	New Small	Other HS	New Small	Other HS	New Small
White								
<i>n</i>	8,670	771	7,830	652	7,404	706	7,573	771
%	15.79	6.71	14.59	5.06	14.56	5.05	14.61	5.47
Asian								
<i>n</i>	7,472	306	7,712	378	7,771	474	8,509	560
%	13.61	2.66	14.37	2.93	15.28	3.39	16.41	3.97
Black								
<i>n</i>	17,784	5,175	16,975	5,961	15,627	6,464	15,435	6,196
%	32.40	45.05	31.64	46.33	30.73	46.29	29.78	43.99
Latino								
<i>n</i>	20,952	5,234	21,121	5,874	20,043	6,320	20,308	6,557
%	38.17	45.56	39.37	45.65	39.41	45.25	39.18	46.55
Female								
<i>n</i>	27,084	5,865	26,355	6,466	24,989	6,933	25,697	6,893
%	49.35	51.06	49.13	50.26	49.14	49.64	49.58	48.94
Free/reduced lunch								
<i>n</i>	43,117	9,872	41,816	11,196	37,414	11,876	46,435	13,217
%	78.57	85.94	77.95	87.02	73.58	85.04	89.59	93.84
ELL								
<i>n</i>	5,253	879	6,363	1,408	5,638	1,294	6,373	1,492
%	9.57	7.65	11.86	10.94	11.08	9.26	12.29	10.59
IEP								
<i>n</i>	7,638	1,659	7,888	1,958	7,015	2,449	7,238	2,529
%	13.91	14.44	14.70	15.21	13.79	17.53	13.96	17.95
Total	54,890	11,487	53,645	12,866	50,848	13,965	51,830	14,084

Several areas from Table 5 are notable. New Small Schools enrolled markedly higher percentages of Black students over this period: approximately 45% in the New Small Schools and 32% in the Other High Schools. New Small schools also enrolled higher percentages of Latino students throughout the time period studied, about 46% as compared to approximately 39% of entering students in Other High Schools. Other High Schools enrolled higher percentages of Asian students than the New Small Schools, sometimes more than 5 times as many, as a percentage. Other High Schools enrolled approximately 3 times the percentage of White students enrolled at New Small Schools.

In addition, it is clear that the New Small Schools enrolled a higher percentage of free- and reduced-lunch students than did Other High Schools for the entering ninth-grade cohort of 2006 (85.9% to 78.5%, respectively) and for the remaining three cohorts studied here. The 2009 entering ninth-grade cohort has a significantly higher free-lunch percentage for both New Small Schools and Other High Schools, which can be explained by the recalibration of free- and reduced-lunch criteria that took place after the Obama administration's stimulus monies were approved. The percentages increased because the bar was lowered to qualify for free or reduced lunch.

Regarding the percentage of IEP students at the schools, even by 2006, the 172 New Small Schools in this study actually enrolled a higher percentage of IEP students than did Other High Schools (14.4% to 13.9%, respectively), and this difference grew over the next 3 years. By the entering class of 2009, 17.9% of New Small School students had an IEP, while the Other Schools still had an average IEP student population of 13.9%.

It is interesting that, in contrast to IEP students, ELL students comprised a lower percentage of students in the New Small Schools than in the Other High Schools. Across the 4

years of data examined in this study, New Small Schools had 2 or 3% fewer ELL students than did Other High Schools. It should be remembered that the Other High Schools group included the international high schools, which screen specifically to enroll students who have recently arrived in NYC. Therefore, although New Small Schools were serving higher percentages of Black, Latino, IEP and free-lunch students, they were serving a lower percentage of ELL students, relative to Other High Schools.

Graduation Outcomes

Having established some demographic distinctions between the New Small Schools and Other High Schools, I now present a descriptive overview of the primary performance outcome: on-time 4-year graduation rates, both overall and for student subgroups.

Table 6 demonstrates the overall graduation rates delineated by demographic subgroup, without any controls. These graduation rates would be calculated 4 years after the cohorts entered high school; in other words, students were expected to graduate in 2010, 2011, 2012, and 2013, respectively. For the purposes of this study, I refer to the cohorts by the year when the students entered high school, that is, 2006, 2007, 2008, and 2009.

The results in Table 6 reveal that New Small Schools had overall on-time graduation rates that ranged between 58.3% in Cohort 2006 to 62.7% in Cohort 2009. These on-time graduation rates grew during the 4 years of the study. These graduation rates are independent of student proficiency entering high school.

The on-time graduation rate for Other High Schools also demonstrated growth, going from 59.36% in Cohort 2006 to 66.34% in Cohort 2009. Although the Other High Schools showed consistently slightly higher graduation rates than the New Small schools, it should be noted again that the Other High Schools group includes many schools that had eligibility

entrance requirements that included Educational Option programs (i.e., Ed.Opt.), academically screened, and auditioned.

Table 6

On-Time Graduation Rates Entering Cohorts 2006–2009 (%) and Total Number of Graduates

	Cohort 2006		Cohort 2007		Cohort 2008		Cohort 2009	
	Other HS	New Small	Other HS	New Small	Other HS	New Small	Other HS	New Small
Overall								
<i>n</i>	32,581	6,694	32,094	7,306	33,500	8,652	34,354	8,831
%	59.4	58.3	59.8	56.8	65.9	62.0	66.3	62.7
White								
<i>n</i>	6,407	542	5,803	455	5,818	537	6,033	584
%	73.9	70.3	74.1	69.8	78.6	76.1	79.7	75.7
Asian								
<i>n</i>	5,745	237	6,033	299	6,419	386	6,833	443
%	76.9	77.5	78.2	79.1	82.6	81.4	80.3	79.1
Black								
<i>n</i>	9,482	2,986	9,103	3,301	952	3,969	9,375	3,882
%	53.3	57.7	53.6	55.5	60.9	61.4	60.7	62.7
Latino								
<i>n</i>	10,947	2,929	11,155	3,245	11,739	3,670	12,143	3,922
%	52.2	56.0	52.8	55.2	58.6	59.5	59.8	59.8
Male								
<i>n</i>	14,648	3,061	14,630	3,387	15,677	4,147	15,889	4,270
%	52.7	54.5	53.6	52.9	60.6	59.0	60.8	59.4
Female								
<i>n</i>	17,933	3,633	17,464	3,919	17,823	4,505	18,495	4,561
%	66.2	61.9	66.3	60.6	71.3	65.0	72.0	66.2
Free/reduced lunch								
<i>n</i>	24,480	5,694	23,945	6,275	23,566	7,223	30,004	8,172
%	56.8	57.7	57.3	56.0	63.0	60.8	64.6	61.8
ELL								
<i>n</i>	2,672	447	2,866	652	2,791	650	3,060	758
%	50.9	50.9	45.0	46.3	49.5	50.2	48.0	50.8
IEP								
<i>n</i>	2,061	670	2,274	730	2,692	1,078	2,900	1,131
%	27.0	40.4	28.8	37.3	38.4	44.0	40.1	44.7

White students in the study population graduated at slightly higher percentages in Other Schools than in the New Small Schools, with approximately a 4% difference, although the percentage of White students in the New Small Schools was much lower.

Asian students had approximately the same graduation rates in Other High Schools and in the New Small Schools, with higher graduation rates in Cohorts 2008 and 2009 and slightly lower graduation rates than Asian students in the New Small Schools in Cohorts 2006 and 2007.

In addition to being much more highly represented in the New Small Schools (approximately 45% to 30%), Black students had higher graduation rates in the New Small Schools across the 4 years in this study. The cohort with the most difference in graduation rates was Cohort 2006, when Black students at New Small Schools had a 57.7% graduation rate, compared to 53.3% in Other High Schools

Except for Cohort 2009, when the New Small Schools and Other High Schools had identical 59.8% graduation rates, Latino students had slightly higher graduation rates in the New Small Schools over the other 3 years of the study. Again, Cohort 2006 showed the most pronounced difference, with 56.0% of Latino students' graduating on time in the New Small Schools, contrasting with 52.2% in Other High Schools.

Male students graduated at relatively similar rates in New Small Schools and Other High Schools. Cohort 2006 had 54.5% of male students graduating in New Small Schools versus 52.7% in Other High Schools. By Cohort 2009, 60.8% of male students graduated on time at Other High Schools, and 59.4% of male students at New Small Schools did so.

Female students had higher graduation rates than their male counterparts in the New Small Schools, approximately 7% higher across all 4 years of the study. But a clear difference can also be seen in female graduation rates at Other High Schools, which were 6 to 8 percentage

points higher than the rates for females at New Small Schools across all 4 study years. In both the New Small Schools and the Other High Schools, girls had higher graduation rates, and Other High Schools graduated girls at noticeably high rates than New Small Schools.

Free- and reduced-lunch students graduated on time at higher rates in the Other High Schools, except for Cohort 2006, when the New Small Schools had a 57.67% on-time graduation rate, compared to 56.77% for Other High Schools. It should be remembered that, overall, the New Small Schools enrolled a higher percentage of free- and reduced-lunch students across the 4 years of this study, which makes these schools' approximately 6-percentage-point-higher on-time graduation rates even more notable.

ELL students graduated on time at very similar rates in the New Small Schools and Other High Schools. Between 46% and 50% of ELL students graduated during the 4 years of this study, and the cohort with the most pronounced difference was 2009, when 50.8% of ELL students in New Small Schools graduated on time, as opposed to 48.0% of ELL students in Other High Schools. Cohort 2007 experienced a dip in graduation of ELL students for students at both types of schools, which merits further investigation in another study.

For IEP students, their on-time graduation rates began significantly higher in the New Small Schools than in the Other High Schools (40.4% to 27.0%, respectively). Over the 4 years of the study, the graduation rates of IEP students were higher at the New Small Schools, but the Other High Schools substantially closed the gap over the years of the study. By Cohort 2008, 44.0% of IEP students at New Small Schools graduated on time, whereas 38.4 of IEP students at Other High Schools graduated on time. In Cohort 2009 the difference diminished to 4.6%, as 44.7% of IEP students in New Small Schools graduated, as opposed to 40.1% in Other High Schools.

The Odds of Graduating On Time for Student Subgroups

To estimate the odds of graduating on time by school type, I employed logistic regression models. Before I compared outcomes, I first looked at the effects of the subgroups' on-time versus not-on-time graduation in New Small Schools only. Each number in Table 7 represents the coefficient for the variable New Small School from separate regressions. The regression coefficient tells the observer the average effect of going to a New Small School on the odds of graduating on time versus not graduating on time. This is not a comparison with Other High Schools, merely a probability of on-time versus not-on-time graduation.

Table 7 illustrates the results of the three models of logistic regression analyses for on-time or not-on-time graduation in New Small Schools versus those not attending a New Small School. The first column represents the null model, without any control variables. The second column controls for individual-level variables. The third column controls for school-level control variables. To help the reader understand the results for the odds of on-time graduation more easily, I exponentiated the equations to produce odds ratios.

Table 7

Logistic Regression of On-Time Versus Not-On-Time Graduation at New Small Schools

	Null model	Individual level	School level
White	0.826***	0.903***	1.195***
Asian	0.975	1.057	1.551***
Black	1.089***	1.102***	1.165***
Latino	1.071***	1.094***	1.227***
Women	0.779***	0.971*	1.121***
Men	0.976*	1.21***	1.319***
IEP	1.388***	1.585***	1.531***
Lunch	0.942***	1.104***	1.22***
ELL	1.055	1.324***	1.409***

* $p < 0.1$. ** $p < .05$. *** $p < .001$.

Looking at the subgroups of students, an examination of Table 7 reveals that the odds of on-time graduation for the New Small School coefficient was 1.089 for Black students in the null model with no controls. This means that a Black student's odds of graduating on time, given that he or she went to a New Small School, were 108.9%. In other words, the odds of graduating on time versus not graduating on time are about 8.9% higher for Black students enrolled in New Small Schools.

When I controlled for individual-level characteristics, the coefficient for graduating on time for a Black student was 1.102. This finding means that, with these controls, the odds of graduating on time versus not on time were about 10.2% higher for Black students in New Small Schools. These odds for Black students' on-time graduation were calculated using the net of individual-level characteristics, controlling for race, gender, ELL status, and free-lunch status.

Looking at another important subgroup, ELL status, the coefficient for on-time versus not-on-time graduation at New Small School was 1.055 with no controls, but this finding was not statistically significant. When I controlled for individual-level characteristics, the coefficient for ELL students' on-time graduation was 1.324, meaning that the odds of graduating on time versus not graduating on time were about 32.4% higher for ELL students in the New Small Schools.

In the null model, with no controls, the odds of an IEP student graduating were 1.388, which means that their odds of graduating on time were close to 39% higher than not graduating on time if they attended a New Small School. The IEP finding became even more significant when controlling for individual-level variables. With these controls, the odds ratio for the New Small School coefficient for IEP students was 1.585. This finding means that IEP students had the highest odds—almost 59% higher—of graduating on time versus not graduating on time, if they attended a New Small School. The odds for IEP students' on-time graduation were

calculated using the net of individual-level characteristics, controlling for race, gender, ELL status, and free-lunch status.

Controlling for school-level factors, IEP students had the second highest odds (after Asian students) of graduating on time versus not on time, at 53%, if they attended a New Small School. We should also note that the IEP students were the only subgroup whose odds diminished when controlling for school-level density characteristics. The IEP student coefficient was 1.531, meaning that IEP students at New Small schools had a 53.1% chance of graduating on time versus not graduating on time when controlling for school-level characteristics. All other subgroups' coefficients increased when controlling for school-level density, except for IEP students. The odds of on-time graduation for additional subgroups of New Small School students can be seen in Table 7 and can be read in the same way as above.

New Small Schools compared to Other High Schools

This section directly compares the odds of on-time graduation for all schools, New Small Schools, and Other High Schools. The logistic regressions represented in Table 8 provide odds ratios for the three models: all schools, which refers to students in New Small Schools and Other Schools, excluding students at specialized, transfer, and District 75 high schools, which were excluded from this study (see chapter 3 for details).

The results in Table 7 provide outcomes for on-time and not-on-time graduation of subgroups of students at New Small Schools. Table 8 compares the odds ratios of on-time graduation for groups of students in all schools, New Small Schools, and Other Schools, relative to the reference group of students, while controlling for individual- and school-level characteristics. This regression analysis used White students as the reference group, so the odds of graduating on time were relative to a coefficient of 1.0 for a White student. Because Asian,

Black, ELL, and other demographic variables were dichotomous, students coded with a value of 1 had that characteristic (e.g., Asian). Students coded 0 did not have the characteristic (e.g., not Asian).

Table 8

Logistic Regression Models for On-Time Graduation in All Schools, New Small Schools, Other High Schools Controlling for Individual-Level and School-Level Characteristics

	All schools		New Small Schools		Other high schools	
	Odds ratio	SE	Odds ratio	SE	Odds ratio	SE
Individual-level characteristics						
Asian	1.344***	0.028	1.578***	0.121	1.319***	0.029
Black	0.579***	0.01	0.683***	0.033	0.565***	0.011
Latino	0.631***	0.011	0.725***	0.035	0.616***	0.011
Female	1.392***	0.013	1.246***	0.024	1.435***	0.015
ELL	0.591***	0.009	0.678***	0.022	0.569***	0.009
Free/reduced lunch	0.810***	0.011	0.804***	0.025	0.818***	0.012
IEP	0.365***	0.005	0.450***	0.011	0.338***	0.005
School-level demographics						
% ELL	0.199***	0.008	0.426***	0.044	0.188***	0.008
% Free lunch	1.193***	0.033	1.967***	0.169	1.111***	0.033
% IEP	0.011***	0.001	0.022***	0.004	0.01***	0.001
% Female	1.798***	0.069	0.851**	0.058	2.528***	0.117
% Black/Latino	0.351***	0.014	0.125***	0.020	0.360***	0.015
% Asian	0.558***	0.034	0.309***	0.090	0.665***	0.043
Cohort†						
2007	1.121***	0.014	1.052*	0.028	1.131***	0.015
2008	1.496***	0.019	1.453***	0.040	1.481***	0.021
2009	1.579***	0.02	1.545***	0.044	1.542***	0.022
Constant	7.529***	0.301	16.69***	2.598	6.469***	0.285
Observations	263,585		52,399		211,186	

Note. White, Male, % White, and 2006 are all reference categories.

*** $p < .01$. ** $p < .05$. * $p < .10$.

Looking at Asian students, then, the odds of graduating on time from New Small Schools were 1.578, roughly 58% higher than for White students in those schools. However, at Other High Schools, Asian students' odds of on-time graduation were only 32% higher than White students. Thus, New Small Schools were increasing the odds of on-time graduation for Asian students at a higher rate.

For Black students, when controlling for individual- and school-level characteristics, the odds of graduating on-time at a New Small School were 0.683, relative to the reference group. At Other High Schools, the odds of graduating on time for Black students were 0.565, relative to the reference group. This means that, relative to White students, Black students' odds of on-time graduation were 11.8% higher over the 4 study years at New Small Schools than at Other High Schools.

For Latino students, when controlling for individual- and school-level characteristics, the odds of graduating on-time at a New Small School were 0.725, relative to the reference group. At Other High Schools, the odds of graduating on time for a Latino student were 0.616, relative to the reference group. This means that, relative to White students, Latino students' odds of on-time graduation were 10.9% higher over the 4 years than at New Small Schools than at Other High Schools. Also, Latinos had higher odds of graduating on time than Black students, relative to the reference group, at both New Small Schools and Other High Schools.

For female students, when controlling for individual- and school-level characteristics, the odds of graduating on-time at a New Small School were 1.246, relative to the reference group, which was male on time graduation. At Other High Schools, the odds of graduating on time for a female student were 1.435, relative to the reference group. This means that the odds of on-time graduation, relative to male students, were 18.9% higher over the 4 study years for female

students at Other High Schools than at the New Small Schools. Additionally, female students had much higher odds of graduating on time at both New Small Schools (24.6%) and Other High Schools (43.5%) than the reference group, White students.

For ELL students, when controlling for individual- and school-level characteristics, the odds of graduating on-time at a New Small School were 0.678, relative to the reference group. At Other High Schools the odds of graduating on time for an ELL student were 0.569, relative to the reference group. This means that, relative to White students, ELL students' odds of on-time graduation were 10.9% higher over the 4 study years at New Small Schools than at Other High Schools. In addition, ELL students had more than 20% higher odds of graduating on time at both New Small Schools and Other High Schools than IEP students, relative to the reference group.

For students receiving free and reduced-price lunch, when controlling for individual- and school-level characteristics, the odds of graduating on-time at a New Small School were 0.804, relative to the reference group. At Other High Schools the odds of graduating on time for a free- or reduced-lunch student were 0.818, relative to the reference group. This means that, relative to White students, the odds of graduating on time for free- and reduced-lunch students were 1.4% lower over the 4 study years at the New Small Schools than at the Other High Schools. In other words, students receiving free or reduced-price lunch had very similar odds of graduating in both groups of schools, relative to the reference group.

For IEP students, when controlling for individual- and school-level characteristics, the odds of graduating on-time at a New Small School were 0.450, relative to the reference group. At Other High Schools the odds of graduating on time for an IEP student were 0.338, relative to the reference group. This means that, relative to White students, IEP students' odds of on-time

graduation were 11.2% higher over the 4 study years than for IEP students at New Small Schools than at Other High Schools.

School-level effects did impact students' graduation outcomes, and I included the school-level odds results in Tables 7, 8, and 9 in this chapter as an indication of level of impact. However, the primary findings are focused at the individual-student level, and I ensured that the analyses controlled for schools' demographic makeup. One other interesting issue that requires further study became apparent in the school-level impact odds. When I examined the impacts of school-wide factors, it was clear that the percentage of females in a school's population impacted the odds of on-time graduation much more at Other High Schools than at New Small Schools.

New Small Schools in Comparison With MDRC Schools

As noted in chapter 2, the MDRC study examined a group of 105 New Small Schools that were oversubscribed in the admissions process (Bloom et al., 2010). MDRC researchers called their group "Schools of Choice" and used a sample of more than 12,000 students. The studies followed the students through the admissions process and tracked their performance once they were admitted to a school. These MDRC studies were used repeatedly to justify policies of the Bloomberg/Klein administration. To more deeply analyze the MDRC findings relative to all New Small Schools in this study, I compared the odds of on-time graduation for students in the MDRC group of schools ($n = 105$) with the students in the present study's New Small Schools ($n = 172$) to determine if the groups showed notable differences or if, perhaps, any such differences were due to the SSCs being "oversubscribed." These comparisons were limited, however, because the New Small Schools were a much larger group and because all 105 of the SSCs were part of the New Small Schools group in this study.

Table 9 presents the odds of graduating on time for subgroups of students in the MDRC SSCs and the New Small Schools, controlling for individual- and school-level density factors. Subgroups included the percentage of Black and Latino students, free- and reduced-lunch students, IEP students, Black students, female students, and Asian students.

Table 9

Logistic Regression for MDRC and Small Schools for cohorts 2006–2009, Presented in Odds Ratios, Controlling for Individual- and School-Level Factors

	MDRC Schools (<i>n</i> = 105)	New Small Schools (<i>n</i> = 172)
Individual student demographics		
Race		
Asian	1.628*** (0.131)	1.578*** (0.121)
Black	0.692*** (0.035)	0.686*** (0.033)
Latino	0.723*** (0.036)	0.710*** (0.034)
Female	1.215*** (0.025)	1.242*** (0.024)
ELL	0.732*** (0.026)	0.677*** (0.022)
Free or reduced lunch	1.010 (0.033)	0.818*** (0.025)
IEP	0.535*** (0.015)	0.453*** (0.011)
School-level factors		
% ELL	0.640*** (0.076)	0.516*** (0.053)
% Free or reduced lunch	1.580*** (0.142)	2.174*** (0.181)
% IEP	0.046*** (0.010)	0.079*** (0.015)
% Female	0.799*** (0.056)	0.900 (0.061)
% Black/Latino	0.250*** (0.042)	0.154*** (0.024)
% Asian	0.595 (0.169)	0.543* (0.157)
Constant	7.087*** (1.091)	12.406*** (1.863)
Observations	43,371	52,399

Note. *SE* in parentheses.

p* < .10. *p* < .05. ****p* < .01. White, Male, and % White are reference categories.

In this regression and the creation of the odds ratios, an excess of 9,000 more students were examined in the New Small Schools versus the smaller group of students in the MDRC schools. When controlling for individual- and school-level student characteristics, the odds of on-time graduation for several student subgroups were very similar for students in both the MDRC SSCs and the New Small Schools. For example, Black students experienced only a 0.6% difference in the odds of graduating on time (0.692 in the SSCs and 0.686 in the New Small Schools), relative to the reference group. Similarly, Latino students had only a 1.3% difference in on-time graduation, relative to the reference group.

However, the results revealed some notable differences between the MDRC SSCs and the New Small Schools. For IEP students, the odds of graduating on time at the MDRC schools were 0.535, relative to the reference group, and the odds of graduating on time at a New Small Schools were 0.453. This means that IEP students had 8% higher odds of graduating on time at the SSCs. Similarly, the ELL and free- and reduced-lunch students had better odds of graduating on time in the SSCs than in the New Small Schools. For ELL students, the odds of graduating were 5.5% higher at MDRC schools than at the larger group of New Small Schools, relative to the reference category. Free- and reduced-lunch students manifested a larger percentage difference: The odds for free- and reduced-lunch students at MDRC schools were 1.010, relative to the reference group, and the odds of on-time graduation at the New Small Schools were 0.818. This finding means that the odds of on-time graduation for free- and reduced- lunch students at the MDRC schools were 19.2% higher than at the larger group of New Small Schools.

As in Table 8, school-level impacts on the odds of graduation findings were included in Table 9, as I controlled for school-level demographics. However, my focus was to examine the

subgroups and control for individual-level demographic characteristics. The results from this chapter will be discussed in chapter 5.

CHAPTER V

DISCUSSION AND CONCLUSIONS

This study examined the graduation outcomes and the odds of on-time graduation at New Small Schools compared to the rates at Other High Schools, using data for the 2006–2009 cohorts of students in NYC high schools. This chapter discusses the results and draws conclusions related to the study findings. This chapter also explores these findings within the context of the literature. The chapter makes several recommendations for further study and offers implications for policy and practice.

The original expectation for this study, and my thesis, was that, when New Small Schools were compared to Other High Schools, including screened schools and schools with more stringent eligibility criteria, the New Small Schools would have higher graduation outcomes than all Other High Schools. My expectation was influenced by the MDRC studies, and by the fact that New Small Schools enrolled higher percentages of groups of students who, historically, had not graduated on time in large urban areas such as NYC; these groups included special education, Black, Latino, and free- and reduced-lunch students (Heckman & LaFontaine, 2011). However, the present results demonstrated graduation outcomes that were strikingly similar despite the differences in school-enrollment criteria and demographic makeup. In fact, the results showed that, when controlling for individual- and school-level characteristics, the students in all subgroups studied here (except female students), had higher odds of on-time graduation at New Small Schools than at Other High Schools.

Research Questions

Given the descriptive and analytical outcomes of this study, in this section, I answer the research questions I posed in chapter 1 and summarize the findings from chapter 4. It is

important to summarize these results to discuss them and to draw conclusions and develop policy implications from them.

Research Question 1

The first research question was, “What population differences of entering students exist when comparing New Small high schools to other high schools in NYC? (special education, English language learners, African American, Latino, free- and reduced-lunch, etc.).” While the detailed answer to this question is found in Table 5, several aspects are worth highlighting. Compared to the Other High Schools, the New Small Schools enrolled larger percentages of Black and Latino students, free- and reduced-lunch students, and IEP Students, but did not have a higher percentage of ELL students over the 4 years of this study. The New Small Schools’ IEP percentages differed from the findings of Jessen (2012), which may be attributable to differences in our respective samples. Still, it is clear from the data in the present study that, by the ninth-grade cohorts of 2008 and 2009, the New Small Schools were serving a higher percentage of IEP students than Other High schools (17% versus 14%, respectively). By Cohort 2009, compared to Other High Schools, the New Small Schools also enrolled a higher percentage of Black students (44% to 30%, respectively), Latino students (46.5% to 39.2%, respectively), and free- and reduced-lunch students (93.8% to 89.6%, respectively).

Research Question 2

The second research question was, “During the study period of (Cohorts 2006 to 2009), did the new small high schools enroll special needs students at rates that were different from other high schools?” The answer is yes. As shown in Table 5, over the 4 years of this study, the New Small Schools in my study group enrolled a higher percentage of IEP students over the

study period (13% in 2006 to 17% in 2009) than did the Other High Schools (12% in 2006 to 14% in 2009).

Research Question 3

The third research question was, “How have various student subgroups graduated at New Small Schools compared to other high schools?” The graduation results are presented in Table 6. The findings demonstrate that, while New Small Schools’ graduation rates improved over the 4 years of this study, collectively, the New Small Schools’ graduation rates were 1 to 3 percentage points below the overall graduation rates in Other High Schools, which increased from 59.4% to 66.3% during the same time. In other words, when analyzing the descriptive data with no controls, collectively, students in the Other High Schools had slightly higher graduation rates than those in the New Small Schools during the study years. However, the New Small Schools’ graduation rates were only slightly lower, and this is particularly notable, given the more restrictive admission criteria used by many of the Other High Schools.

Research Question 4

The fourth research question was, “Controlling for other factors, what are the odds of special education and other subgroups of students graduating on time at a New Small School relative to Other High Schools?” When controlling for individual socioeconomic status and school density, certain subgroups of students had higher odds of graduating on time in the New Small Schools than students in Other High Schools. As seen in Tables 7 and 8, Black, Latino, free- or reduced-lunch, ELL, and IEP students all had higher odds of graduating on time in the New Small Schools, given the statistical model and controls used. Black students had 11.8% improved odds of graduating in New Small Schools than in Other High Schools. Both Latino students and ELL students had a 10.9% better chance of graduating on time in a New Small

School, and IEP students had an 11.2% better chance of graduating on time in a New Small School. Asian students had 25.9% better odds of graduating on time at a New Small School. However, for female and free- and reduced-lunch students, the odds of graduating on time were better at the Other High Schools. Female students had 18.9% better odds at Other High Schools, and free- and reduced-lunch students had 1.4% better odds at these schools.

Research Question 5

The fifth research question was, “What were the on-time graduation rates of all students and students in various subgroups at New Small High schools for Cohorts 2006 to 2009 compared to the graduation rates in other high schools in NYC during this same time period?” As seen in Table 6, students at New Small Schools graduated at a lower rate than students at all Other High Schools. In Cohort 2006, 59.4% of Other High School students graduated on time compared to 58.3% in New Small Schools, which is a 0.9% difference in the graduation rate. In Cohort 2009, students in Other High Schools graduated on time at a rate of 66.3%, compared to 62.7% in New Small Schools that year, independent of school admissions requirements (a 3.6% difference). Given the more stringent admissions requirements in the group of Other High Schools, one could expect them to have higher performance outcomes. The fact that the New Small Schools were even relatively close in overall on-time graduation rates is worth noting. Over the 4 years of the study, Black and Latino students had consistently higher graduation rates at the New Small Schools than at Other High Schools. IEP students at New Small Schools graduated at higher rates than at Other High Schools. The differences in graduation rates for IEP students was also more substantial than for other subgroups, with the New Small Schools graduating a substantially higher percentage of special education students in Cohorts 2006, 2007, and 2008. However, it must also be recognized that the graduation rate for IEP students at Other

High Schools grew significantly over the 4 years of this study, increasing from 26.98% in Cohort 2006 to 40.06% in Cohort 2009. This represents a more than a 50% increase in 4 years.

Discussion and Connections to the Literature

This study began because of my interest in the outcomes of the small-school reform in NYC under Mayor Bloomberg. Specifically, I sought to answer a fundamental question regarding the on-time graduation rates of students at the New Small Schools created by that reform, as compared to Other High Schools. I was also interested in the extent to which the study produced by the research group MDRC (Bloom et al., 2010) accurately reflected the small schools' performance outcomes in NYC, especially given how often it had been used by the DOE to justify its policies of developing small high schools. During this reform period, several critics of DOE policies had implied or stated outright that the DOE had rigged the system in favor of the small schools to justify their policies, especially because the MDRC studies did not fully explore the lack of special education students found in their sample or other factors that might have explained their results. What I found in the present study, using a more comprehensive data set of almost the entire NYC student population, was that the 172 New Small Schools in my sample did not, collectively, outperform all Other High Schools in terms of on-time graduation, but the students in various subgroups in those schools still performed relatively well, especially relative to the citywide graduation prior to the reforms. The New Small Schools in this study did not perform as well as the SSCs in the MDRC study, primarily because of its different approach to comparing the new schools with other schools. Still, the findings in the present study support the overall conclusions from previous studies, which have found improved graduation outcomes in NYC's New Small Schools (Abdulkadiroğlu et al., 2013; Bloom et al., 2010).

Both prior literature and the present study have provided evidence to support both “sides” of the debate surrounding New Small Schools and NYC’s school reform in general. Looking solely at the results found in this study, the New Small Schools can be seen as a success in terms of helping the city school system raise its overall graduation rate over time, as well as the rates and the odds of on-time graduation for lower-performing student subgroups, including Black, Latino, free- and reduced-lunch, and IEP students. However, it is also clear, from critics of the NYC reform, that much further study and a larger contextual understanding of the reforms are greatly needed. In particular, many factors could have contributed to the successes of NYC’s small and other schools, and further research needs to consider these factors in more detail. These factors include the open political and institutional support of the small schools from the highest levels, the “newness” of the small schools, the policy of withholding SC special education students out of the New Small Schools between 2002 and 2006, additional start-up funding for the New Small Schools, smaller class size, and the displacement of some students leading to overcrowding and potentially contributing to additional school closures.

This study extends and deepens the findings of studies that used a variety of statistical designs. These include studies by MDRC, the Research Alliance, and MIT and Duke, all of which have found evidence of solid and improving graduation performance in the New Small Schools in NYC. The present study adds to the literature by building on evidence presented by Kemple (2013), which demonstrated system-wide improvement in graduation rates. My study’s focus on small-school outcomes adds to the field’s understanding of the overall improved graduation outcomes. As a group, the students who attended New Small Schools demonstrated improving graduation rates, even though their cohorts had and higher percentage of students from subgroups with lower graduation rates in previous years.

This study also examined the odds of graduating on time for particular groups of students at New Small Schools and Other High Schools. Our findings in this study add to the body of literature regarding the odds of graduation at small schools in large urban districts and in regard to improved outcomes for certain subgroups. Further, this study adds to the literature by analyzing a larger group of schools and students than has been done in other studies, as I analyzed almost the entire high school population of NYC high schools.

This study suggests that, although many plausible critiques can be made of the manner in which the New Small Schools were created, how they were resourced, and how they admitted different groups of students in their early years, students from some historically underperforming subgroups are succeeding. In particular, this study provides evidence that IEP students, Black students, Latino students, and ELL students all had approximately 11% greater odds of graduating on time if they attended a New Small School than if they had attended one of the Other High Schools in NYC. Moreover, the size of the population in this study ($N = 263,585$) strengthens this finding.

Kemple (2013, 2015) discussed the improved citywide graduation outcomes for Black and Latino students and how those groups had closed the so-called achievement gaps with White students between 2002 and 2013. Kemple's studies did not focus on the role of the small schools in the closing of these gaps in graduation rates between White and Asian students and between Black and Latino students. This study shows that small schools had higher on-time graduation rates for these groups; thus, the small schools appear to have played a role in diminishing this gap.

In sum, both the researchers whose findings tended to support the reform and their critics have valid points. The New Small Schools might have had relatively strong graduation rates in

the cohorts from 2006 to 2009 compared to Other High Schools, possibly because they originally enrolled a lower percentage of IEP, SC students who had lower graduation rates (Pallas & Jennings, 2010). Therefore, the city's trumpeting of the higher graduation rates in small high schools and the MDRC studies on its SSCs might not have sufficiently considered this discrepancy, the differences in incoming student groups, and the many systemic supports the New Small Schools received.

The DOE policy of restricting special needs students in the New Small Schools during the first 2 years of a school's existence might have been successful in the intermediate term and helped the New Small Schools' graduation outcomes, both overall and for special education students. I do not know the extent to which these favorable admissions restrictions were directly or indirectly detrimental to Other High Schools in the system in terms of displacement and in some cases subsequent school closures, but student-level results in the intermediate term have shown higher graduation outcomes with special needs populations and better odds of graduating for special needs populations at the New Small Schools.

However, by the time this study began, with the incoming class in September 2006, the New Small Schools were enrolling a slightly higher percentage of IEP students than were Other High Schools, and, overall, still managed to produce similar percentages of on-time graduates and higher percentages of on-time IEP graduates. In other words, even though the policy of holding IEP students out of the small schools might have been disruptive and debilitating to other schools in the system from 2003 to 2006, by the time of this study (entering 2006 Cohort) the New Small Schools appeared to be ready to serve and graduate IEP students on time at even higher rates than Other High Schools.

Studies undergirding the reforms in NYC have found that the improvements in small schools' on-time graduation outcomes contributed to the city's improvement of the same (Bloom et al., 2010; Kemple, 2013). In addition, as this study shows, several subgroups of students did have higher odds of graduating on time at higher rates in the New Small Schools. On the other hand, the critics are correct that the small schools admitted fewer special needs students at first, but this changed over time, particularly by the time of the Office of Civil Rights finding in January 2009.

I have noted that the New Small Schools graduated a lower a percentage of students than did Other High Schools during the study period. It is also worth remembering that the MDRC reports were released during this time, claiming that students at their group of SSCs were outperforming students at Other High Schools with a higher on-time graduation rate of 66% to 59% (and an even larger difference by 2012). The MDRC claims created a public perception of small schools doing better than other high schools. The present study found the New Small Schools to have lower graduation rates than Other High Schools, which calls into question the perception created by MDRC regarding small-school performance. However, this finding does not necessarily mean that the present results completely contradict the MDRC findings. In fact, when comparing the 172 New Small Schools in this study with the subset of 105 MDRC SSCs, I found very similar odds of on-time graduation for Black, Latino, and female students. However, I did find better odds of on-time graduation for ELL, free- and reduced-lunch, and IEP students at the MDRC's SSCs than at the New Small Schools in the present study. These differences could have been caused by the "oversubscribed" nature or more popular aspect of the MDRC schools or other factors, but the subset of MDRC schools as compared to all small schools also warrants further study.

Limitations of the Study

I encountered several important limitations as I developed and implemented this study, and I make note of them here. As stated in chapter 3, it was a challenge to identify the exact graduation cohorts of students, particularly for the incoming cohort class of 2006. The data set used for this study did not allow access to the NYC DOE's assigned ninth-grade cohort for each student; therefore, I assigned the cohort myself, using first-time, ninth-grade enrollment status as the determining factor. Because of this limitation, my results might vary slightly from officially published DOE results, given the possible under- or overcounting of holdover ninth graders in the 2006 cohort, but I worked logically given the data set to eliminate such variation and establish an accurate cohort.

This study's analysis of one student subgroup, IEP students, is limited because I analyzed "IEP" as one category. Given the limitations of the data set, I did not delineate which types of IEP students attended which schools, as the Jessen (2013) study did, although her study looked at a smaller set of small and large schools. A next, logical area of research would be to analyze another data set that includes the percentages of SC IEP students and/or ICT students at the New Small Schools as compared to Other High Schools.

This study might have also suffered from some degree of selection bias, if students who attended two groups of schools in the sample differed on dimensions such as motivation, ability, and parental support. Any such differences could have independently affected the outcomes of interest, such as graduation. These characteristics are more difficult to measure, unlike characteristics such as race and free- or reduced-lunch status. I recognize that this built-in selection bias might be a limitation that I cannot control for.

The size of the system and the consequent data files were challenges in this study. Combining the various, massive files presented statistical challenges, especially in terms of combining the files supplied by the DOE to run the necessary logistical regressions. Although this study was able to present comprehensive data from almost all high schools in NYC, it is limited in that it remains difficult to draw comparisons between very different types of schools across five boroughs in New York's huge school system. The tiered nature of the NYC school system, in terms of school eligibility and requirements for entrance, meant that the limited-unscreened New Small Schools could not easily be compared to any other significantly sized group of schools because that comparison group would have schools that were not limited-unscreened.

Recommendations for Further Study

Further study is required to examine the many questions raised in this study of graduation outcomes and odds of on-time graduation. Below, I discuss the most prominent of several areas for further study generated by this study.

Why did the New Small Schools have better odds to graduate Black, Latino, and IEP students on time? A logical follow-up to this study would be to examine the factors that influenced why the New Small Schools had better on-time-graduation odds for certain groups of students. Was the main factor actually because of what the Small School Movement supporters touted in the literature about the small schools in the 1990s: personalization? Or were other factors at play, as Bloomfield and others have pointed out (e.g., Ravitch et al., 2009)? Numerous factors could affect New Small School and Other School outcomes. Some examples are political and institutional support from the DOE, start-up monies from the Gates/Carnegie/Soros New Century Fund, the peer effects of fewer or more IEP or other student subgroups, student

placement across neighborhoods, the quality of teachers hired, the demand for and quality of New Small School leadership, the demand for capital and operational monies to build the new schools, training (or lack of training) for New Small School guidance personnel and special education teachers, incoming academic levels of the students, parental education levels, and other factors.

What were the effects of the large number of large high school closures? The effects of these school closures on the surrounding neighborhoods is another area that requires further study, as well as the displacement that occurred in many neighborhoods, given that students from areas of previously zoned schools had to travel farther to get to school. Kemple (2015) began this work on closures in a study that looked at overall student performance. To date, however, no extensive study has focused on the ripple effect that the closures had on displacing special needs students, especially between 2003 and 2006, and the resultant overcrowding that developed in many schools that were eventually closed several years later. Some Other High Schools enrolled and served larger numbers of displaced IEP or ELL students who had been deflected from the start-up New Small Schools, and this may have affected their performance outcomes and led to further closures in the years that followed. It is worth studying the contention of some critics that the Bloomberg administration's student displacement without accompanying resources set large schools up to fail in a self-fulfilling, domino-like manner to justify the creation of more New Small Schools (Hemphill et al., 2009).

What about the age and "newness" of the small schools? Much research remains to be done on the ongoing performance of the New Small Schools as they become "Older" Small Schools. It is not clear yet whether small schools can maintain their graduation performance outcomes over time. How institutionalized are the New Small Schools and what happens when a

committed founding principal and founding staff leave a small school? How does a system develop qualified leadership successors for so many schools? And what have been the effects of a new political administration? In New York the next administration has not demonstrated a clear commitment to the small schools, and study is necessary to understand how this political change could affect school outcomes.

The data used here indicated that, over the 4 years of the study, the graduation rate of IEP students at Other High Schools grew rapidly. Understanding the reasons for this substantial increase also requires additional study. One hypothesis could be that the density of a certain type of IEP student, such as SC students, diminished at Other High Schools during this time because the New Small Schools were required to enroll more SC students after 2006. Only further study will determine what the factors were, however. Additional research could also be conducted on the breakdown of graduation rates of IEP students in New Small Schools by IEP category: SC, ICT, Resource Room, or Occupational Therapy/Physical Therapy only. It could be that the New Small Schools only had graduation success with a particular type of IEP student (or not), and this possibility requires further study.

Another intriguing area for further study involves the data that emerged for female students in small schools. This study found a notable anomaly between female graduation rates in New Small Schools and Other high schools. Additional research could look into why female students had lower odds of graduation in New Small Schools than in Other High Schools.

This study looked at on-time graduation in 4 years. It did not consider 5- or 6-year graduation results. An analysis that included the longer time frame graduation rates might yield additional information about the performance outcomes for all students at New Small Schools

and Other High Schools. An interesting area of study could be whether New Small Schools did better with IEP or ELL students over additional time in school.

One of the other critiques leveled at the improved graduation rates of New Small Schools and the NYC school system overall is that the diploma had been made easier to obtain because of “credit recovery” courses that are not always rigorous (Ravitch, 2015a). In 2012–2013, the DOE revised its academic policy regulations regarding graduation requirements, including the use of “credit recovery” courses. Department officials have said that credit recovery courses were only 1.6% of the credits earned for graduates (Suransky, 2013), but that percentage might be an undercount because of the lack of course-coding guidelines during this entire time period. An area of further study would clearly be a thorough review of the use of credit recovery and how much of a role it did or did not play in raising graduation outcomes in NYC schools, especially in the New Small Schools.

Finally, the policy of holding special needs students out of the New Small Schools until Year 3 might have contributed to their improved graduation rates. The policy might have increased graduation rates in those early cohorts, as a higher density of special needs students in a school affects graduation rates. However, holding out those special needs students between 2002 and 2006 did allow New Small Schools time to organize their staff and prepare for working with special needs students. Further study is needed to understand the effects of this policy and the reasons for the New Small Schools’ higher odds of on-time graduation for IEP students.

Implications for Policy and Practice

Many policy effects and recommendations for practice can be identified by this study. Below are several of the main policy implications I wish to highlight.

En masse, the New Small Schools in NYC have demonstrated that they can contribute to raising a large urban school system's graduation rate, and policy makers should consider small high schools a viable option for helping to reform a low-performing district and for improving the graduation outcomes of traditionally lower performing subgroups of students. Special needs students do seem to have benefited in terms of the overall graduation rates and the odds of on-time graduation at the New Small Schools, and policy makers should look at the size of the institutions that their special needs students are attending and make teachers and resources available to serve students in smaller school settings.

A higher percentage of free- and reduced-lunch students and Black and Latino students graduated on time at New Small Schools, and boys performed better than girls at these schools. Independent of the reasons for these higher on-time graduation outcomes in the New Small Schools, school districts and policy makers should consider the size of school as a factor in where certain students and subgroups of students are attending high schools.

In NYC, the creation of a citywide portfolio system of school choice for high schools, as well as students traveling outside of their neighborhoods to attend the New Small Schools, necessarily “uncoupled” schools from their communities. This meant that, as a whole, the school system ceased to be community based. Once such a system is in place and the schools are untethered from the geographic community, it may be challenging for school leaders to recreate their “community.” This situation has implications well beyond the school walls, particularly regarding integration.

The New Small Schools in this study demonstrated a clear record of on-time graduation performance and odds of on-time graduation that were higher for certain subgroups than in Other High Schools. School districts should encourage the development of smaller schools or smaller

learning communities. Given the results demonstrated in this study, it is worth the effort for large urban districts to examine ways they could create small schools for their students, as small schools have demonstrated improved graduation rates and better odds of on-time graduation for Black, Latino, ELL, and IEP students.

However, it is also important for policymakers to remember that NYC's small-school reform must be seen within its overall context, as one of an enormous, comprehensive reform of many moving pieces that were enacted during the Bloomberg/Klein administration. The New Small Schools were a part of a larger whole and were not created in a vacuum. There was political will and resources put behind the small schools, and they were extolled politically by city leadership. For Bloomberg and Klein, the creation of the small schools was part of a decision to close many low-performing schools, to overhaul of high school admissions, to renegotiate and deny teacher seniority rights to bump teachers with less experience out of positions, to create a Leadership Academy for principals, to overhaul the school support structure from districts to regions and eventually to networks, and many other reforms, all done under mayoral control with no board of education. The creation of New Small Schools was not a stand-alone policy, and policy makers must take into account what other changes they will need to make to provide conditions for small schools to succeed.

Policy makers and school-district administrators must also remember that, merely being small does not necessarily make a school better. The DOE closed about 5% of the same New Small Schools it opened during this period, indicating that DOE leadership viewed some of the new schools as performing poorly enough to close down. School size might have a positive effect on student outcomes, but it is not sufficient for affecting outcomes on its own. Policy makers must understand that many factors affect schools' performance outcomes, such as

leadership, school culture, location, admissions policies, political and financial support, “newness,” teacher quality, percentage of students in poverty, percentage of students with special needs, peer effects, travel time, and even the name of the school, among others. All of these factors must be considered when creating small schools as well.

Providing new start-up small schools some time (such as 2 years, which the DOE did do) to reach a critical mass of resources, programming, and staffing, before expecting them to provide all services to all students might have improved student outcomes in the New Small Schools. But the tradeoffs of student displacement to other schools must be recognized and accounted for, as well as working within existing civil rights legislation. If a district is going to mandate holding special needs students out of start-up schools, then it should also provide additional resources and training to the schools where the displaced students will be attending. In NYC this displacement seems to have taken place during the early years of the small-school reform, with no significant additional funding to the schools tasked with accepting more IEP students. Without additional resources, training, and support, those schools might also (as seems to be the case in NYC) end up being closed. Further research is needed to more fully understand this domino-effect process, as mentioned above.

Conclusions

The New Small Schools have been deeply ingrained as part of the overall systemic changes to the NYC school system, including school closings. It is virtually impossible to separate the creation of the many New Small Schools from the closing of the large ones because the closings had to happen for the small schools to open. In the future, critics might argue, with evidence, that closing the large schools displaced students and destabilized communities but

creating the New Small Schools helped raise the overall graduation rate in NYC, and the odds of graduation, especially among certain subgroups of students.

The DOE operates the district that opened these New Small Schools and was also the district that closed a few of these same schools when they were only 6 or 7 years old. This study has noted higher student on-time graduation across all 172 small high schools in this study's sample of New Small Schools, but given the small school closings, the New Small Schools were in no way an unmitigated success.

The New Small Schools are a reality in the NYC school system and appear to be here to stay. The immense scope of the overall reform has made going back to any semblance of the pre-2002 system almost impossible, for political and financial reasons. The results, in terms of performance outcomes demonstrated in this study, raise the question, would policy makers want to go back to the system of mostly large schools with much lower graduation rates? High school graduation rates are up citywide, in part because of the New Small Schools. Although the NYC system still faces immense problems and challenges, including many schools that continue to struggle with graduation rates, given the current outcomes of the portfolio of schools providing choice of high school to eighth graders, it would be extremely difficult, politically, to return exclusively to large, community-based schools.

In NYC there is no going back to the school organization as it existed before 2002. The new mayor, Bill DeBlasio, and Chancellor Carmen Fariña have attempted some geographical reforms in the structures of school support, and they have closed some small schools that were “too small” (fewer than 150 students). Still, the school structures established by the Bloomberg and Klein reforms have been in place more than a decade and have been institutionalized. In 2016 the citywide on-time-graduation rate reached 70% for the first time. Overall, the New

Small Schools have demonstrated improved on-time graduation rates and odds of graduating students, which justify their existence. Indeed, more students like William Galvez will have better odds of graduating on-time at their no longer “new” small high school.

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APPENDIX A

ADDITIONAL BACKGROUND ON SPECIAL EDUCATION STUDENTS IN SMALL HIGH SCHOOLS

As of December 2009, a total of 162,269 students were receiving special education services in all grades of the NYC public school system (NYC DOE, 2009). The NYC public school system classifies special education into three main types: Special Education Teacher Support Services, Collaborative Team Teaching (CTT; later renamed ICT), and SC, which are established by a student's IEP. Classifications are to assist schools in providing services, depending on the needs of the students. The classification Special Education Teacher Support Services refers to additional instruction provided by a special education teacher outside the classroom to support the participation of the student with a disability in the general education classroom (NYC DOE, 2009). Integrated coteaching is a model of inclusive education in which students with disabilities and non-disabled students are educated together with two teachers; a special education teacher and a general education teacher. Self-contained is a service provided for children with disabilities in a self-contained classroom, usually with a teacher student ratio of 12:1 (NYC DOE, 2009).

Each IEP classification can be used for different time intervals; however, Special Education Teacher Support Services is generally used for part-time students, whereas ICT and SC can be for either part-time or full-time, the latter covering all high school class periods. In this system, students higher on the spectrum of need generally receive SC services, although many high-need students do participate in an inclusion model. As discussed below, the NYC public school system has encouraged inclusion for all levels of need in the Least Restricted Environment possible, both in NYC and throughout the nation's public schools.

Regarding the New Small Schools in NYC, precedent exists for excluding special education students in start-up schools. However, most of the literature on special education and small-school choice and exclusion has focused on the relationship between charter school reforms and special education (Estes, 2008; Howe & Welner, 2002, 2005). Most of these studies have suggested that, despite lottery admissions policies, students with special needs are not admitted as easily into schools of choice, such as charters, for several reasons. One study of Arizona charter schools early in the charter reform period found that parents of special education students were “steered away” from applying to charter schools, and many parents complained formally to local officials (McKinney, 1996). National data have consistently shown a one-third lower rate of special education students than general education students at charter schools. A U.S. Government Accountability Office (2012) study put the gap at 3% nationally (8.2% at charter schools vs. 11.2% in traditional public schools). This gap is similar in NYC. Even the New York City Charter School Center, a charter advocate group, found that 13.1% of city charter school students received special education services compared to 16.5% in traditional public schools (Fertig, 2013).

These findings about some charter schools are similar to many new district public schools. Many new schools of “choice” have been found to create admission barriers for students with special needs. Howe and Welner (2002) examined enrollment practices in a “choice” system in Boulder, CO, which led to an “increased stratification among the newly created choice schools” (Howe & Welner, 2002, p. 219). This study indicated that “counseling out” students provided a way to select students without legally excluding any special groups of students.

According to other studies, giving families the option of “choosing” a small school has also created incentives for charters and public school administrators to manipulate the admission

system in other ways to admit higher performing students. Because of increased accountability requirements and school report cards being made public, for many schools and school leaders, special needs students and lower performers were less desirable for schools to admit. Several researchers have studied how this type of “choice” could lead to an increase in school segregation along socioeconomic or racial lines (Henig, 1994; Kleitz, Weiher, Tedin, & Matland, 2000; Weiher & Tedin, 2002). Another study demonstrated that school “choice” can exacerbate inequities based on special needs (Lacireno-Paquet, Holyoke, Moser, & Henig, 2002) and can lead to “cream skimming,” which can happen when nearby charter schools steer higher performing students away from traditional public schools (Dee & Fu, 2004).

One of the primary critiques of the New Small Schools in NYC, often coming from a large-school perspective, has consisted of the following type of sentiment: “Of course they are doing better than us. They don’t have the same kids. The system gave us the lower performing students.” In an important study looking specifically at special education in NYC, Jennings (2010) found that the new admissions choice process and the creation of the New Small Schools were “intricately interwoven.” Several other studies and reports have looked at subgroups and their relation to the school-choice system, mostly examining—and critiquing—the school reform in NYC (Advocates for Children, 2005; Hemphill et al., 2009; Jennings, 2010; Stiefel, Schwartz, Iatarola, & Chellman, 2009). One report criticized the new high school directory of 400-plus pages, which eighth-grade students and parents used in the new system to choose a high school, arguing that it provided “confusing instructions” for special education students. For instance, the new directory confusingly informed students that they could apply to any school they wished, “regardless of whether or not the services listed on your child’s IEP are included on the school’s page.” Obviously, if the school does not list a service, the parent is less likely to apply. Hemphill

et al. (2009) also quoted the head of the Office of Student Enrollment as saying to special education parents, “You’re eligible to apply—but chances are, you’re not going to get in” (Hemphill et al., 2009). Given the intense rate of change in NYC schools during 2003–2010, it was difficult for families, middle school guidance counselors, and sometimes even school administrators themselves to accurately list the services for special needs students that were actually provided in the schools and to navigate the complex school-choice process.

Other studies have found that, in their early years of operation, NYC’s new, small public schools generally had a lower proportion of students in special education than other public schools. A report by Advocates for Children in 2005, 3 years after the beginning of the large-scale small-school reform, pointed out that the small schools provided fewer and inadequate services, and the report questioned the graduation rates of these schools. Because the New Small Schools could not adequately provide services to these students, “children with disabilities are more likely to be placed in large low-performing schools, and less likely to gain access to the new smaller schools currently being created” (Advocates for Children, 2005). Stiefel et al. (2009) studied New Small Schools and found fewer students with special needs when compared with other public schools. Weinstein, Jacobowitz, Maguire, Saunders, and Fruchter (2007) blamed the New Small Schools’ lack of ability to service special needs students on diminished resources and lack of teacher experience working with this population. The authors interviewed principals and school staff and described how the proposed themes of many of the New Small Schools often had to be put on hold, and the entire schools reprogrammed, as teachers “struggled to differentiate instruction for students with such wide ranging needs” (Weinstein et al., 2007).

Another study found that, because the New Small Schools are both small in size *and* new, they often do have fewer resources and teachers necessary to serve students with special needs

(Weinstein et al., 2007). Once the schools obtained sufficient resources and had been open for more than 2 years, NYC DOE policy and the admissions office expected that the school would enroll students with special needs at the same rate as other public schools.

Jessen (2013) found that comparing the approximately 200 small schools solely with the remaining 64 large schools citywide showed that large schools, on average, had a special needs population of 12.3%, whereas the small schools averaged 10.8%. She went on, however, to analyze the types of special education services offered in the schools, and concluded that the large schools served disproportionately large populations of higher needs, SC special education students (Jessen, 2013).

Jessen (2013) and others have delineated how the New Small Schools in NYC provided services overwhelmingly for special education inclusion programs and less restrictive environments, such as Resource Room, but not for more restrictive special needs environments, such as SC classrooms or even CTT¹¹ services, where two teachers work with a class of IEP and general education students together. In other words, the smaller schools generally admitted students with less serious disabilities, especially in the first 4 years of the reform. According to the Year 2008 school registers analyzed by Jessen, of the IEP students in larger high schools, 42% were SC, 19% were CTT, and 39% were RR. In the small schools she examined, only 18% of the IEP students were SC, whereas 32% were CTT and 50% were Resource Room. This difference is significant because self-contained IEP students have the lowest graduation rate (approximately 6%) of any IEP students in NYC, so the larger schools had more than double the

¹¹ For the years in question, collaborative team teaching was called CTT. In 2011 the nomenclature used to describe this service was changed to integrated collaborative teaching, or ICT.

percentage of SC students—those students with the lowest graduation rates (NYC DOE, 2008–2009 School Register, as cited in Jessen, 2013).

Jessen also pointed out that the 2009 OCR ruling failed to separate the different levels of special education services. Instead, the ruling combined CTT data with SC data, despite the fact that these two types of special education services are completely distinct services for students with different levels of need. Students who have an IEP requiring an SC classroom generally are not as high functioning as students whose needs can be met in a more inclusive setting, such as a CTT. Self-contained instruction also often requires a larger financial outlay than CTT because self-contained classrooms often require a paraprofessional and a teacher in the classroom, as well as additional classroom space in the school to provide the necessary separation, and most small schools placed in large school buildings did not have those additional rooms available. Jessen then inferred that part of the disparity between special education students at different types of schools can be explained by the context of special education in NYC schools. She argued that, because it often takes longer for students with special needs to complete high school, and because the large schools have been serving student with SC needs longer, the small schools had “not yet had a chance to build up a comparable population of higher-need students” (p. 443).

The difference in special education programming and percentages can also be partly due to policies of the small schools and their developers. One of the largest creators of small schools was the organization New Visions for Public Schools. As early as 2002, New Visions openly promoted its CTT model as its choice for special education, rather than self-contained

classrooms. While New Visions never promoted that all of its schools followed an inclusion model exclusively, the organization's preference was clear.¹²

Some schools did not offer self-contained classes for financial reasons. Jessen (2013) quoted one principal, "A lot of times they [the small schools] don't do the special class. It is a monetary thing with them. Not that it should be, because that's what you're supposed to do" (p. 443). Whether the reason was financing or lack of resources or classroom space, when they did receive an SC student, many schools would counsel the parent to change the student's IEP to fit their programming model, usually to CTT. Jessen interviewed several school personnel who found that the CTT inclusion model does not fit all students with special needs; furthermore, she found that merely switching a student's IEP program "legally" did not mean that enough services were being provided to many students who should have been in an SC classroom and who, consequently, floundered.

Ostensibly, the special education inclusion models of instruction are intended to address the unnecessary separation of students with special needs. In NYC, however, the exclusion of self-contained IEP students in the New Small Schools in their start-up years was not merely commonplace practice, it was an organizational policy. As I noted earlier in this chapter, Pallas and Jennings (2010) studied the types of students entering the New Small Schools in NYC. Although they did not study student outcomes in the New Small Schools, they did find that New Small Schools had admitted fewer full-time special education students (Pallas & Jennings, 2010).

Pallas and Jennings (2010) did not investigate outcomes. They asked how the New Small Schools compared to "all schools" and to the closing schools they replaced. Their focus was on

¹² Full disclosure: My school started as a New Visions school and had only 3 SC students, and we used the IEP process to move the students to a less restrictive environment in an ICT classroom.

selection—and they argued that the students who attended the New Small Schools, at least initially, were drawn from a different pool than those in the schools they replaced. In all, in their early years, the New Small Schools seemed to have faced “less challenging students,” as they did not have large numbers or percentages of special needs students. Pallas and Jennings found that New Small Schools did have poorer students, and more students who were not proficient in state ELA or Math exams. A further area of study would be to investigate this more deeply and to look to see if New Small Schools students had, on the whole, more involved and motivated parents and how these and other factors might have affected student attendance and performance.

In their early years, the New Small Schools did not offer a full range of special education services. Another report suggested that New Small Schools did not always accurately advertise their special needs resources to applicants. Although Hemphill et al. (2009) were told by the DOE that students with special needs were “eligible to apply” to any public school, much of the literature on Special Education in NYC raises questions about how clearly or how well this message was communicated to or understood by parents of eighth-grade students, the applicants, or even middle school guidance counselors. In the data collected in this case study, families and guidance counselors typically restricted their choice sets based on their interpretation of the available options, which was sometimes arrived at based on erroneous or incomplete information. Hemphill and Nauer pointed out that, even when services are available to special needs students at a small school, “steering” during the application process by the high school intake person could also deter families of students with special needs. Some schools attempted to shape the applicant pool by intentionally conveying to families that they are not able to serve students with certain special needs, which made families desist.

What is clear from the literature on special education in the small schools in NYC is that, in the selection process, choices set for students with special needs have been restricted, and there is a lack of research specifically focusing on graduation outcomes for the special education students in the small schools. However, the descriptive outcomes of this study do add to the literature related to the small-school reforms in NYC. Given the city's policy of excluding special needs students from New Small Schools, at least from 2002 to 2006, it was unclear whether the entering 2006 cohort of students in the New Small Schools had enrolled a similar percentage of special needs students to all Other High Schools in their first two years of operation. The descriptive outcome data in this study indicated a similar percentage of special needs students in both the New Small Schools and Other High Schools in the 2006 incoming cohort. There were approximately 14% IEP students in both other high schools and New Small Schools. There were approximately 2% more ELL students in other high schools than in New Small Schools over the 4 years of this study. This study's results demonstrate that, by the 2006 cohort, the New Small Schools were enrolling a percentage of special education students at least as high as other schools; also, by the end of the 4 years of this study, New Small Schools had 3% more IEP students than other high schools.

Therefore, according to the descriptive results of this study, by 2006, the DOE was in the process of rectifying the discrepancy in the percentage of special education students that might have existed at the outset of the creation of the New Small Schools from 2002 to 2006 according to Pallas and Jennings (2010). The present results indicate that a change was made to the DOE's stated policy in order to not admit certain IEP students into the New Small Schools during their first 2 years of operation, which was pointed out by Pallas and Jennings (2010) and challenged legally by Professor David Bloomfield's 2006 Civil Rights complaint. No causal link has been

established to clarify whether the OCR complaint drove this shift in the percentage of IEP student enrollment toward the New Small Schools.

APPENDIX B

NEW SMALL SCHOOLS ANALYZED IN THIS STUDY CREATED BETWEEN 2002 AND 2009 IN NEW YORK CITY AND MDRC SMALL SCHOOLS OF CHOICE USED IN MDRC STUDIES.

New Small School (grouped by Borough)	DBN	Also in MDRC study
Academy for College Preparation and Career Exploration	K382	
Academy for Environmental Leadership	K403	X
Academy for Young Writers	K404	X
Academy of Hospitality and Tourism	K408	X
Academy of Urban Planning	K552	X
Agnes Y Humphrey School for Leadership	K027	
All City Leadership Secondary School	K554	
Arts and Media Preparatory Academy	K589	X
Brooklyn Academy for Science in the Environment	K547	X
Brooklyn Collegiate: A College Board School	K493	
Brooklyn Community Arts and Media HS	K412	X
Brooklyn Preparatory High School	K488	X
Brooklyn Secondary School for Collaborative Studies	K448	
Bushwick Leaders HS for Academic Excellence	K556	X
Bushwick School for Social Justice	K549	X
Expeditionary Learning School for Community Leaders	K572	X
FDNY HS for Fire and Life Safety	K502	X
Foundations Academy	K322	X
Frederick Douglass Academy IV Secondary School	K393	
Frederick Douglass Academy VII HS	K514	X
Green School: An Academy for Environmental Careers	K454	X
HS for Civil Rights	K504	X
HS for Global Citizenship	K528	X
HS for Medical Professions	K633	
HS for Public Service	K546	
HS for Service and Learning at Erasmus	K539	X
HS for Sports Management	K348	X
HS for Youth and Community Development at Erasmus	K537	X
International Arts Business School	K544	X
It Takes a Village Academy	K563	X
Academy for Conservation and the Environment	K637	
Academy for Business and Community Development	K336	
Academy of Innovative Technology	K618	
Brooklyn Academy of Global Finance	K688	
Brooklyn Generation	K566	
City Polytechnic Engineer, Architecture and Technology	K674	
Frances Perkins Academy	K632	
Cultural Academy for the Arts and Sciences	K629	
Gotham Professional Arts Academy	K594	

New Small School (grouped by Borough)	DBN	Also in MDRC study
Brooklyn School for Global Studies	K429	
Juan Morel Campus Secondary School	K071	
Kurt Hahn Expeditionary Learning School	K569	
Life Academy HS for Film and Music	K559	
Lyons Community School	K586	
Performing Arts and Tech HS	K507	X
Rachel Carson HS for Coastal Studies	K344	X
School for Democracy and Leadership	K533	
School for Human Rights/Amnesty International	K531	
Urban Assembly HS for Music and Art	K350	X
Urban Assembly New York Harbor School	K551	X
Urban Assembly School for Law and Justice	K483	X
Victory Collegiate HS	K576	X
Williamsburg HS for Architecture and Design	K558	X
Williamsburg Prep	K561	X
World Academy for Total Community Health HS	K510	X
Urban Action Academy	K642	
School for Classics Academy Thinkers Writers and Performers	K592	
Brooklyn Theater Arts	K567	
Academy for Social Action: A College Board School	M367	
Community Health Academy of the Heights	M346	
Essex Street Academy	M294	X
Facing History School	M303	X
Food and Finance HS	M288	X
Frederick Douglass Academy II	M860	
Global Learning Collaborative	M403	
Henry Street School for International Studies	M292	X
HS for Arts, Imagination and Inquiry	M299	X
HS of Hospitality Management	M296	X
HS for Excellence and Innovation	M423	
HS for Language and Diplomacy	M399	
James Baldwin: A School for Expeditionary Learning	M313	X
Lower Manhattan Arts Academy (LOMA)	M308	X
Manhattan Business Academy	M392	
Manhattan Theater Lab School	M283	X
Mott Hall HS	M304	X
New Design HS	M543	
Pace HS	M298	X
Business of Sports	M393	
Urban Assembly School for Business for Young Women	M316	X
Urban Assembly School for Media Studies	M307	X
Urban Assembly School for the Performing Arts	M369	X
Urban Assembly School of Design and Construction	M300	X
Urban Assembly School of Government and Law	M305	X
Washington Heights Expeditionary Learning School	M348	

New Small School (grouped by Borough)	DBN	Also in MDRC study
Academy of Finance and Enterprise	Q264	X
Channel View School for Research	Q262	
Civic Leadership Academy	Q293	
Cypress Hills Collegiate Prep	K659	X
East-West School of International Studies	Q281	X
Excelsior Prep HS	Q265	X
Frederick Douglass Academy VI	Q260	X
George Washington Carver HS for the Sciences	Q272	
HS of Applied Communication	Q267	X
Pathways College Prep School	Q259	
Preparatory Academy for Writers	Q283	
Queens Preparatory Academy	Q248	X
World Journalism Preparatory	Q285	
Young Women's Leadership School, Queens Campus	Q896	
Academy for Careers in TV and Film	Q301	
Academy of Medical Technology	Q309	
Business of Computer Application and Entrepreneurship	Q496	
Queens Collegiate: A College Board School	Q310	
Robert Goddard HS of Communication Arts and Technology	Q308	
Pan American International High School	Q296	X
Gaynor McGown Expeditionary Learning	R064	
CSI HS for International Studies	R047	X
Academy for Scholarship and Entrepreneurship	X270	
Astor Collegiate Academy	X299	X
Bronx Academy of Health Careers	X290	X
Bronx Aerospace Academy	X545	X
Bronx Center for Science and Math	X250	X
Bronx Engineering and Tech Academy	X213	X
Bronx Expeditionary Learning HS/Collegiate Academy	X227	X
Bronx Guild	X452	X
Bronx Health Sciences HS	X249	X
Bronx HS for Performance and Stagecraft	X262	X
Bronx HS for the Visual Arts	X418	X
Bronx HS for Writing and Communication Arts	X253	X
Bronx Lab HS	X265	X
Bronx Latin	X267	
Bronx Leadership Academy II HS	X527	X
Bronx School of Law and Finance	X284	X
Bronx Theater HS	X546	X
Bronxwood Preparatory Academy/Sports Professions HS	X514	X
Collegiate Institute for Math And Science	X288	X
Columbus Institute of Math and Science	X415	
Community School for Social Justice	X427	X
Discovery HS	X549	X
Dreamyard Preparatory School	X329	X

New Small School (grouped by Borough)	DBN	Also in MDRC study
Eagle Academy for Young Men	X231	X
East Bronx Academy for the Future	X271	
Eximius College Preparatory Academy	X250	
Explorations Academy	X251	X
Felisa Rincón de Gautier Institute for Law and Public Policy	X519	X
Frederick Douglass Academy III	X517	
Gateway School of Environmental Research and Technology	X295	X
Global Enterprise Academy	X541	X
High School for Teaching and the Professions	X433	X
High School for Violin and Dance	X543	X
Holcombe L Rucker School of Community Research	X332	X
HS for Contemporary Arts	X544	X
HS of Computers and Technology	X275	X
International School for the Liberal Arts	X342	
Knowledge and Power Prep Academy International HS	X374	X
Leadership Institute	X276	X
M.Curie HS for Nursing and Allied Health Professions	X237	
Metropolitan High School	X248	X
Millennium Art Academy	X312	X
Morris Academy for Collaborative Studies	X297	X
Mott Hall Bronx HS	X252	X
Mott Haven Village Preparatory HS	X473	X
New Day Academy	X245	
New Explorers HS	X547	X
Pablo Neruda Academy	X305	X
Peace and Diversity Academy	X278	X
Pelham Preparatory Academy	X542	X
Renaissance HS of Musical Theater and Technology	X293	X
School for Community Research and Learning	X540	X
School for Excellence	X404	X
South Bronx Prep	X221	
Urban Assembly School for Careers in Sports	X548	X
Urban Assembly Academy for History and Citizenship for Young Men	X239	X
Urban Assembly Bronx Academy of Letters	X551	X
Urban Assembly School for Applied Math and Science	X241	
Validus Preparatory Academy	X263	X
West Bronx Academy for the Future	X243	
Young Women's Leadership School, Bronx Campus	X282	
Bronx HS for Business	X412	
Johnathan Levin	X414	
Academy of Language and Technology	X365	X
Belmont Preparatory HS	X434	
Bronx Career and College Prep	X479	

APPENDIX C

A DESCRIPTION OF HIGH SCHOOL ELIGIBILITY AND ADMISSION IN NEW YORK CITY HIGH SCHOOLS

Almost all of the New Small high schools created under Bloomberg/Klein were given the eligibility criterion of “limited unscreened.” Because these schools were all limited unscreened, I chose to make all the schools in this study’s sample limited unscreened as well. To gain entrance to these schools, students must rank schools between 1st and 12th on their application; then, schools blindly rank students based on “demonstrated interest” indicators, such as showing up at an open house or school fair, and, finally, students are chosen by a DOE algorithm and lottery. The New Small Schools in this study all had the limited-unscreened eligibility criterion. Below is a brief description of the tiered admissions eligibility categories for NYC high schools.

Specialized schools (8 total schools) require students to take the Specialized High Schools Admissions Test (SHSAT) for entrance. Specialized High Schools are the only schools that require the SHSAT. Approximately 25,000 students take this examination every year, and a little more than 5,000 students are admitted into these eight schools every year.

Audition schools require students to perform an audition for the specific art program they are applying to. In addition to the audition, students might be required to meeting certain achievement and attendance criteria to be accepted.

Screened schools and programs within schools rank and select students based on criteria that might include report card grades, reading and math standardized test scores, and attendance and punctuality. Schools might use other items to screen applicants as well, such as an interview or essay. Manhattan has a much higher percentage of screened high schools than any other borough.

Screened schools for language provide services for students with a minimum level of English language skill. Admission is based on a student's recent arrival to the United States, knowledge of the English language, and, in some cases, home language. These include the "international" schools and other schools not in the international network of schools.

Educational Option (Ed. Opt.) programs are meant to serve a wide range of academic performers. The criterion that schools use is English Language Arts (ELA) standardized test scores from the prior school year. The DOE enrollment office then attempts to match students to schools based on the following distribution: 16% from the high reading level, 68% from the middle reading level, and 16% from the low reading level. Half of the students matched to schools with Ed. Opt. programs will be selected based on their rankings from the school. The other half of students will be selected randomly from the students who have applied to that school.

Charter Schools provide admission by lottery, but parents must make the effort to apply for admission to these schools and enter the lottery. New York City does not yet have many charter high schools, as most charter schools are elementary schools. More charter high schools have opened since 2010, and the screening criteria is usually an application to to placed in the school's lottery.

Limited Unscreened schools and programs (all of the schools in this study's group of schools of interest), in theory, give priority to students who demonstrate interest in the school by attending a school's information session(s), open house event(s), or by visiting the school's table at any one of the High School Fairs. One must sign in at these events to receive priority to the school's Limited Unscreened program(s). In practice, however, most small schools end up

having to rank many more students than actually come to an information session to ensure that they are matched with their projected register of incoming ninth graders.

Zoned schools and programs within schools admit students who live in a geographically designated area, independent of academic or attendance record. Few zoned high schools are left in NYC after the Bloomberg era reforms, and most of those zoned schools are in Queens.

Transfer Schools are alternative smaller “second chance” schools, where students attend after they have been unsuccessful in other high schools. These schools usually enroll students ages 17–21 in multigrade classes and focus on assisting students to make up course credits and state examinations that they have failed in their previous schools.

District 75 schools are specifically for students whose disabilities preclude placement in a general education setting. These schools usually have a very low faculty–student ratio, as many students work one-on-one with a paraprofessional, as well as teachers and teaching assistants.

APPENDIX D

TECHNICAL APPENDIX REGARDING LOGISTICAL REGRESSIONS

The formulas used for the logistic regressions in this study followed a pattern, with each successive regression controlling for additional variables. The regression formula template was the following:

the Log of the Probability of On-Time Graduation/1-Probability of On-Time Graduation
= $\alpha + B_1x_1 + B_2x_2 + \dots + \text{Standard error}$, which can be written as follows:

$$\log (p/1-p) = \beta_0 + \beta_1(Var1) + \beta_2(Var2) + \beta_3(Var3) \dots + \varepsilon,$$

where p is the probability of on-time graduation, β_0 is a constant, and ε is the standard error.

Therefore, for example, with no controls, the formula to establish the odds of Asian students graduating on time would be

$$\log (p/1-p) = \beta_0 + \beta_1 (Asian) + \varepsilon$$

For Black students the formula is:

$$\log (p/1-p) = \beta_0 + \beta_1 (Black) + \varepsilon$$

For Latino students the formula is:

$$\log (p/1-p) = \beta_0 + \beta_1 (Latino) + \varepsilon$$

For Female students the formula is:

$$\log (p/1-p) = \beta_0 + \beta_1 (Female) + \varepsilon.$$

For ELL students the formula was

$$\log (p/1-p) = \beta_0 + \beta_1 (ELL) + \varepsilon.$$

For free- and reduced-lunch students the formula was

$$\log (p/1-p) = \beta_0 + \beta_1 (Free/Reduced) + \varepsilon$$

For IEP students the formula was

$$\log (p/1-p) = \beta_0 + \beta_1 (IEP) + \varepsilon.$$

For the second set of logistic regressions, to control for individual characteristics, I used the formula

$$\log (p/1-p) = \beta_0 + \beta_1 (Asian) + \beta_2 (Black) + \beta_3 (Latino) + \beta_4 (Female) + \beta_5 (ELL) + \beta_6 (Free/ReducedLunch) + \beta_7 (IEP) + \varepsilon.$$

And to control for all of this study's demographic factors, both at the individual- and school-level densities of various demographic variables, the formula for our third set of regressions was

$$\log (p/1-p) = \beta_0 + \beta_1 (Asian) + \beta_2 (Black) + \beta_3 (Latino) + \beta_4 (Female) + \beta_5 (ELL) + \beta_6 (Free/ReducedLunch) + \beta_7 (IEP) + \beta_8 (\%ELL) + \beta_9 (\%Free/ReducedLunch) + \beta_{10} (\%IEP) + \beta_{11} (\%Female) + \beta_{12} (\%Black/Latino) + \beta_{13} (\%Asian) + \beta_{14} (Cohort) + \varepsilon.$$