

The Research Alliance for  
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# Pathways to an Elite Education: Exploring Strategies to Diversify NYC's Specialized High Schools



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### **Introduction**

New York City's specialized high schools have a long history of offering a rigorous, college preparatory, public education to some of NYC's highest-achieving students. Unlike other high schools in the City, these eight schools admit students based solely on their performance on the Specialized High School Admissions Test (SHSAT). In a typical year, about 25,000 8<sup>th</sup> graders take the SHSAT (which is free), and 5,000 are offered admission to a specialized high school. These admitted students represent about 6 percent of the 80,000 or more 8<sup>th</sup> graders who participate in NYC's high school admissions process each year.

Despite enrolling only a small fraction of the City's high school students, the specialized schools have become a powerful symbol in a larger public debate about educational equity. For years, these elite schools have served disproportionately low numbers of Black, Latino, and female students. In 2013, for example, at the three largest specialized high schools, 57 percent of incoming 9<sup>th</sup> graders were male, 64 percent were Asian, and 22 percent were White, while just 4 percent were Black and 5 percent Latino. By comparison, incoming 9<sup>th</sup> graders citywide were 51 percent male, 17 percent Asian, 13 percent White, 28 percent Black, and 40 percent Latino (see Table 1 on the next page).

This brief is based on a working paper, *Pathways to an Elite Education: Application, Admission, and Matriculation at New York City's Specialized High Schools*. Please see the paper (available at [www.ranycs.org/publications/pathways\\_to\\_an\\_elite\\_education](http://www.ranycs.org/publications/pathways_to_an_elite_education)) for information about our methods and more detailed findings.

Critics argue that this problem stems, at least in part, from the specialized schools' exclusive use of the SHSAT to determine admission. While supporters of the test insist that it is essential for maintaining the schools' high academic standards—highlighting its objectivity, as well as its emphasis on logic and advanced abilities in math and English<sup>1</sup>—there is little question that the students who are admitted based on the SHSAT do not look like NYC public schools as a whole. In 2012, a coalition of education and civil rights groups filed a complaint with the U.S. Department of Education charging that the SHSAT-based admissions policy is racially discriminatory;<sup>2</sup> that complaint is currently under review.

**Table 1: Demographics of NYC’s Specialized High Schools and All NYC High Schools, Students Entering 9<sup>th</sup> Grade in Fall 2013**

|                    | “Big 3” <sup>a</sup> | Other Specialized High Schools <sup>b</sup> | All NYC High Schools |
|--------------------|----------------------|---|----------------------|
| <b>Gender</b>      |                      |   |                      |
| Female             | 43.2                 | 41.9  | 49.0                 |
| Male               | 56.8                 | 58.1  | 51.0                 |
| <b>Race</b>        |                      |   |                      |
| Asian              | 64.3                 | 45.4  | 16.8                 |
| Black              | 3.8                  | 6.9   | 28.4                 |
| Latino             | 5.4                  | 13.7  | 39.6                 |
| White              | 21.9                 | 31.7  | 13.2                 |
| Other              | 4.7                  | 2.3   | 2.1                  |
| Number of Students | 2,963                | 835   | 69,491               |

Source: Research Alliance calculations using data provided by the NYC Department of Education.

Notes: <sup>a</sup> The “big 3” are Stuyvesant High School, the Bronx High School of Science, and Brooklyn Technical High School. <sup>b</sup> The other specialized high schools are Staten Island Technical High School, the High School of American Studies at Lehman College, the High School for Math, Science, and Engineering at City College, Queens High School for the Sciences at York College, and the Brooklyn Latin School. A ninth specialized high school, the Fiorello H. LaGuardia High School of Music and Art and Performing Arts, accepts students on the basis of an audition and a review of student records, rather than the SHSAT. LaGuardia is not included in this analysis.

In recent years, policymakers at both the City and State level have debated the future of the specialized schools. New York State law mandates the use of the SHSAT to decide admissions to the three oldest and largest schools—Stuyvesant High School, the Bronx High School of Science, and Brooklyn Technical High School—as well as “similar” high schools established by the NYC Department of Education.<sup>3</sup> In 2014, state lawmakers introduced a bill that would require the specialized schools to use multiple criteria, including grades, attendance, and state test scores, in determining admissions.<sup>4</sup> At the NYC level, Mayor Bill de Blasio, Schools Chancellor Carmen Fariña, and various members of the City Council have all signaled interest in alternatives to the current specialized school admissions policy.<sup>5</sup>

Yet, until now, there has been surprisingly little evidence to inform policymakers as they consider strategies to diversify NYC’s specialized schools. Is the SHSAT the only or main reason for the racial and gender disparities seen at these schools? What role do students’ prior academic performance, the middle school they attend, or their own preferences play in shaping their odds of attending a specialized school? And what are the likely results of the changes that have been proposed to the specialized schools’ admissions process?

This brief begins to answer these questions by examining the pathway from middle school to matriculation at a specialized high school. It explores differences in rates of

application, admission, and enrollment—highlighting opportunities to improve access for under-represented groups. The brief also simulates the effects of various alternative admissions rules, which allows us to examine how the use of criteria other than the SHSAT might alter the composition of the specialized schools.

### **The Pathway to a Specialized High School: Where Are the Opportunities to Improve Access?**

The current path from middle school to enrollment in a specialized high school is marked by several critical milestones. These include the decision to apply to a specialized high school (by taking the SHSAT), receiving an admissions offer, and accepting that offer.<sup>6</sup>

We analyzed data for nine cohorts of students engaged in NYC’s high school choice process (the 2004-2005 to 2012-2013 school years). During this period, nearly a third of New York City’s 8<sup>th</sup> graders opted to take the SHSAT. Approximately 19 percent of those who did scored high enough to receive an offer of admission to a specialized high school. And, of those offered admission, 72 percent accepted the offer.

Thus, while the SHSAT is (by design) the single most important factor determining who attends New York City’s specialized high schools, it is not the only factor. Many students—including many high-achieving students—do not take the SHSAT at all, and some of those offered admission decide to go to high school elsewhere.

Not surprisingly, there are disparities, particularly in terms of race and ethnicity, at each stage of specialized school pathway.<sup>7</sup> From a policy perspective, it is important to know if these disparities are purely a reflection of inequalities in the larger system—where White and Asian students are more likely to be “high achieving”—or if there are differences above and beyond what would be expected based on students’ past academic performance. To answer this question, we examined whether students with comparable prior achievement on 7<sup>th</sup> grade New York State English Language Arts (ELA) and math tests were more or less likely to apply, be admitted, and accept an offer to a specialized school—based on gender, race and poverty. We found notable differences at each stage:

**1. Application.** Among students with the same level of prior achievement:

- Girls, students eligible for free lunch, and Latino students were less likely to take the SHSAT (by 3 percentage points each).
- Asian students were substantially more likely to do so (by 17 percentage points).

2. **Admission.** Among students with the same level of prior achievement who took the SHSAT:
  - Girls, students eligible for free lunch, and Latino and Black students were all less likely to receive an offer of admission (by 7, 3, 6, and 7 percentage points respectively; these are large differences given that only 19 percent of test takers receive an admissions offer).
  - Asian students were more likely to receive an offer of admission (by 5 percentage points).
3. **Accepting the offer.** Among students with the same level of prior achievement who received an offer to attend a specialized high school:
  - Girls were 11 percentage points less likely to accept the offer.
  - Students eligible for free lunch and Asian students were more likely to accept (by 5 and 20 percentage points respectively).

These findings suggest that there *is* room to increase the number of well-qualified students from under-represented groups who successfully navigate the pathway into a specialized school. Perhaps, all students who reach a certain threshold on their state ELA and math scores, for instance, could receive an invitation (or automatically be signed up) to take the SHSAT. This might increase the share of girls, low-income,

### What Is the Role of “Feeder” Middle Schools?

Our analyses showed that applicants to the specialized high schools were heavily concentrated in a small number of middle schools, as were students who scored well enough on the SHSAT to receive an offer. Between 2005 and 2013, more than half of the students who were admitted to a specialized high school came from just 5 percent of the City’s public middle schools.

Predictably, these middle schools tended to be highly selective themselves. For example, among students from the top 30 “feeder” schools, 58 percent were in gifted and talented programs that required a test for admission, and 29 percent were in screened schools that admit students using test scores or other criteria.

These numbers are striking, but also easily misinterpreted. When we controlled for students’ prior achievement, we found that the middle school they attended had a much smaller influence on the likelihood that they would take the SHSAT, and almost no effect on their odds of admission to a specialized school. This means that the concentration of specialized school offers in a small number of middle schools is less about the schools themselves and more about the uneven distribution of students across the system—i.e., the sorting or “tracking” of higher- and lower-achieving students that takes place before they enter middle school.

and Latino students who apply to the schools. Furthermore, the fact that some groups tend to perform better on the test, even when controlling for prior academic achievement, suggests the potential of test preparation efforts to boost performance. Schools or community-based organizations might be able to improve access for disadvantaged students by offering free, high-quality SHSAT preparation. Finally, students' preferences about where to attend high school also clearly influence the specialized school enrollment picture—particularly for girls (who are less likely to accept an offer) and Asian students (who are more likely to do so). Providing families with more information about the specialized schools, earlier on, might help seed interest in attending.

It is important to note that students may have good reasons for opting out of the specialized high schools. Evidence is mixed as to whether attending one of these elite schools has measurable educational benefits for already high-achieving students,<sup>8</sup> and there are an array of other selective high schools in the City (both public and private) that students might prefer. Still, most stakeholders would agree that well-qualified students who are interested in attending a specialized school should have a fair shot at doing so. This aim has led to a variety of recommendations for changing the specialized schools' admissions criteria. We explore the likely effects of some of them in the next section.

### **What Might Be Expected from Proposed Changes to the Specialized High School Admissions Criteria?**

To answer this question, we simulated alternative admissions rules that use various combinations of state test scores, grades, and attendance (and, in some cases, other factors) as admissions criteria in lieu of the SHSAT.<sup>9</sup> Variants of these criteria have been proposed by opponents of the single test policy, or are in use in other selective public high schools in the United States.<sup>10</sup> In general, we found that awarding admission based on these alternative criteria would not diminish the average achievement of admitted specialized high school students (at least as measured by State tests) and would improve diversity in enrollment. In some cases, however, their effect on diversity would be quite modest. Among our key findings:

- Offers based on state test scores, grades, and attendance would increase the share of Latino and White students in specialized high schools, and reduce the share of Asian students (who would remain significantly over-represented).
- These rule changes would not appreciably increase the proportion of Black students admitted, and, alarmingly, several of these alternative criteria would

- actually decrease the number of Black students offered a specialized school seat. A simulated rule based on test scores and grades that also enforces proportional representation by borough would moderately increase the share of Black students.
- All simulated admissions rules based on state test scores, grades, and attendance instead of the SHSAT would tip the gender balance in specialized high schools in favor of girls.
  - A little over half of the students who would receive offers under these simulated rules were actually admitted based on their SHSAT score, suggesting that there is considerable overlap in students who would be admitted under different criteria.
  - Admissions rules that rely on test scores, grades, and attendance would not significantly reduce the concentration of offers in a small number of middle schools. This largely reflects the uneven distribution of high-achieving students across schools (see textbox on page 4).
  - The only simulated admissions rule that would substantially change the demographic mix of the specialized high schools—and reduce the concentration of offers in a small number of middle schools—is a rule that guarantees admission to all students across the City who are in the top 10 percent of their middle school. This rule would have a large impact on diversity, but at the cost of reducing the average achievement of incoming students, particularly in math. Under this rule, the average math achievement of admitted students would be about 0.12 standard deviations (or 7.2 percent) lower, a potential concern for the math- and science-oriented specialized schools.

There are a number of things to consider when interpreting these simulations. First, they do not take into account ways in which behavior might change under a new policy. For example, the new rules would prompt some students to shift their emphasis away from SHSAT preparation and toward course grades and state tests—likely altering their performance and reducing the impact of the rule change. Second, our simulations omit private school students, who comprise a meaningful share of applicants (15 percent); we do not have data for these students on the measures used in the proposed rules, so it is unclear how they would fare. Third, none of the rules we were able to simulate include qualitative admissions criteria that have been suggested, such as teacher recommendations, essays, or interviews, which could capture other dimensions of students' readiness for a rigorous academic environment (but have been criticized as subjective). Finally, our simulations cannot speak to certain student characteristics, such as complex thinking skills, that the SHSAT may

measure but the state tests do not. One could also consider hybrid admissions criteria that use both the SHSAT and other performance measures. At the time of this writing, we did not have access to students' SHSAT scores, and thus could not simulate such hybrid rules.

Despite their limitations, these simulations provide the best available evidence about the likely impact of proposed changes to the specialized schools' admissions process. They also serve as models of analyses that could—and should—be conducted for any new rule that is under consideration.

For more details and the results of each simulation, see pages 9 and 10.

## Conclusion

To some extent, the SHSAT does appear to be a barrier to diversity in the specialized high schools. Among students with comparable achievement on New York State ELA and math tests, Black, Latino, low-income, and female students are significantly less likely to score high enough on the SHSAT to be admitted to a specialized school. But our analysis of the pathway into these schools suggests that there are opportunities for increasing diversity, even within the confines of SHSAT-based admissions. High-achieving girls, Latinos, and low-income students are all under-represented among test takers, for instance. Interventions that ensure that well-qualified students sit for the SHSAT—and have adequate resources to prepare for it—could help make the specialized schools more diverse.

Policies that offer admission on the basis of other measures, such as state test scores, grades, and attendance, would change the demographic mix of the specialized high schools by increasing the share of Latino, White, and female students. But most of the alternatives we simulated would not appreciably increase the share of Black students nor reduce the concentration of offers in a small number of middle schools. Of the alternative criteria we examined, only the “Top 10%” rule, which would guarantee admission to the top-performing students in every middle school, would have a large effect on diversity. Such a rule would, however, decrease the average academic performance of students admitted to the specialized schools, especially in math.

While there is a clear need to improve access for under-represented groups, our analyses suggest that a narrow focus on the SHSAT is largely misguided. We found that alternative admissions rules based on test scores, grades, and attendance do not substantially improve diversity in these schools nor reduce the concentration of offers

in a small number of middle schools. The sobering reality is that disparities in the specialized schools mirror larger, system-wide achievement gaps that exist prior to middle school. Ensuring that Black, Latino, and low-income students have access to high-quality educational opportunities, from the earliest grades, is a central challenge facing the City's public schools. Addressing this challenge will likely take years, more knowledge, and a much greater commitment of resources. Still, as this study underscores, there are options for moving NYC's specialized schools toward more diversity, however incrementally, even as we acknowledge the need for larger, more systemic change.

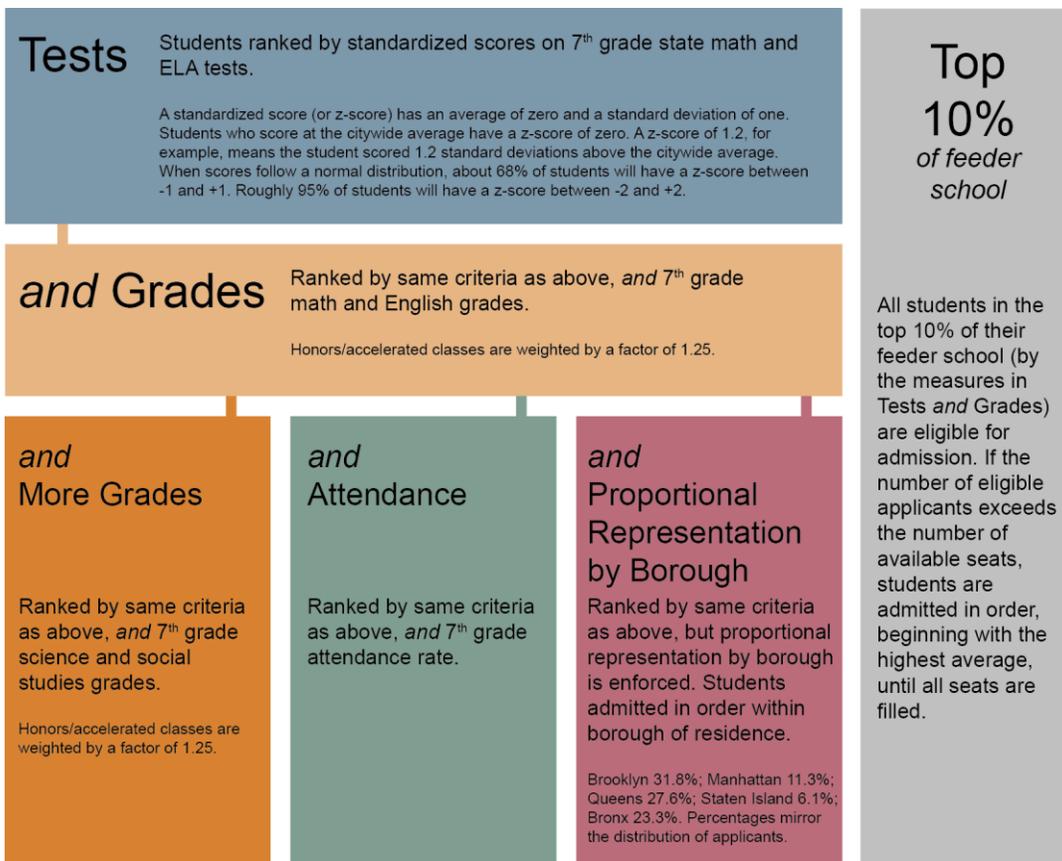
## Simulating Alternative Admissions Rules

We simulated how the composition of students in the specialized high schools would change, if at all, under alternative admissions policies.

The table on page 10 presents the composition of students who actually received offers in 2009, plus students who *would have received* offers under six possible alternative rules, which use combinations of state test scores, course grades, attendance rates, and other factors.

For all simulations, we ranked actual 8<sup>th</sup> grade applicants from Fall 2008 (i.e., students who expressed an interest in attending a specialized school by taking the SHSAT) based on a specific set of conditions, and then admitted them in order, beginning with the highest average, until all seats were filled.

The six rules rank students based on the following criteria:



## Average Characteristics of Students Offered Seats in Alternative Admissions Rule Simulations

### Changes from Actual Offers in Simulations

|   | 2009 Offers | Tests  | Test and Grades | Tests and More Grades | Tests, Grades, and Attendance | Tests, Grades, and Proportional Representation by Borough | Top 10% |
|---|-------------|--------|-----------------|-----------------------|-------------------------------|---|---------|
| ELA standardized score <sup>a</sup>                 | 1.413       | +0.298 | +0.080          | -0.056                | +0.076                        | +0.053  | -0.027  |
| Math standardized score <sup>a</sup>                | 1.696       | +0.230 | +0.046          | -0.112                | +0.049                        | -0.024  | -0.122  |
| Math grade (0-100)                                  | 93.1        | +0.1   | +1.0            | +0.5                  | +1.1                          | +0.4  | +0.3    |
| English grade (0-100)                               | 91.3        | +0.8   | +2.0            | +1.7                  | +2.1                          | +1.2  | +0.8    |
| Attendance rate                                     | 97.7        | -0.2   | -0.1            | -0.2                  | +0.3                          | -0.2  | -0.5    |
| Female  | 46.1        | +9.3   | +11.3           | +10.8                 | +11.5                         | +12.8   | +14.1   |
| Asian   | 53.6        | -8.9   | -6.5            | -6.0                  | -4.4                          | -12.7   | -15.9   |
| Black   | 7.6         | +2.1   | -0.5            | -1.2                  | -0.6                          | +3.5  | +12.8   |
| Latino  | 9.4         | +4.3   | +3.5            | +4.1                  | +3.0                          | +10.7   | +12.4   |
| White   | 29.2        | +2.4   | +3.5            | +3.1                  | +2.0                          | -1.7  | -9.4    |
| Free lunch eligible                                 | 30.6        | -0.3   | 0               | +0.7                  | +0.5                          | +4.6  | +12.0   |
| Received an offer in 2009                           | 100.0       | -37.8  | -43.8           | -49.0                 | -42.9                         | -47.2   | -57.7   |
| Received a "Big 3" offer in 2009 <sup>a</sup>       | 75.7        | -26.5  | -31.4           | -36.2                 | -30.6                         | -33.8   | -43.3   |
| Number of middle schools representing 50% of offers | 23          | +4.0   | -5.0            | -7.0                  | -5.0                          | -1.0  | +34.0   |
| Number of middle schools representing 85% of offers | 81          | +13.0  | -27.0           | -38.0                 | -26.0                         | +1.0  | +36.0   |

Source: Research Alliance calculations using data provided by the NYC DOE

Notes: This brief includes six of the seven "rules" included in the full working paper. See the full working paper for simulated results for a rule based on tests and unweighted grades. <sup>a</sup> See note to "Tests" on previous page. <sup>a</sup> The "big 3" are Stuyvesant High School, the Bronx High School of Science, and Brooklyn Technical High School.

## Endnotes

- <sup>1</sup> The SHSAT receives especially strong support from immigrant families, who often view the specialized high schools as an affordable gateway to educational and professional success. For example, see Rafter (2014).
- <sup>2</sup> Hewitt et al. (2013).
- <sup>3</sup> See NAACP (2012), Appendix C.
- <sup>4</sup> See NYS Senate (2014). As of this writing, the bill has not been voted on.
- <sup>5</sup> Fertig (2014).
- <sup>6</sup> We refer to the decision to accept an offer of admission as “matriculation.” Although there is a small amount of attrition between acceptance and enrollment in 9<sup>th</sup> grade, nearly all students who accept an offer enroll in their offered school.
- <sup>7</sup> See Table 3 in the full working paper for the characteristics of students who applied, were admitted, and accepted an offer of admission to a specialized school.
- <sup>8</sup> The most rigorous estimates of the return on attending an elite high school in NYC are provided by Abdulkadiroğlu et al. (2014) and Dobbie and Fryer (2014), who used a regression discontinuity design to contrast outcomes for students just above and below the cutoff score for admission. At least for students on the margin, they found little to no effect of receiving an offer to attend an exam school on Advanced Placement or state test scores; PSAT or SAT participation or performance; or college enrollment, graduation, or quality.
- <sup>9</sup> This analysis focuses on the Fall 2008-Spring 2009 application cycle. Only applicants—those who expressed an active interest in attending a specialized school by taking the SHSAT—were considered for admission under each simulation, though one could apply the same rules to the baseline population to award eligibility.
- <sup>10</sup> Finn & Hockett (2012); Hewitt et al. (2013).

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