EDUCATION POLICY FOR ACTION SERIES
EDUCATION CHALLENGES FACING NEW YORK CITY

Do New York City's New Small Schools Enroll Students with Different Characteristics from Other NYC Schools?

Jennifer L. Jennings
Aaron M. Pallas

in collaboration with Annenberg Institute research staff

Annenberg Institute for School Reform
AT BROWN UNIVERSITY

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Education Policy for Action: Education Challenges Facing New York City is a series of research and policy analyses by scholars in fields such as education, economics, public policy, and child welfare in collaboration with staff from the Annenberg Institute for School Reform and members of a broadly defined education community. Papers in this series are the product of research based on the Institute's large library of local and national public education databases; work with the Institute's data analysis team; and questions raised and conclusions drawn during a public presentation and conversation with university and public school students, teachers, foundation representatives, policy advocates, education reporters, news analysts, parents, youth, and community leaders.

Among the issues that the series addresses are several pressing topics that have emerged from the Institute's research and organizing efforts. Some of the topics covered in the series are:

- Confronting the impending graduation crisis
- The small schools experiment in New York City
- Positive behavior and student social and emotional support
- Modes of new teacher and principal induction and evaluation

Many thanks to the Robert Sterling Clark Foundation for its support of the public conversations from which this report and the other publications in the series grew.

For a downloadable version of this report and more information about the series, please visit <www.annenberginstitute.org/WeDo/NYC_Conversations.php>.

Acknowledgments

We thank Deinya Phenix and the staff of the Annenberg Institute for School Reform for their support and research assistance; the New York City Department of Education and Tom Gold for providing access to the 2007-2009 data; and John White for his helpful comments on an earlier draft of this report.

Introduction

In 2000, the Bill & Melinda Gates Foundation made a significant investment in high school reform and supported the creation of new small high schools, as well as the restructuring of existing large comprehensive high schools. Since then, many urban districts have adopted new small school creation as a central reform strategy. Nowhere has this approach been implemented as broadly as in New York City. Since 2001-2002, twenty-seven large comprehensive high schools in New York City have been closed or downsized and reopened as campuses of "small schools." By the start of the 2009-2010 school year, over 200 new small schools had been founded in New York City.

Despite the breadth of this initiative, no study has comprehensively examined what types of students are attending new small schools in New York City and whether these students have different characteristics, on average, than students at the schools they replaced. Our study fills this gap by comparing the characteristics of entering new small high school students with those of all other New York City high schools, as well as directly comparing the student composition of the new small high schools with the large high schools they replaced. We focus on student characteristics such as gender and socio-economic status, proficiency in eighth-grade reading and math, middle school attendance, whether students are over-age for their grade, and special education and English language learner classification.

More specifically, we address four research questions:

- Are the students who enroll in new small schools similar to students enrolling in other New York City high schools in their boroughs?
- Do the characteristics of students enrolling in new small high schools change over time?
- Are the students enrolling in new small schools sited in former large comprehensive high school buildings similar to the students who previously attended the large schools?
- Have New York City's high school reforms altered the distribution of students across schools?

A Brief History of Small Schools in New York City

New York City is often credited as the birthplace of the "small schools movement." Small schools first appeared in New York in the early 1970s when Anthony Alvarado, the superintendent of Community School District 4 in East Harlem, allowed groups of teachers to start their own schools and located them within existing buildings (Fliegel 1993). These schools were given increased flexibility with regard to staffing, the structure of the school day, assessment, and resource allocation.

Throughout the 1970s and early 1980s, the number of small schools in New York's District 4 continued to grow. In 1985, Deborah Meier founded Central Park East Secondary School, perhaps New York's most famous small high school. Until then, most small schools were K–8 schools supported by New York's thirty-two decentralized community school districts. In contrast, Central Park East Secondary

School represented a collaboration between a community school district and the central Board of Education.

External foundation funding ultimately catalyzed the founding of large numbers of new small schools in New York City. In the early 1990s, Norm Fruchter, leading education programs for the Aaron Diamond Foundation, joined with Beth Lief, executive director of the Fund for New York City Public Education, and Deborah Meier to propose the creation a group of new small schools. In August 1992, Chancellor Joseph Fernandez embraced this concept and announced that the city would create thirty small high schools in partnership with intermediary organizations: "Planned from the ground up by the community, parents, and teachers, the schools will foster student choice and innovative instruction responsive to the diversity of our student population" (Fliegel 1993, p. 76). The Aaron Diamond Foundation donated start-up planning grants of $25,000 per school to the Fund for New York City Public Education, which channeled this money to the Board of Education for the creation of the new small schools. The Fund, reborn as "New Visions for Public Schools," issued a Request for Proposals for new schools late in 1992 and received over 280 proposals from community groups, teachers, and other agencies. By fall 1993, thirty-seven new schools were slated to open.

Historically, small schools had not replaced existing schools. This changed in fall 1992, when Julia Richman High School stopped taking incoming ninth-graders and the Coalition Campus Schools Project replaced it with a number of small schools. Improved student outcomes at the "Julia Richman Educational Complex" were quickly cited as evidence that the model should be expanded, and the Campus Coalition Schools Project expanded to Monroe High School in the Bronx the following fall (Bradley 1993).[1] The new chancellor, Ramon Cortines, then agreed to open another group of new schools in September 1994 (Darling-Hammond 1997).

New York's small schools movement received an additional boost in 1993, when Walter Annenberg announced his intention to donate $500 million to reinvigorate public and rural schools across the country. New York City was selected as the first site, and Annenberg donated a total of $25 million. This donation was not made to the school district, but to independent intermediary organizations. To carry out this initiative, in 1994, New York Networks for School Renewal was formed as a coalition of the four grantee organizations: the Association of Community Organizations for Reform Now (ACORN), the Center for Collaborative Education, the Center for Educational Innovation, and New Visions for Public Schools. By 2000, forty new small schools had been founded under the auspices of the Annenberg Challenge (Stiefel et al. 2000).

In 2000, the Gates Foundation initiated a major small high schools reform program (Gewertz 2000). Following this announcement, in 2001, New Visions launched the New Century High Schools Initiative in New York City with the support of the Gates Foundation, Carnegie Corporation, and the Open Society Institute, which "sought to establish high-quality small schools as the DOE closed large, failing high schools" (New Visions 2006). The Gates Foundation donated an additional $51.2 million in 2003 to New York intermediary organizations (Herszenhorn 2003), and Mayor Michael Bloomberg made the creation of 200 new small schools the centerpiece of his educational agenda.

[1] In the six new schools that replaced Julia Richman, 89 percent of students attended school on a given day, versus 64 percent of students in previous years (Darling-Hammond, Ancess & Ort 2002).

The High School Admissions Process in New York City

New York City is unique in that all students must apply to high school, and this admissions process is important to understanding how new school foundings may have changed the distribution of students across schools. Over the past twenty years, the number of public high schools in New York City has grown from about 120 schools to over 400. Each year, more than 80,000 eighth-graders from public and private schools apply for entry into a public high school program. The application process takes the better part of a year, beginning with open houses, auditions, and entrance examinations; it concludes when student appeals are decided and schools' final rosters are created.

The application process is anchored in a simultaneous queuing process modeled after the hospital residency "match." Students list up to twelve schools (or school programs)* in their own order of preference, but the schools do not know whether the student ranked the school first or twelfth. Schools rank-order applicants according to their stated or unstated criteria; a complex computer algorithm is used to match students to schools. Students are ultimately offered a seat at one school only. This process unfolds in three rounds. If a student is not offered a seat in the first round, s/he can reapply to schools with open seats in the second round, and so on.

New York City schools use multiple admissions regimes to admit students. There are nine specialized high schools, eight of which require a competitive score on an entrance exam, and one of which (LaGuardia High School) requires an audition. Some school programs are screened, which means that selection is based on a student's previous record of academic performance and, in some cases, an interview; others, typically in the performing or visual arts, screen students on the basis of an audition.

Programs admitting students through the "educational option" method select half of their incoming students on the basis of their academic record, while drawing the other half randomly from applicants to the program. Unscreened programs rely solely on a computer to randomly select students from applicants, and a student's prior academic performance is not allowed to be considered. "Limited unscreened" programs also rely on a random selection from among applicants whom the school verifies have demonstrated an interest in the program by attending a school's information session. Other high schools in the city are "zoned," which means that they admit students who live nearby, whether or not they have applied to the school. All of the high schools in Staten Island and some of those in the Bronx, Brooklyn, and Queens have a comprehensive zoned program, and many schools with comprehensive zoned programs have specialized theme programs as well.

The majority of new small schools are limited unscreened. Admission to these schools is not based on students' performance, but on schools' confirmation that the student is making an "informed choice" to attend the school. What constitutes an "informed choice," however, has been left to the discretion of individual schools. Some schools require students to attend information sessions; in the past, schools have required that students attend a session with a parent or guardian, but this practice has now been forbidden by the NYCDOE. Other schools have asked students to fill out applications – some involving essay questions and recommendations from their middle school principal and guidance counselor – to verify informed choice. In addition, until recently, all limited unscreened schools had access to individual students' prior attendance, grades, their test scores, their date of birth, their address, their sending junior high schools, and their special education and English language learner status. Whether schools have used this information to select their students remains an open question.

*An individual school in New York City may host multiple "programs," often organized around curricular themes, while some other schools only operate one program. Students apply to individual programs rather than to schools; for example, if a school operates twelve programs, a student could list each of these programs as his or her twelve choices through the school choice process.

At this point, the focus of the small schools reform effort shifted from a new schools creation strategy that marked the small school foundings of the 1990s to a "failing school" closing strategy. Between 2000 and the present, a total of twenty-five comprehensive high schools were closed, or planned for closure, and reconstituted with new small schools. An additional two high schools have been dramatically downsized and replaced with small schools. Over this time period, some charged that large schools were being set up to fail, that small schools were being given more resources than the large schools, and that small schools were "creaming" the best students, leaving the large schools with the toughest and most disadvantaged students (Bloomfield 2005; Gootman 2004). Notwithstanding these critiques, by fall 2008 the New York City Department of Education (NYCDOE) met its goal of opening 200 new schools, the majority of which have been sited within large comprehensive high schools.

The small schools reform effort shifted from a new schools creation strategy that marked the small school foundings of the 1990s to a "failing school" closing strategy.

This paper informs the discussion about the impact of new small schools by first determining whether the students attending new small schools are similar to students attending other New York City high schools in the same borough, and then determining whether the students attending small schools sited in large high schools are similar to those who attended the schools they replaced. Our data do not allow us to establish whether any differences that emerge are a function of student choices or of selection by the school. Nonetheless, to our knowledge our paper is the first attempt to systematically examine the composition of the most recent wave of New York City's new small schools.

Findings

Before introducing our findings, we first draw attention to the geographic distribution of small schools across the five boroughs of New York City. Between the fall of 2002 and the fall of 2008, 207 new schools meeting our sample selection criteria (not transfer schools and with data available on ninth-grade classes) had been founded. Seventy percent of these schools are located in the Bronx and Brooklyn, while 15 percent are located in Manhattan, 14 percent in Queens, and 1 percent in Staten Island (see Figure 1).

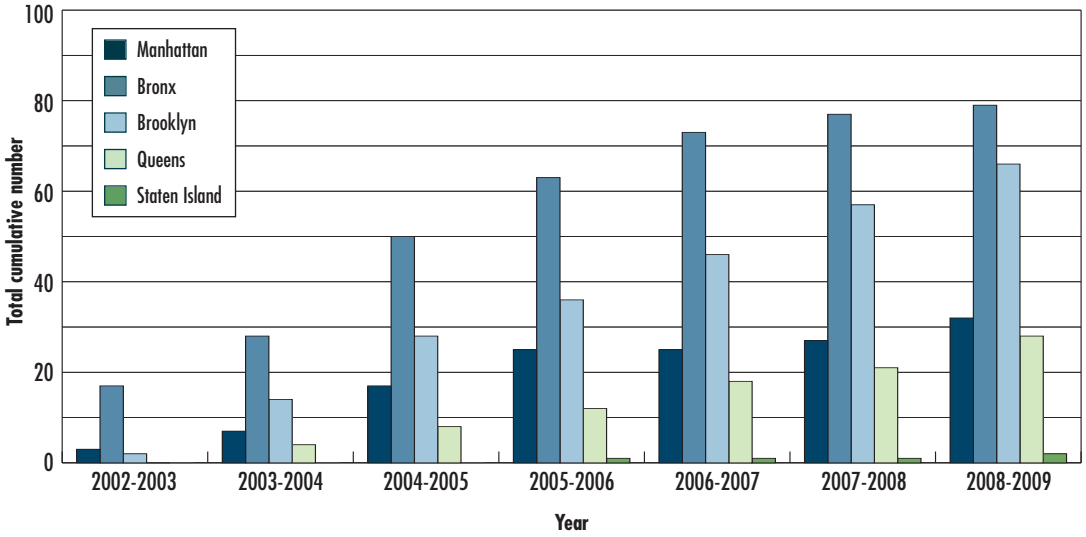
In what follows, we discuss the key findings of our study. Appendix A, Data and Methods, discusses the data and analytic strategy in detail, and Appendix B provides the full results from our regression models.

Are the students who enroll in new small schools similar to students enrolling in other New York City high schools in their boroughs?

We begin with the question of whether the composition of new small high schools differs from other New York City high schools in their boroughs. Because new small schools are generally unscreened schools, which do not select their students based on prior performance, and schools in the comparison group include schools with competitive admissions based on prior performance, we might expect new small schools to enroll lower-achieving students on average.

We first calculate the average difference in the characteristics of the ninth-graders in the new small schools and in all other schools in the same borough across all years of our sample, 2002-2003 through 2008-2009 (see Table 1a for descriptive statistics of this sample). Because, as we demonstrated in Figure 1, small schools are not distributed evenly across boroughs and these boroughs are geographically and socio-economically distinctive, we compare small and other schools in the same borough. Thus, in the figures that follow, we adjust schools' average characteristics by their borough averages, so a school with a value of -5 in reading proficiency enrolls students 5 percentage points below the borough average. Along these lines, because there are secular time trends in many of the characteristics of interest – for example, the percentage of students proficient in reading and math increases over this time period – we also control for year.

Figure 1
Growth in total number of new small schools by borough, 2002-2003 to 2008-2009



New small schools, on average, had entering classes that are less likely to be proficient in mathematics in eighth grade, less likely to enroll special education students, and more likely to qualify for free or reduced-price lunch.

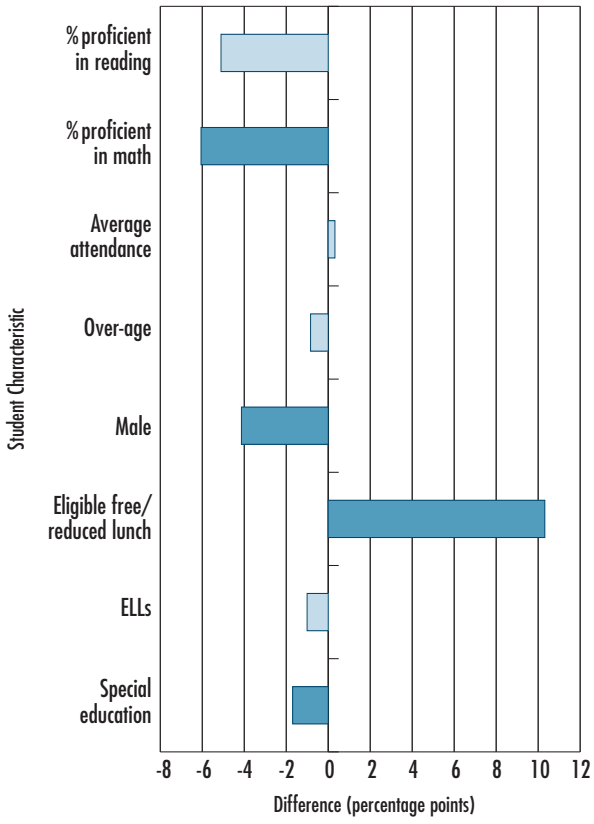
Figure 2 graphs the results of this analysis; statistically significant differences are represented by dark bars, while insignificant differences are represented by light bars.[2] Averaging across all years (2002-2003 through 2008-2009), new small schools did not differ significantly from other New York City high schools in their initial intake of students proficient in reading, students' prior attendance, the percentage of students who are over-age, or the percentage of English language learners (ELLs).

There were, however, important differences between new small schools and other New York City high schools on the four other characteristics. New small schools, on average, had entering classes that were less likely to be proficient in mathematics in eighth grade (a difference of 6.1 percentage points) and less likely to be male (a difference of 4.1 percentage points). New small schools were also less likely to enroll special education students (a difference of 1.7 percentage points). At the same time, new small schools enroll students who are more likely to qualify for free or reduced-price school lunches – the conventional measure of a student's socio-economic status – a difference of 10.3 percentage points.

There are two caveats to these results. For the four years for which data are disaggregated for full-time and part-time special education students (2002-2003 through 2005-2006), we estimated the same models. We found no difference in the percentage of students in part-time special education in small schools. However, we found that small schools over this time period were substantially less likely to educate full-time special education students, a difference of 4.6 percentage points. During this time period, small schools were given a waiver that allowed them to exclude full-time special education students until their third year of opera-

Figure 2

Characteristics of entering ninth-graders, new small schools compared with existing schools, 2002-2003 through 2008-2009 average



NOTE: Statistically significant differences are represented by dark bars, while insignificant differences are represented by light bars.

[2] See tables 2a and 2b in Appendix B for the data from our regression analysis for each of the eight student characteristics.

tion. However, we found that even for schools that were open for three or more years, small schools continued to serve a smaller fraction of full-time special education students (a difference of 2.9 percentage points).[3]

The story for ELLs also changes when we exclude newcomer schools serving solely these students. New small schools serving all students enroll 2.9 percentage points fewer ELLs. Our estimates do suggest that this disparity is declining. While new small schools in 2003 enrolled 4.9 percentage points fewer ELLs, this difference had narrowed to 1.7 percentage points by 2009, though this change over time was not statistically significant.[4]

Overall, the story of the growth of new small schools in New York City is complex. In some ways they were more selective than other high schools in their boroughs, and in other ways they were not. We found no evidence, for example, that the ninth-graders entering new small high schools had better academic records than the ninth-graders entering other high schools, as indexed by rates of proficiency on state reading and mathematics tests; in fact, they had worse performance on prior mathematics tests. Nor were the entering students in new small schools economically advantaged as measured by eligibility for free or reduced-price lunch; these schools actually had higher percentages of students eligible for free or reduced-price lunch than did other New York City high schools. At the same time, new small schools were significantly less likely to enroll ninth-graders who were male or full-time special education students, and new small schools that serve both ELL and non-ELL students were less likely to enroll ELL students (NYIC & ACNY 2006).

Do the characteristics of students enrolling in new small high schools change over time?

We now consider how these differences changed over the period 2002-2003 through 2008-2009. Figures 3–5 display these differences over time for each of the eight characteristics.[5] For reading and math proficiency and attendance, our estimates suggest that from 2002-2003 to 2004-2005, small schools attracted higher-performing students. By 2004-2005, small schools enrolled students who were more likely to be proficient in reading and mathematics and were more likely to have better attendance in middle school. Each year thereafter, small schools enrolled a progressively more disadvantaged population.

In some ways new small schools were more selective than other high schools in their boroughs, and in other ways they were not.

The story is similar for the percentage of students who are over-age for grade, ELL, or special education (see Figure 4 on page 8). Through 2004-2005, small schools became less likely to enroll over-age, ELL, or special education students, but this pattern reverses in the subsequent years. By 2008-2009, small schools enrolled a population that was 2.3 percentage points more likely to be over-age, 0.29 percentage points less likely to be ELL, and 0.8 percentage points more likely to be special education. Though we cannot rule out the possibility that there is no change over time (these 2008-2009 estimates are not significantly different from those of 2002-2003), these results suggest that small school composition is changing over time on these characteristics.

[3] For data from the regression analysis, see tables 3 and 4 in Appendix B.

[4] For data from the regression analysis, see Table 4 in Appendix B.

[5] See tables 2a and 2b in Appendix B for the regression estimates.

Figure 3

Percentage proficient in reading and math and average attendance of entering ninth-graders, new small schools compared with existing schools by year, 2002-2003 to 2008-2009

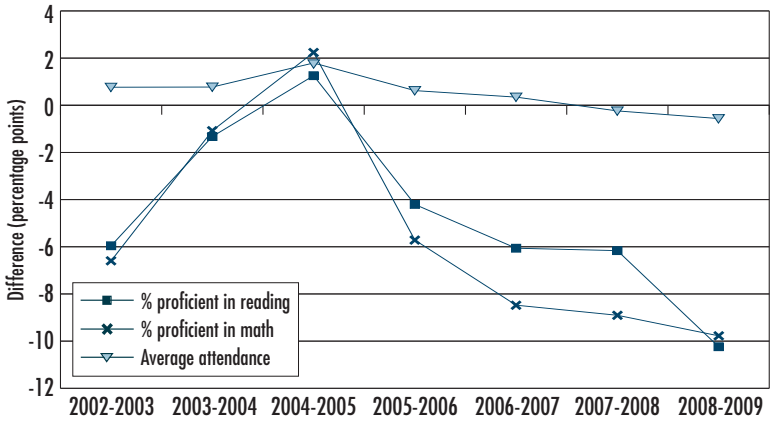


Figure 4

Percentage over-age, ELL, and special education of entering ninth-graders, new small schools compared with existing schools by year, 2002-2003 to 2008-2009

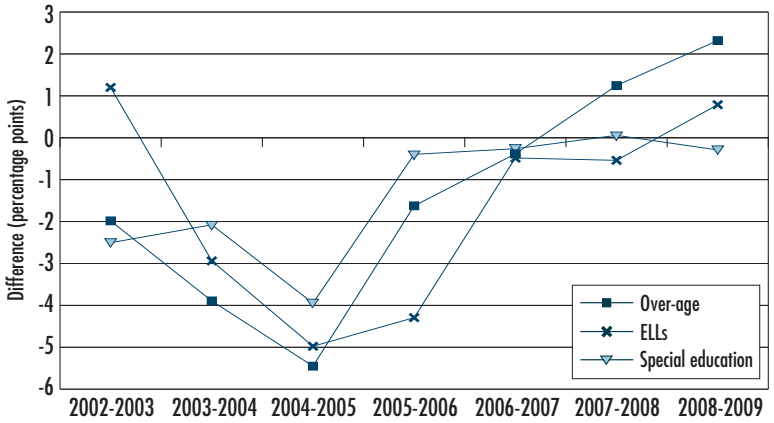
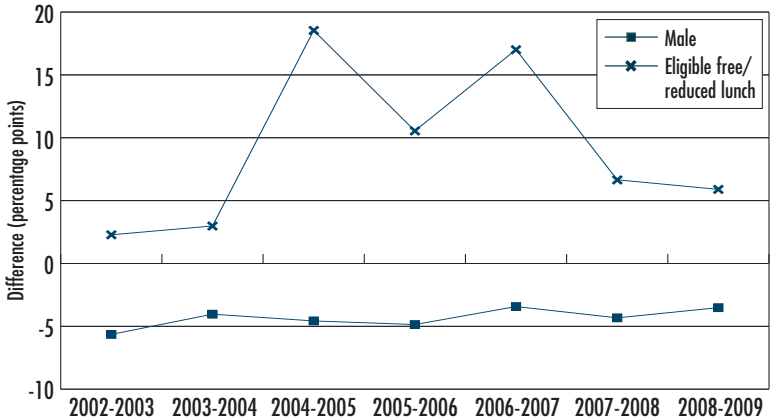


Figure 5

Gender and eligibility for free or reduced-price lunch of entering ninth-graders, new small schools compared with existing schools by year, 2002-2003 to 2008-2009



Two characteristics follow a different pattern than those previously mentioned – the percentage of students qualifying for free or reduced-price lunch and the percentage of students who are male (see Figure 5). In both cases, our estimates suggest that small schools enrolled slightly more male and free or reduced-price lunch students over time, but again, these results fall short of statistical significance.

In short, our estimates suggest that small schools opened in 2002-2003 were similar to New York City schools in all elements but the percentage of students who were male, but by the 2004-2005 academic year, they enrolled a more advantaged population in terms of the percentage of students proficient in reading and math, prior attendance, and special education. Our results suggest that 2004-2005 also marked the lowest ELL and over-age enrollment in the small schools. After 2004-2005, the fraction of academically challenging students that small schools enrolled increased each year.

This result is consistent with the pattern of school closings.[6] It appears that as the first round of large schools closed, students who would have attended the closed schools initially did not attend the new small schools. Over time, as more and more large comprehensive high schools closed, more academically challenged students have populated the new small schools.

[6] See Figure 6 on page 9 for a timeline and locations of school closings.

Are the students enrolling in new small schools sited in former large comprehensive high school buildings similar to the students who previously attended the large schools?

We turn next to a more focused comparison. Previously, we compared new small schools, the majority of which are "unscreened," or unable to select students based on academic characteristics, following district rules, with other New York City high schools in the same boroughs, which include both screened and unscreened schools. Arguably, an apples-to-apples comparison would compare new small schools with the large comprehensive schools they replaced. Between 2001-2002 and 2008-2009, twenty-six large comprehensive high schools were replaced by new small schools located at the same sites; Figure 6 depicts the years and locations of school closings.[7] In all but two cases, the large comprehensive schools closed completely; in the case of two schools, they were downsized substantially over time.

In either event, we can compare the characteristics of the new entering ninth-graders at these new small high schools with the student characteristics of the large comprehensive schools they replaced. Doing so will enable us to address the question of whether the students enrolled in new small schools at closed or downsized campuses differ in meaningful ways from the students in the schools they replaced.

[7] The twenty-seventh school, Brandeis, did not yet have small schools in its building when it took its last ninth-grade class. See Figure 1 on page 5 and tables 1b and 1c in Appendix B for data on new school openings.

Figure 6
Timeline of New York City comprehensive high school closings

Borough / School Year	BROOKLYN	BRONX	MANHATTAN	QUEENS
2001-2002	• John Jay High School	• Morris High School • South Bronx High School	• Martin Luther King High School	
2002-2003	• Bushwick High School • George Wingate High School • Prospect Heights High School	• Theodore Roosevelt High School • William Howard Taft High School	• Park West High School • Seward Park High School	
2003-2004	• Harry Van Arsdale High School • Thomas Jefferson High School			• Springfield Gardens High School
2004-2005		• Evander Childs High School • Walton High School		
2005-2006		• Adlai Stevenson High School		
2006-2007	• Lafayette High School • South Shore High School • Samuel J. Tilden High School			
2007-2008	• Canarsie High School			• Far Rockaway High School
2008-2009	• Franklin K. Lane		• Bayard Rustin High School • Louis Brandeis High School	

NOTES: *School year* is the year that closing schools accepted their last ninth-grade class.

Two additional schools in the Bronx, Christopher Columbus High School and John F. Kennedy High School, were significantly downsized and multiple small schools were added to the building. These schools are also included in our analysis.

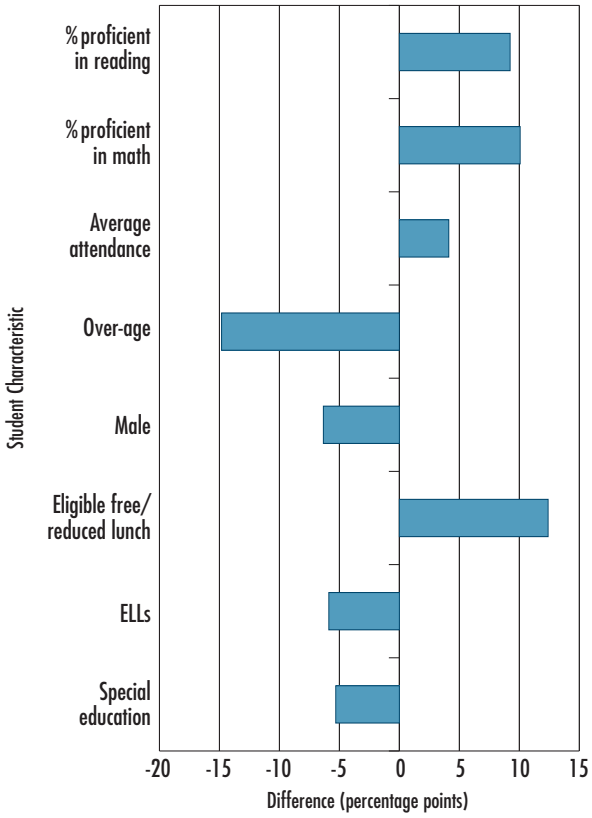
Our analysis examined the characteristics of students at closing schools and the trends in these characteristics in the years preceding closing.[8] We also adjusted schools' average characteristics by their boroughs, so that a school with a value of -5 in reading proficiency enrolled students 5 percentage points below the borough average in the same year. For the sixteen schools with at least five years of pre-closing data, schools were already enrolling students performing below the borough average five years prior to closure. For example, the average closing school enrolled students performing 13 percentage points below the borough average in reading and math, 2 percentage points below the borough average in prior attendance, 11 percentage points above the borough average in the percent of students who were over-age, 0.8 percentage points above the borough average in percent male, 2 percentage points below the borough average in free or reduced-price lunch, and 2 percentage points above the borough average in ELL and special education students.

The closing schools were educating more challenging students than other schools in their boroughs, and their student populations became more challenging as they approached the year they stopped accepting ninth-grade classes.

These schools progressively became more concentrated with challenging students in the subsequent five years. By the time these schools accepted their final class, they were 17 and 19 percentage points below the borough mean in reading and math, 5 percentage points below the borough mean in attendance, 18 percentage points above the borough mean in over-age students, 3 percentage points above the borough mean in the percentage of students who were male, 3 percentage points below the borough mean in free or reduced-price lunch, 4 percentage points above the borough mean in

Figure 7

Characteristics of entering ninth-graders, new small schools compared with closed schools they replaced, 1999-2000 through 2008-2009 average



NOTES: *School year* is the year that closing schools accepted their last ninth-grade class.

[8] See Table 5c in Appendix B for the data from the regression analysis.

[9] For data from the regression analysis, see tables 5a and 5b in Appendix B. We begin this series in 1999-2000 to preserve multiple years of pre-closing data for the large schools.

ELLs, and 5 percentage points above the borough mean in special education students. In short, the closing schools educated more challenging students than other schools in their boroughs, and their student populations became more challenging as they approached the year in which they stopped accepting ninth-grade classes.

Figures 7 to 10 show the differences in the characteristics of entering ninth-grade students at the new small schools relative to the large comprehensives they replaced for the years 1999-2000 to 2008-2009.[9] For all eight characteristics of entering ninth-grade students, there were significant differences between new small schools and the large comprehensive schools they replaced. New small schools enrolled students who were 9 to 10 percentage points more likely to be proficient in reading and math compared to the large comprehensive schools and who had attendance rates approximately 4 percentage points higher than the students entering the large comprehensive high schools. There were lower concentrations of male students in the new small high schools than the large comprehensives (a difference of 6 percentage points), and students in the new small high schools were 15 percentage points less likely to be over-age for grade than the students entering the large comprehensive high schools they replaced.

Finally, the students entering the new small schools were less likely to be ELL or special education students. Ninth-graders entering the new small schools were 6 percentage points less likely to be ELLs than ninth-graders entering the large comprehensive schools on the same sites and 5 percentage points less likely to be special education students.

Figure 8

Percentage proficient in reading and math and average attendance of entering ninth-graders, new small schools compared with closed schools they replaced by year, 1999-2000 to 2008-2009

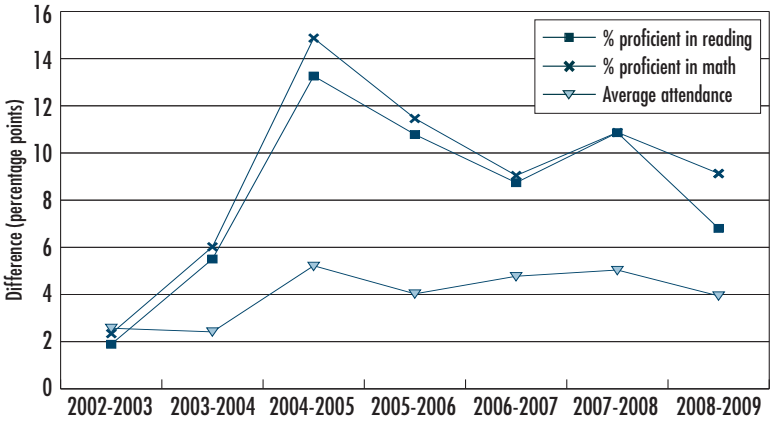


Figure 9

Percentage over-age, ELL, and special education of entering ninth-graders, new small schools compared with closed schools they replaced by year, 1999-2000 to 2008-2009

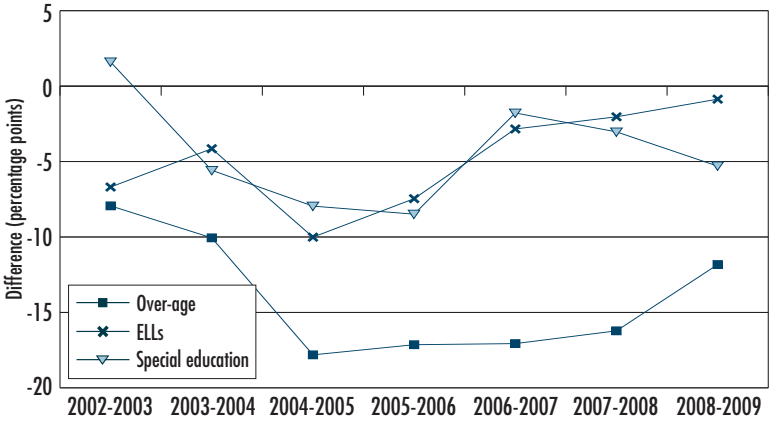
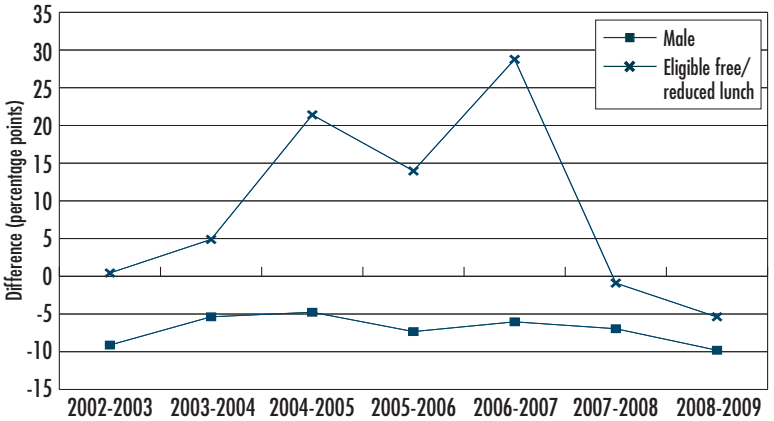


Figure 10

Gender and eligibility for free or reduced-price lunch of entering ninth-graders, new small schools compared with closed schools they replaced by year, 1999-2000 to 2008-2009



Despite these student disadvantages, we find that new small school students were 12 percentage points more likely to qualify for free or reduced-price lunch – however, this finding may result from the differential efficacy of small and large schools in collecting lunch forms.

As the new schools mature, these differences do not shrink and, in some cases, may even be getting larger. Figures 8 to 10 show that in only one of the eight instances where there are significant differences between the first entering ninth-grade class of a new small school and the ninth-grade class of a closing large comprehensive school – the percentage of students who are ELLs – is there suggestive evidence of closing the gap over time.[10]

New small schools that replaced large comprehensive schools on the same campuses are very different than the large schools they replaced.

In summary, we found that when compared with other schools in their borough over the period 2002-2003 to 2008-2009, new small schools enrolled students who were less likely to be proficient in mathematics, less likely to be male, more likely to qualify for free or reduced-price lunch, and less likely to be eligible for special education – especially full-time special education. When we limited these comparisons to schools serving all students, not solely ELL students, we also found that small schools were less likely to enroll ELL students. But we saw a very different picture when we focused our attention on large comprehensive high schools that were closing or downsizing over time and the new small high schools that replaced them on the same campuses. These new small schools were very different than the large comprehensives they replaced; they enrolled students who were academically much better off than the students in the large comprehensives.

[10] For data from the regression analysis, see tables 5a and 5b in Appendix B. When we make a more focused comparison – including building fixed effects in our models in tables 6a and 6b in Appendix B – we find that these differences are even larger.

Have New York City's high school reforms altered the distribution of students across schools?

One of the possible consequences of the expansion of small schools is a shift in the distribution of students across schools. The most common way of thinking about student distributions is racial/ethnic segregation, which is generally tracked using the Index of Dissimilarity, denoted as D. This index ranges from 0 to 1, where 0 represents an even distribution of a minority group across schools, and 1 represents the extreme case in which some schools are entirely made up of minority students and the remaining schools are entirely comprised of majority students. The value of D can be interpreted as the fraction of minority students who would have to change schools in order for them to be evenly distributed across all schools. Thus, a value of 0 indicates that students are already evenly distributed; a value of .5 indicates that one-half of all minority students would have to switch schools to create an even distribution; and a value of 1 would imply that all minority students would have to switch schools to create a distribution in which the same proportion of minority students was present in all schools.

Although the focus of segregation is often the distribution of racial and ethnic groups, in this report we examine the evenness of the distribution of several other student attributes that

reflect the selectivity of New York City high schools: the percentage of entering students who are proficient in reading and math; the percentage of entering students who are overage for grade; the percentage of entering students eligible for free or reduced-price lunch; the percentage of students who are male; the percentage of entering students who are full-time or part-time special education students; and the percentage of entering students who are ELLs.

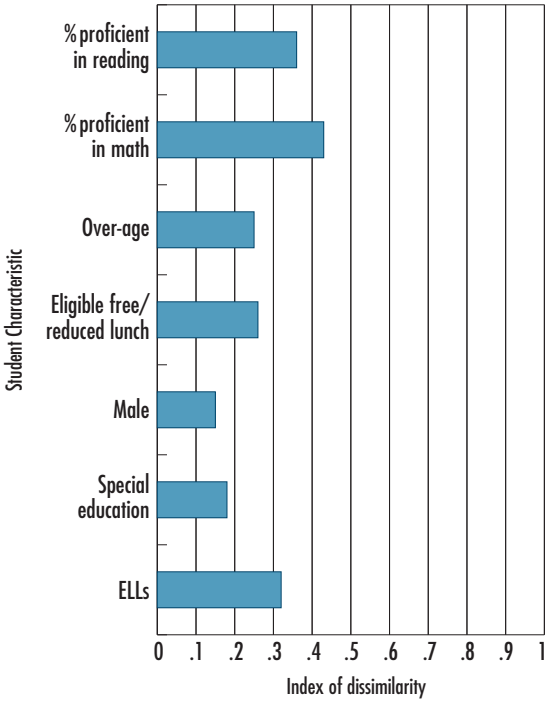
It would be surprising indeed if any of these attributes were evenly distributed across high schools in New York City, as some schools are explicitly designed to serve particular populations of students, and so are likely to have higher concentrations of some groups and lower concentrations of others. The presence of exam high schools, for example, likely results in an overrepresentation of students proficient in reading and math, since students must receive a competitive score on the Specialized High School Admissions Test to be admitted to the exam schools, and such students are more likely to have scored well on the state's eighth-grade reading and math exams as well. Similarly, some high schools may have themes that are particularly attractive to young men or women, resulting in an uneven distribution of males and females across schools.

We begin with a brief overview of the extent to which students are evenly distributed across schools across the city high school system. Then, we examine trends over time in the extent to which schools are segregated by the student attributes described above. We focus on trends separately by borough, because the patterns of school closings and foundings differ by borough, and most students elect to enroll in a school in their own borough. This approach reduces the influence of borough-to-borough differences in student characteristics in our assessment of trends in school segregation over time.

Figure 11 shows the baseline levels of segregation for New York City overall for the 1999-2000 school year. The length of each bar represents the extent of segregation for a given attribute. Overall, there was a small to moderate amount of segregation among students entering high school in the fall of 1999, but the extent of segregation varies by student attribute. The greatest amount of segregation was observed for eighth-grade math and reading proficiency, with D of .36 and .43, respectively. Relatively few New York City eighth-graders met the state's standards for proficiency at that time: about 30 percent of students were

Figure 11

Degree of student segregation in New York City high schools, 1999-2000 baseline



proficient in reading, and about 20 percent were proficient in mathematics. These figures indicate that proficient students were concentrated in some high schools more so than others.

Conversely, the least amount of segregation was observed for the distribution of male and female students across schools. Here, D is .15, indicating that only 15 percent of male students would need to switch schools in order to create an even gender distribution across all New York City high schools. Of the student attributes we are able to consider, gender is the one for which we would expect the least selection, both on the part of students and of schools. The remaining attributes all have values of D between .18 and .32.

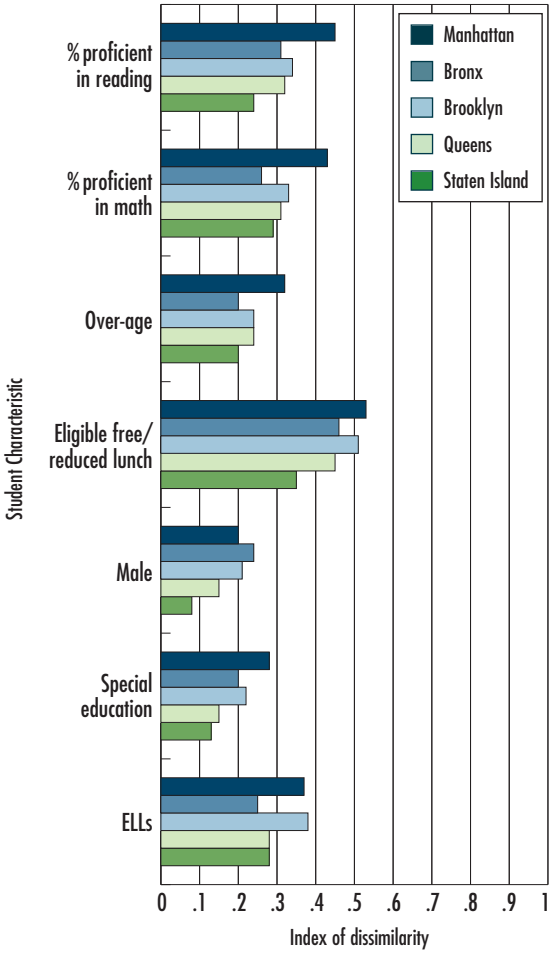
The highest levels of segregation across schools are observed for free or reduced-price lunch status.

With this baseline, we now examine the extent of segregation by student characteristics across New York City high schools in 2008-2009, the most recent year available. Figure 12 shows the current amount of segregation for each of the seven student attributes we are able to examine, separately for each of the five boroughs.[11] There are substantial differences in the amount of segregation by eighth-grade proficiency in reading and math, with the highest levels of segregation observed in Manhattan and Brooklyn and the lowest levels in Staten Island. There is also a moderate amount of segregation by over-age status observed in each of the five boroughs, indicating that over-age students are more clustered in some schools than in others, but not dramatically so.

The highest levels of segregation across schools are observed for free or reduced-price lunch status, with D of over .50 in Manhattan and Brooklyn, indicating that more than one-half of the students eligible for free/reduced-price lunch would need to change schools for these students to be distributed evenly across high schools in these two boroughs. The lowest levels are observed for gender, but even here the differences across high schools within a borough can be surprisingly large. In Manhattan, the Bronx, and Brooklyn, more than 20 per-

Figure 12

Degree of student segregation in New York City high schools in 2008-2009, by borough



[11] Average attendance was not included in this analysis, since it is not a categorical attribute.

cent of male students would need to switch high schools to achieve an even representation across schools.

A similar pattern is observed for the distribution of students eligible for full-time or part-time special education services, with higher rates of segregation in Manhattan, the Bronx, and Brooklyn than in Queens and Staten Island. More than 20 percent of the special education students in Manhattan, the Bronx, and Brooklyn would need to change high schools for these students to be represented in equal proportions across high schools in these boroughs.

There is much more segregation of ELLs across high schools in every borough, with the highest levels in Manhattan and Brooklyn. In these boroughs, nearly 40 percent of ELLs would need to change schools to obtain an even distribution, indicating that there currently is a great deal of clustering of ELLs in a subset of the high schools in these two boroughs. The Bronx, Queens, and Staten Island also exhibited relatively high levels of segregation of ELLs by school; more than 25 percent of the ELLs in each of these three boroughs would need to move to a different high school to achieve an equal balance across the high schools within each borough.

Having shown the baseline levels of student segregation for the city in 1999-2000 and the current levels for each borough, we now consider changes in segregation over the period 1999-2000 to 2008-2009 for each borough. Figure 13 on page 16 shows the change in the segregation index from 1999-2000 to 2008-2009 for each of the seven attributes of entering ninth-grade high school students, by borough. A quick glance at the figure shows a complex pattern of increases and decreases. We judge increases and decreases of .10 or less in magnitude over the ten years for which we have data to be small.

Using this criterion, the overall pattern of student segregation from 1999-2000 to 2008-2009 is relatively stable. For the most part, we do not observe a systematic increase or decrease over time in borough-specific segregation rates. There is a decline in segregation by math proficiency in Brooklyn and the Bronx, especially over the most recent five years. Conversely, segregation by reading proficiency increased by .10 in Queens from 1999-2000 to 2008-2009. But we did not see important changes in the distribution of eighth-grade student proficiency in reading and math across high schools within boroughs, even as proficiency rates increased sharply over this ten-year period. Nor were there large changes in the distribution of over-age students across schools over the decade for which we have data. The segregation index for Queens rose from .13 to .24, an increase of .11, but the other boroughs displayed very stable levels of the segregation of over-age entering high school students across schools.

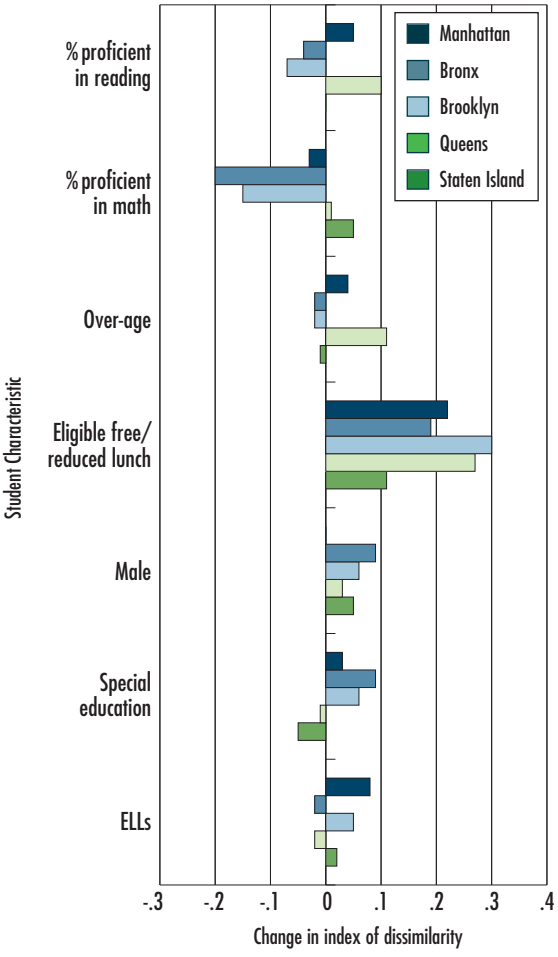
In Manhattan and Brooklyn, nearly 40 percent of English language learners would need to change schools to obtain an even distribution, indicating that there currently is a great deal of clustering of ELLs in a subset of the high schools.

By far the most dramatic feature of Figure 13 is the sharp increase in the extent of segregation by students' eligibility for free or reduced-price lunch in every borough over the past five years. The steepest increase is seen in Brooklyn, which rose from an index of .21 in 2000 to .51 in 2008-2009, but similar evidence of increased segregation by free/reduced-price lunch status is seen in the other boroughs as well.

We do not have a good explanation for these increases. The data on free/reduced-price lunch status are, in general, less stable over time at the system level than the other data we consider, which might reflect changes in the collection or reporting of the data that are not obvious. We also suspect that some schools are more vigorous than others in seeking to identify which of their students are eligible. If these schools were disproportionately new small schools, that might partially explain the apparent increase in segregation by student socio-economic status. We do know that newer small high schools have higher concentrations of students eligible for free/reduced-price lunch than other high schools. Whether this is due to better accounting for student eligibility or the differential selection of students according to their socio-economic background is difficult to tell.

Figure 13

Change in student segregation in New York City high schools between 1999-2000 and 2008-2009, by borough



The changes over time in segregation levels for the remaining three student attributes – gender, special education status, and ELL status – are all relatively small and fail to meet our substantive threshold of an increase or decrease of at least .10 over the ten-year period. The one caveat we offer is that, due to changes in the NYCDOE's reporting practices, it is not possible to separate students eligible for part-time special education services from those eligible for full-time special education services. Thus, we cannot address the question of whether entering ninth-grade students with the most profound disabilities have become increasingly concentrated in a subset of high schools over the period from 1999-2000 to 2008-2009.

Across the various measures of entering students' characteristics, then, the story we observe is more one of stability than of change in the extent of segregation among schools in a given borough. At the beginning of this

Feedback from the Community Forum

On September 23, 2009, preliminary results of this study were presented in a community forum hosted by the Annenberg Institute for School Reform. Several dominant themes emerged in the community feedback elicited at that forum.

The closing of large schools affects the population of other large schools.

Eloise Messineo, principal of Brandeis High School, which is in the process of closing, explained that proximate closings have also affected the population of her school, particularly through the number of "over the counter" students – students who are not admitted through the formal admissions process – that the school receives. Last year, her school enrolled 489 students over the counter in addition to 700 other freshmen placed through the admissions process.

How the NYCDOE handles the closing process and communicates information to the community influences who attends the new small schools.

Ana Maria Archila, the founder and co-executive director of Make the Road New York, noted that the process through which her community learned about the closing of Bushwick High School was an important factor for students choosing to enroll in the new small schools. In that case, she said, parents and students learned of the closing primarily through rumors. Ultimately, there were only 400 seats available in the new small schools, although approximately 700 students had attended the school in the past. As a result, many students who previously would have attended Bushwick High School had to travel outside of the neighborhood to attend high school; she believed that these students were from families who were less able to navigate the school bureaucracy.

New small schools face challenges in serving ELL and special education students; they need additional resources and support from the NYCDOE to do this successfully.

Many participants believed that small schools need additional support to successfully serve special populations. As Archila from Make the Road explained:

> ELL and special education students are not having the same opportunities to take advantage of major school reform initiatives. As we think about the creation of small school options, they also have limitations. It's hard to support ELL students because of school budget decreases. There are choices that small high schools have to make all the time, and the Department of Education has not been good at providing more support and more resources for small schools to support students with high learning needs who want to be part of small schools.

Kim Nauer from the Center for New York City Affairs reported on her ongoing research about how students and families make high school choices. Her research has revealed that guidance counselors steer students with special needs to large schools because they offer a full array of programs and services, while the small schools currently do not. This finding was also reflected in Eloise Messineo's comments. She explained that Brandeis is able to offer twelve levels of ESL services, as well as a continuum of services in special education. Others provided anecdotal evidence that Individualized Education Programs (IEPs) are being altered to reflect the limited services that small schools can provide. Leonie Haimson of Class Size Matters reported that she recently received an e-mail from a teacher at a small school who was asked to change students' IEPs to parallel the services the school was able to offer students.

Schools with high concentrations of challenging students are being re-created among the new small schools.

One member of the audience worried that failing schools are being re-created again by allowing the market to fully determine student placement:

> Some high schools were truly terrible. The DOE allowed them to become this way. The lowest-achieving schools had the most difficult kids – schools like Taft and Jefferson. They had been like that for ten to fifteen years. They served a purpose – they were a dumping ground. Today, it's market driven. . . . Schools do brochures, CDs, and market themselves. Some pick the right names. Some schools have 75 percent girls and tend to do much better than the opposite scenario. . . . If you're lucky enough to end up in a high-achieving school, the school is credited. If you choose a school with social justice in the name and few kids apply, you get a much poorer education. The DOE lets the market decide. We are going to re-create failing small schools, if it's solely the marketplace that is left to determine successful and not successful schools.

Eloise Messineo also added that some new schools are enrolling high concentrations of students who are not proficient in reading and mathematics and who require ELL and special education services. From her perspective, this has created a vicious circle, as higher-achieving students observed the schools' poor results and chose not to apply to such schools. Jackie Bennett of the United Federation of Teachers added to these concerns, arguing that if we simply replaced all large schools with small schools, ultimately we would have the same results, with some schools continuing to fail but with fewer services offered to meet student needs. Closing this discussion, Jim Devor, president of the Community Education Council of District 15, Brooklyn, asked whether the small schools initiative had increased segregation, which ultimately led us to pursue the analyses previously presented.

What is missing is a view of the population of high schools as a system, in which schools occupy distinct niches and the fortunes of one school can influence what happens to other schools.

decade, there were moderate levels of segregation among schools in the concentration of students with various academic and social factors that presaged trajectories of success or failure. At the end of the decade, after the expansion of small high schools in many of the five boroughs of New York City, the amount of segregation was largely unchanged, with the significant but puzzling exception of students' free/reduced-price lunch eligibility.

Overall, we see little evidence that the expansion of small high schools in New York City, including the replacement of large comprehensive schools with smaller schools on the same campus, fundamentally redistributed students throughout the system.

Conclusion and Recommendations

Our purpose here was not to evaluate the academic outcomes of New York City's small school initiative, and we have intentionally minimized any discussion of key high school outcomes such as graduation or dropout rates, Regents exam pass rates, college readiness, or preparation for the labor force. Such outcomes should be the subject of more comprehensive assessments of the impact of the high school foundings and closures over the course of this decade, and we are confident that others will be studying them in appropriate detail.

The closing of large comprehensive high schools and opening of a large number of small high schools, coupled with the refinement of the high school choice process, can be viewed as an effort to expand the role of the market in the New York City public high school system. In this market, students and their families "vote with their feet," casting their lots with some high schools and not with others. Over time, according to market proponents, the market responds to consumer preferences: schools that offer the kind of schooling that students and their parents want attract many applications, and those that do not attract fewer applications. The "winners" in this system survive by attracting the students and other resources that can enable them to succeed, and the "losers" run the risk of being closed.

The NYCDOE might view its role primarily as creating a market and providing students and families with information about the population of high schools that can help them make an informed choice. Historically, this information has been summarized in the annual high school directory, a compendium the size of a telephone book, which now includes a high school's School Progress Report letter grade – the centerpiece of the NYCDOE's accountability system.

But such a view treats each school as an independent entity that rises or falls on its own merits. What is missing is a view of the population of high schools as a system, in which schools occupy distinct niches, and the fortunes of one school can influence what happens to other schools. A systemic view leads to

the recognition that closing or opening schools can have consequences for other schools.

We are not in a position to judge whether the choices that the NYCDOE has made in closing and opening schools have benefited the population of high school students in New York City. That question will benefit from further study. But we do think that the consequences of these choices for the distribution of students across the city should be traced over time. It's not enough, in our view, to track the School Progress Report grades received by new high schools and their more established counterparts, as the accountability system is explicitly designed to compare schools serving similar populations of students. Setting aside the other limitations of the School Progress Reports, they do not provide a way of summarizing how students are distributed throughout the New York City system and how the characteristics of entering high school students differ from one borough to the next.

In many respects, then, our primary recommendation for the NYCDOE and those who have a stake in the city's system of high schools is to *be vigilant*. By acknowledging that school foundings and closings have consequences for other schools, stakeholders can identify instances in which a purposeful intervention in policy or practice might be appropriate. One such intervention observed over the years we studied was the repeal of the waiver originally granted to new small schools regarding the admission of students with special needs. The initial waiver and its later rescission shifted how entering ninth-grade students were distributed among the high schools in New York City. But although the waiver was widely known, there was no systematic study of its consequences for where students attended school.

Part of this task of being vigilant involves subjecting the high school choice process itself to greater scrutiny. In many respects, this system of matching students to schools can be viewed as a success: a great many students receive their first-choice school, and the overwhelming majority are assigned to one of their top three school choices. But we still lack insight into how and why students and their families choose to rank some schools highly and to ignore other high schools. A more detailed analysis of the ways in which a student's academic background and needs, and where he or she lives, shape high school choices could enable the system to respond more effectively to what parents and students deem to be important.

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Data and Methods

Data Collected

Two types of data were central to our analyses. The first pertained to the identification of high school openings and closings, and the second to the characteristics of new students entering the school.

Identifying School Foundings and Closings

We relied on four sources of information on school foundings: an official New York City Department of Education (NYCDOE) list (NYCDOE 2009), high school directories, annual school report supplements, and school Web sites. After first coding foundings from the NYCDOE document, we cross-checked these foundings with the high school directory published by the NYCDOE and distributed to eighth-grade students who are preparing to select high schools in the annual high school choice process. The directory indicates the number of ninth- and tenth-grade seats that were available in the preceding year and the number of applications that a school received. If the directory indicated that there were no seats available or no applications in the preceding year, we coded the school as not open during that preceding year. (In a few instances, the directories directly identified the year that the school opened.)

Second, we coded foundings from the annual school report supplements produced by the NYCDOE to accompany annual school reports prepared by the New York State Education Department. The supplements briefly describe a particular school and provide information on the characteristics of the school, its teachers, and its students, including student performance measures. Of particular note, the annual school report supplements include a profile of entering ninth- and tenth-graders for a given school year. If data on entering ninth- and tenth-graders were missing for a particular school year, and there were no previous years with valid data, we inferred that the school was not open in that school year. Finally, in cases where the aforementioned sources were not in agreement, we referenced the NYCDOE Web site and Insideschools.org, which performs reviews of all high schools in New York City.

To identify comprehensive high schools that were in the process of phasing out, we used a second NYCDOE document to identify the final year that schools accepted a freshman class (NYCDOE 2008). We used school addresses available in the annual school reports to identify the large school buildings in which small schools were sited and cross-checked these addresses with reports of the school's location available on insideschools.org, in high school directories, and on the NYCDOE's Web site. Because schools often moved in their first years of operation, we are careful to compare the population of large closing high schools only with those in the building in a given year.

Combining these sources of data, then, we were able to identify the year in which new small high schools opened and began enrolling classes of entering ninth-grade students, the buildings in which they were located each year, and the year in which large high schools stopped enrolling classes of entering ninth-graders.

Data on the Characteristics of Entering High School Students

The second type of data used in our analysis consists of the characteristics of new students entering the school from the school years 1999-2000 through 2008-2009. Here, we rely on the profiles of entering ninth- and tenth-grade students in the annual school report supplements from 1999-2000 through 2005-2006. These data represent students who were on the school's register as of October 31 of a given school year as new ninth- or tenth-grade students who had come from a different school. Many high schools hold a small number of seats for new entering tenth-graders, but overwhelmingly these data pertain to entering ninth-graders. The NYCDOE stopped producing these reports in the school year 2006-2007 but generously provided us with parallel characteristics of ninth-grade students for the school years 2006-2007 through 2008-2009.

Dependent Variables

Our analyses include ten dependent variables:

Percent proficient in reading This indicator is the percentage of entering students whose performance on the statewide eighth-grade English language arts assessment was classified as proficient or above. Students are described as Level 1 (basic), Level 2 (partially proficient), Level 3 (proficient), or Level 4 (advanced). The indicator is the percentage of entering ninth- and tenth-grade students who scored at Level 3 or Level 4.

Percent proficient in mathematics The percentage of entering students whose performance on the statewide eighth-grade mathematics assessment was classified as proficient or above (Levels 3 or 4, similar to reading proficiency).

Attendance The average daily attendance of entering students in the semester prior to school entry, expressed as a percentage from 0 to 100.

Percent over-age for grade The percentage of entering students who were classified as over-age for their grade.

Percent male The percentage of entering students who are male.

Percent free/reduced-price lunch The percentage of entering students who are eligible for a free or reduced-price lunch.[12]

Percent ELL The percentage of entering students who are classified as limited English proficient.

Percent FT special education The percentage of entering students who are classified as entitled to full-time special class services, based on the presence of a disability. (Only available from 1999-2000 through 2005-2006.)

Percent PT special education The percentage of entering students who are classified as entitled to part-time support in general education classes or part-time special class services, based on the presence of a disability. (Only available from 1999-2000 through 2005-2006.)

Percent special education The percentage of entering students who are classified as entitled to full-time or part-time special education.

[12] Across the district, there are anomalies in the level reported for the year 2002-2003, but this is controlled for in our alalyses.

Analytic Strategy

We estimated multivariate regression models based on a panel data set in which each record is a *school-year* – that is, a particular school in a particular year. To determine whether the characteristics of students attending new small high schools differ from students in other New York City high schools, we predict a given characteristic of entering students as a function of whether the school is a new small school. Because student populations vary substantially across boroughs of the city and 70 percent of new small schools are concentrated in the Bronx and Brooklyn, we control for borough in our analyses. Similarly, because there are secular time trends in some of the characteristics of entering high school students – for example, the percentages of students proficient in reading and mathematics have increased dramatically over our study period – we also introduce controls for year. Finally, to allow different time trends by borough, we include a set of borough–year interactions. We then build on this model to consider whether the characteristics of entering new small school students have changed over time, and do so by interacting dummy variables for year and the new small school dummy variables. This first set of analyses comparing new small schools with other city schools includes 2,127 school-years of data representing 408 schools that span the entering classes of fall 2002 through the entering classes of fall 2008, the last year for which data are available; the first small schools are part of the recent New Century High Schools/Gates wave which opened in fall 2002.

Next, we consider whether the characteristics of students attending new small high schools that are sited at closed or downsized large high schools differ from the students they replaced at those large high school sites. This latter question is answered by analyzing 655 school-year observations for twenty-six large schools that closed and 109 small schools that replaced them and includes data from fall 1999 through fall 2008 to allow us to incorporate multiple years of pre-closing trend data for the comprehensive high schools.[13] Because large schools become more concentrated with challenging students as they approach closing, including multiple pre-closing years guards against over-reliance on the large schools' most disadvantaged classes in the analysis. Accordingly, the observations included in the analysis are all entering classes for the large high schools until they take their final freshman class, as well as all observations for the new small high schools that replaced them. We estimate these models with fixed effects for year, borough, and borough–year interactions and in a second set of models substitute building fixed effects for these controls. Once building fixed effects are included in the equation, the coefficient on the new small school dummy variable can be interpreted as the average difference between new small schools and the closing large comprehensive schools.

Because we are interested in the characteristics of the average student attending new small schools versus those attending other schools, we weight our models by entering ninth-grade enrollment. Where enrollment is missing for a given year, we interpolate enrollment to preserve these observations. In all models, we adjust our standard errors for clustering, since we employ multiple observations of the same schools.

[13] The twenty-seventh school, Louis Brandeis, did not host any small schools before it took its last entering class in the 2008-2009 school year.

Study Sample

Our study sample includes all New York City general education high schools enrolling at least ten ninth-grade students between the school years 1999-2000 and 2008-2009. We exclude schools serving only special education students located in District 75, as well as transfer high schools. Transfer schools are second-chance alternative high schools that serve students who have not excelled in a traditional high school. Admission is typically limited to students who have completed a year of high school in a traditional school, and there are often age restrictions for entry as well. Because students cannot apply directly to transfer schools as part of the high school choice process, and since all students attending such schools have previously spent the ninth-grade year in another school, we exclude transfer schools from our analyses. In the earlier years of our analysis, these alternative schools were generally known as "District 79" schools and are also excluded from our analysis.

Newcomer schools, the majority of which have been founded as new small schools in recent years, are schools developed for and intended to serve students who are not proficient in English and who have been in the United States for no more than four years. Because students do apply directly to newcomer schools, we include them in our analyses, although it is worth noting that by design virtually all of their entering students are limited English proficient. We then perform additional sensitivity analyses excluding newcomer schools in order to determine whether schools serving all students were less likely to enroll ELLs.

Results from Regression Models

APPENDIX B

Table 1a

Characteristics of New York City high schools entering ninth-grade classes, 2002-2003 to 2008-2009

Characteristics of ninth-grade class	Mean	SD	Minimum	Maximum	n
Proficient Reading	33.8	22.5	0.0	100.0	2117
Proficient Math	39.7	24.0	0.0	100.0	2126
Prior Attendance	89.3	3.4	26.3	98.5	2125
Percent Over-age	29.0	13.2	0.0	100.0	2127
Percent Male	50.5	12.0	0.0	100.0	2127
Percent Free Lunch	55.2	25.8	0.0	100.0	2127
Percent LEP	13.1	12.2	0.0	98.4	2127
Percent Special Education	10.9	6.0	0.0	43.3	2127

Table 1b

Number of new small schools and other New York City high schools by school year

School type	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	Total n
Other New York City high schools	194	185	179	178	179	173	171	1,259
New small schools	22	53	103	137	163	183	207	868
Total	216	238	282	315	342	356	378	2,127

Table 1c

Number of new small schools by borough and school year

Borough	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	Total n
Manhattan	3	7	17	25	25	27	32	136
Bronx	17	28	50	63	73	77	79	387
Brooklyn	2	14	28	36	46	57	66	249
Queens	0	4	8	12	18	21	28	91
Staten Island	0	0	0	1	1	1	2	5
Total	22	53	103	137	163	183	207	868

Table 2a

Characteristics of entering ninth-grade students at new small schools and other New York City public high schools, 2002-2003 to 2008-2009

	Proficient reading		Proficient math		Attendance		Over-age		Male	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
New small school	-5.107	-5.957	-6.060*	-6.597	0.362	0.765	-0.843	-1.983	-4.135*	-5.644*
	(2.996)	(3.835)	(2.903)	(3.949)	(0.431)	(0.561)	(1.646)	(3.099)	(1.607)	(2.681)
New–2003-2004		4.632		5.521		0.008		-1.911		1.610
		(3.277)		(3.079)		(0.493)		(2.750)		(2.235)
New–2004-2005		7.212*		8.835**		1.029*		-3.468		1.074
		(3.239)		(3.114)		(0.507)		(2.666)		(2.377)
New–2005-2006		1.753		0.882		-0.143		0.358		0.784
		(3.373)		(3.356)		(0.554)		(2.981)		(2.405)
New–2006-2007		-0.104		-1.879		-0.419		1.599		2.217
		(3.346)		(3.378)		(0.610)		(3.012)		(2.496)
New–2007-2008		-0.206		-2.307		-1.004		3.229		1.319
		(3.484)		(3.551)		(0.622)		(3.095)		(2.515)
New–2008-2009		-4.280		-3.178		-1.328*		4.303		2.130
		(3.656)		(3.561)		(0.609)		(3.133)		(2.482)

NOTES: All models include fixed effects for borough, year, and the interaction of borough and year. * p≤.05; ** p≤.01; *** p≤.001

Table 2b

Characteristics of entering ninth-grade students at new small schools and other New York City public high schools, 2002-2003 to 2008-2009

	Free/reduced-price lunch		LEP		Special education	
	(1)	(2)	(1)	(2)	(1)	(2)
New small school	10.318***	2.281	-1.007	-2.505	-1.693*	1.200
	(2.125)	(1.699)	(1.505)	(3.634)	(0.748)	(1.107)
New–2003-2004		0.703		0.427		-4.138***
		(2.361)		(3.066)		(1.150)
New–2004-2005		16.256***		-1.443		-6.177***
		(3.441)		(3.243)		(1.163)
New–2005-2006		8.265*		2.109		-5.493***
		(3.269)		(3.618)		(1.285)
New–2006-2007		14.730***		2.244		-1.683
		(3.019)		(3.502)		(1.257)
New–2007-2008		4.375		2.563		-1.739
		(3.258)		(3.591)		(1.313)
New–2008-2009		3.613		2.214		-0.412
		(3.251)		(3.629)		(1.326)

NOTES: All models include fixed effects for borough, year, and the interaction of borough and year. * p≤.05; ** p≤.01; *** p≤.001

Table 3

Characteristics of entering ninth-grade students at new small schools and other New York City Public High Schools, 2002-2003 to 2005-2006, full-time and part-time special education

	Full-time special education				Part-time special education			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
New small school	-4.569***	0.288	-5.083***	0.288	0.686	0.912	0.515	0.912
	(0.460)	(0.305)	(0.402)	(0.305)	(0.435)	(1.006)	(0.418)	(1.007)
New–2003-2004		-4.980***		-4.980***		0.842		0.842
		(0.618)		(0.619)		(1.016)		(1.017)
New–2004-2005		-5.064***		-5.765***		-1.113		-1.350
		(0.523)		(0.504)		(1.071)		(1.095)
New–2005-2006		-5.468***		-6.723***		-0.024		-0.448
		(0.647)		(0.690)		(1.087)		(1.135)
New–Open>=3 Years			2.127***	2.980***			0.708	1.007
			(0.623)	(0.661)			(0.618)	(0.684)

N=105

NOTES: This N is smaller than the other tables, e.g., Table 4, because the data were only available for a subset of the years under study.

Table 4

English language learner status of entering ninth-grade students at new small schools and other New York City public high schools, 2002-2003 to 2008-2009, excluding schools serving English language learners exclusively

	All foundings	
	(1)	(2)
New small school	-2.940**	-4.853*
	(1.068)	(2.242)
New–2003-2004		0.944
		(1.805)
New–2004-2005		-1.294
		(1.818)
New–2005-2006		1.760
		(2.123)
New–2006-2007		2.815
		(2.122)
New–2007-2008		3.129
		(2.166)
New–2008-2009		3.169
		(2.204)

N=2047

NOTES: All models include fixed effects for borough, year, and the interaction of borough and year. * p≤.05; ** p≤.01; *** p≤.001

Table 5a

Characteristics of entering ninth-grade students at new small schools and the large comprehensive schools they replaced, 1999-2000 to 2008-2009

	Proficient reading		Proficient math		Attendance		Over-age		Male	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
New small school	9.233***	1.889	10.071***	2.340	4.121***	2.569***	-14.818***	-7.936*	-6.336**	9.115***
	(1.435)	(2.141)	(1.484)	(2.032)	(0.584)	(0.565)	(1.701)	(3.193)	(1.951)	(2.620)
New–2003-2004		3.615		3.682		-0.154		-2.121		3.746
		(2.668)		(2.456)		(0.660)		(3.160)		(2.601)
New–2004-2005		11.373***		12.530***		2.650**		-9.877**		4.350
		(2.480)		(2.436)		(0.928)		(3.073)		(2.849)
New–2005-2006		8.894**		9.124***		1.459*		-9.205**		1.785
		(2.912)		(2.470)		(0.694)		(3.338)		(2.869)
New–2006-2007		6.852**		6.704**		2.205*		-9.131*		3.080
		(2.431)		(2.308)		(1.059)		(3.599)		(3.239)
New–2007-2008		8.973***		8.535**		2.469**		-8.285*		2.165
		(2.465)		(3.189)		(0.872)		(3.521)		(3.072)
New–2008-2009		4.914		6.790		1.372		-3.890		-0.688
		(3.315)		(4.034)		(0.860)		(4.277)		(4.162)

NOTES: All models include fixed effects for borough, year, and the interaction of borough and year. * p≤.05; ** p≤.01; *** p≤.001

Table 5b

Characteristics of entering ninth-grade students at new small schools and the large comprehensive schools they replaced, 2002-2003 to 2008-2009

	Free/reduced-price lunch		LEP		Special education	
	(1)	(2)	(1)	(2)	(1)	(2)
New small school	12.400***	0.437	-5.882*	-6.689	-5.304***	1.599
	(3.338)	(1.377)	(2.839)	(5.030)	(0.883)	(1.300)
New–2003-2004		4.453		2.542		-7.178***
		(2.536)		(3.666)		(1.577)
New–2004-2005		20.963***		-3.321		-9.552***
		(5.624)		(4.356)		(1.522)
New–2005-2006		13.539		-0.771		-10.085***
		(6.919)		(5.344)		(2.090)
New–2006-2007		28.324***		3.851		-3.378*
		(6.509)		(5.052)		(1.524)
New–2007-2008		-1.337		4.655		-4.631**
		(7.939)		(5.866)		(1.614)
New–2008-2009		-5.835		5.826		-6.902
		(7.785)		(5.168)		(3.518)

NOTES: All models include fixed effects for the building in which schools are located and year. * p≤.05; ** p≤.01; *** p≤.001

Table 5c

Trends in student characteristics at closing comprehensive high schools

Schools with >=5 years of pre-closing data (16 schools)								
Years prior to closing	Reading	Math	Attendance	Over-age	Male	Free/reduced-price lunch	LEP	Special education
4 years	-13.18	-13.21	-2.36	10.82	0.80	-2.14	2.35	2.12
3 years	-14.20	-16.12	-2.87	12.58	0.59	0.20	2.17	2.85
2 years	-15.81	-16.69	-4.05	15.27	1.08	0.57	4.42	1.74
1 year	-16.21	-18.00	-4.42	16.21	1.64	0.25	4.19	3.65
Final year	-17.71	-19.46	-5.15	18.22	3.33	-3.26	4.27	5.34

Schools with >=8 years of pre-closing data (10 schools)								
Years prior to closing	Reading	Math	Attendance	Over-age	Male	Free/reduced-price lunch	LEP	Special education
7 years	-8.38	-9.30	-0.94	4.49	1.66	1.30	1.66	0.47
6 years	-10.78	-11.59	-1.42	5.23	1.60	4.78	2.65	-0.06
5 years	-11.23	-12.51	-2.20	8.14	2.69	-5.21	3.43	0.06
4 years	-13.85	-14.88	-2.70	12.13	2.38	-3.11	3.79	2.30
3 years	-15.94	-19.33	-3.24	15.37	2.16	-2.60	4.78	4.03
2 years	-18.71	-21.27	-5.70	19.81	1.74	-5.31	6.26	2.39
1 year	-20.74	-23.37	-5.44	21.61	3.10	4.14	6.54	3.61
Final year	-20.56	-20.83	-5.50	22.62	5.92	-5.97	1.67	3.47

Table 6a

Characteristics of entering ninth-grade students at new small schools and the large comprehensive schools they replaced, building fixed effects, 1999-2000 to 2008-2009

	Proficient reading		Proficient math		Attendance		Over-age		Male	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
New small school	13.822***	3.833*	13.062***	2.954	5.434***	3.090***	-20.288***	-9.784***	-5.261**	-7.034**
	(1.701)	(1.801)	(1.537)	(1.995)	(0.428)	(0.408)	(1.342)	(2.171)	(1.778)	(2.127)
New–2003-2004		5.424*		5.538*		0.357		-4.510		2.362
		(2.347)		(2.414)		(0.585)		(2.660)		(2.191)
New–2004-2005		13.619***		14.516***		3.442***		-13.448***		2.614
		(2.328)		(2.594)		(0.871)		(2.654)		(2.393)
New–2005-2006		11.246***		11.141***		2.299***		-13.033***		1.101
		(2.731)		(2.793)		(0.605)		(2.618)		(2.485)
New–2006-2007		11.066***		10.234***		3.527***		-13.946***		3.114
		(2.715)		(2.740)		(0.988)		(2.914)		(3.028)
New–2007-2008		13.469***		12.869***		3.553***		-14.115***		1.236
		(2.740)		(3.738)		(0.661)		(2.501)		(2.980)
New–2008-2009		11.405**		12.159**		2.796**		-11.501***		-1.786
		(4.104)		(4.351)		(0.890)		(3.404)		(3.560)

NOTES: All models include fixed effects for the building in which schools are located and year. * p≤.05; ** p≤.01; *** p≤.001

Table 6b

Characteristics of entering ninth-grade students at new small schools and the large comprehensive schools they replaced, building fixed effects, 1999-2000 to 2008-2009

	Free/reduced-price lunch		LEP		Special education	
	(1)	(2)	(1)	(2)	(1)	(2)
New small school	10.216**	-5.015	-7.128***	-7.504	-6.435***	0.355
	(3.154)	(3.543)	(2.059)	(3.899)	(0.958)	(1.341)
New–2003-2004		6.775		1.461		-6.811***
		(3.449)		(2.791)		(1.354)
New–2004-2005		24.472**		-3.258		-9.482***
		(7.976)		(3.364)		(1.518)
New–2005-2006		16.489		-2.216		-9.748***
		(8.852)		(3.614)		(2.062)
New–2006-2007		32.493***		4.049		-3.168*
		(8.714)		(3.548)		(1.584)
New–2007-2008		3.822		5.143		-4.616*
		(7.225)		(3.707)		(1.803)
New–2008-2009		0.730		5.305		-8.062*
		(8.437)		(3.693)		(3.399)

NOTES: All models include fixed effects for the building in which schools are located and year. * p≤.05; ** p≤.01; *** p≤.001

Table 7

Segregation of students across New York City schools by selected characteristics, 1999-2000 to 2008-2009

Year	Reading	Math	Over-age	Male	Free/reduced-price lunch	LEP	Special education
1999-2000	0.36	0.43	0.25	0.15	0.26	0.32	0.18
2000-2001	0.37	0.44	0.24	0.15	0.27	0.34	0.19
2001-2002	0.36	0.44	0.24	0.14	0.39	0.30	0.19
2002-2003	0.39	0.41	0.25	0.15	0.22	0.36	0.20
2003-2004	0.35	0.35	0.24	0.14	0.25	0.35	0.20
2004-2005	0.36	0.34	0.25	0.14	0.40	0.36	0.22
2005-2006	0.41	0.39	0.26	0.17	0.44	0.42	0.25
2006-2007	0.39	0.41	0.28	0.18	0.46	0.33	0.23
2007-2008	0.37	0.38	0.27	0.18	0.53	0.33	0.21
2008-2009	0.37	0.35	0.27	0.19	0.50	0.34	0.22

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