

Charter School Performance in New York

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Introduction

Since the passage of the *New York Charter Schools Act of 1998*, nearly 300 public charter schools in New York State have offered parents and students choices in their education. Heated – and at time rancorous – debate has been a constant companion. Supporters praise the autonomy that charter schools enjoy as an essential element in adapting school designs to meet the needs of students, especially those in communities with historically low school quality. Opponents decry charter schools as abandoning the existing system, taking students and resources that further strain existing public schools' ability to improve. However, only a fraction of the debate is grounded in well researched evidence about charter schools' impact on student outcomes. This report contributes to the discussion by providing evidence for charter students' performance in New York over five years of schooling, beginning with the 2011-2012 school year and ending in 2015-2016.

With the cooperation of the New York State Education Department (NYSED), CREDO obtained the historical sets of student-level administrative records. The support of NYSED staff was critical to CREDO's understanding of the character and quality of the data we received. However, the entirety of interactions with the Department dealt with technical issues related to the data. CREDO has developed the findings and conclusions presented here independently.

The study provides an in-depth examination of the results for charter schools in New York. This current report has two main benefits. First, it provides a rigorous and independent view of the performance of the State's charter schools. Second, the study design is consistent with CREDO's reports on charter school performance in other locations, making the results amenable to benchmarking both nationally and in other locations.

In this analysis we first present findings about the effects of charter schools on student academic performance. These results are expressed in terms of the academic progress that a typical charter school student in New York would realize from a year of enrollment in a charter school. To help the non-technical reader grasp the findings, we translate the scientific estimates into estimated days of learning based on the foundation of a 180-day school year.

Both legislation and public policy operate to influence school level decisions. As such the second set of findings presented is important to understand the range of performance at the school level. These findings look at the performance of students by school and present school average results.

The third set of analyses examines the performance of charter schools grouped by charter school networks. In New York, as in the rest of the nation, charter schools networks are comprised of either charter management organizations, education management organizations, or a combination of both. These analyses aim to discern whether there are differences between schools that are part of these charter networks versus charter schools that are independent.

The analysis shows that in a year's time, the typical charter school student in New York shows stronger growth in both reading and math compared to the educational gains that the students would have had in a traditional public school (TPS). The findings are statistically significant for both reading and math. Thinking of a 180-day school year as "one year of learning", an average New York charter student demonstrates stronger growth equivalent to completing 34 additional days of learning in reading and 63 additional days of learning in math in a year's time. Probing these overall findings, the analysis reveals that certain subgroups exhibit stronger growth than their TPS peers while others do not. Notable growth occurs among Hispanic and Black charter students in

poverty, who post stronger growth compared to their counterparts in TPS, during the period of the study. Overall, over the four growth periods of the study, charter students demonstrate positive growth in both reading and math.

Study Approach

This study of charter schools in New York focuses on the academic progress (growth) of enrolled and tested students in New York charter schools. Whatever else charter schools may provide their students, their contributions to their students' readiness for secondary education, high school graduation, and post-secondary life remains of paramount importance. Indeed, if charter schools do not succeed in forging strong academic futures for their students, it is unclear whether social and emotional skills can compensate. Furthermore, current data limitations prevent the inclusion of non-academic outcomes in this analysis.

This analysis uses the Virtual Control Record (VCR) methodology that has been used in previous CREDO publications.^{1,2,3} The approach is a quasi-experimental study design with matched student records that are followed over time. The current analysis examines whether students in charter schools in New York outperform their traditional public school (TPS) counterparts. This general question is then extended to consider whether the observed charter school performance is consistent when the charter school population is disaggregated along a number of dimensions, such as race/ethnicity and years enrolled in a charter school. Answers to all these questions require that we ensure that the contribution of both the charter schools and the traditional public schools is isolated from other potentially confounding influences. For this reason, these analyses include many other variables whose purpose is to prevent the tainting of the estimate of charter schooling by other effects. In its most basic form, the analysis includes controls for student characteristics: prior academic achievement, race/ethnicity, special education status, socio-economic status (as measured by eligibility for free or reduced lunches), English proficiency, grade level, and retention in grade.

To create a reliable comparison group for our study, we strive to build a VCR for each charter school student. A VCR is a synthesis of the actual academic experiences of students who are identical to the charter school students, except for the fact that the VCR students attend a TPS that each charter school's students would have attended if not enrolled in their charter school. We refer to the VCR as a 'virtual twin' because it consolidates the experience of multiple 'twins' into a single synthesis of their academic performance. This synthesized record is then used as the counterfactual condition to the charter school student's performance.

Our approach is displayed in Figure 1. We identify all the traditional public schools whose students transfer to a given charter school; each of these schools is designated as a "feeder school." Once a TPS qualifies as a feeder school for a particular charter school, all the students in the school become potential matches for a student in that particular charter school. All the student records from a charter school's feeder schools are pooled – this

¹ Cremata, Edward, D. Davis, K. Dickey, K. Lawyer, Y. Negassi, M. Raymond and J. Woodworth. *National Charter School Study 2013* (2013). <http://credo.stanford.edu>.

² CREDO *Urban Charter School Study* (2015).

<http://urbancharters.stanford.edu/download/Urban%20Charter%20School%20Study%20Report%20on%2041%20Regions.pdf>

³ CREDO *Charter School Performance in New York City* (2013).

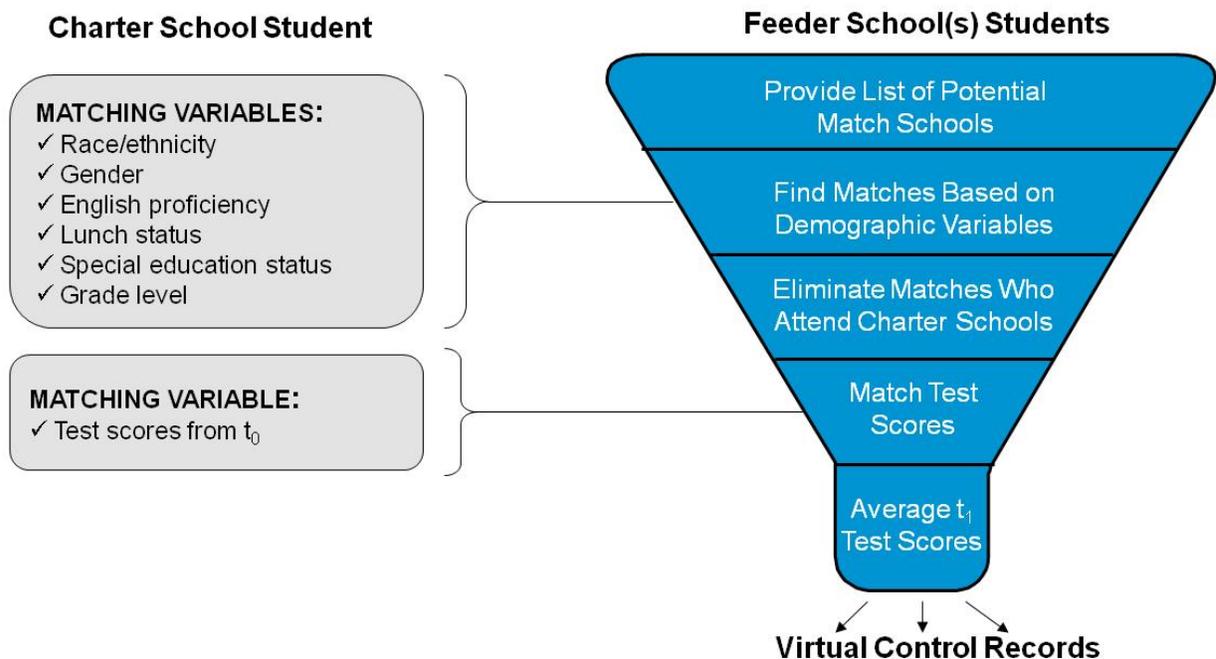
http://credo.stanford.edu/documents/NYC_report_2013_FINAL_20130219_000.pdf.

becomes the source of records for creating the virtual match for students from that charter. Using the records of the students in the match pool in the year prior to the test year of interest (t_0), CREDO selects all of the available TPS students that match each charter school student.

Match factors include:

- Grade level
- Gender
- Race/Ethnicity
- Free or Reduced Price Lunch Status
- English Language Learner Status
- Special Education Status
- Prior test score on New York state achievement tests

Figure 1: CREDO Virtual Control Record Methodology



At the point of selection as a VCR-eligible TPS student, all candidates are identical to the individual charter school student on all observable characteristics, including prior academic achievement. The focus then moves to the subsequent year, t_1 . The scores from this test year of interest (t_1) for as many as seven VCR-eligible TPS students are then averaged and a Virtual Control Record is produced. The VCR produces a score for the test year of interest that corresponds to the expected result a charter student would have realized had he or she attended one of the traditional public schools that would have enrolled the charter school's students. The VCR thus provides the counterfactual "control" experience for this analysis.

For the purposes of this report, the impact of charter schools on student academic performance is estimated in terms of academic growth from one school year to the next. This increment of academic progress is referred to by policy makers and researchers as a "growth score" or "learning gains" or "gain scores." Using statistical methods, it is possible to isolate the contributions of schools from other social or programmatic influences on a

student's growth. Thus, all the findings that follow are reported as the **average one-year growth** of charter school students relative to their VCR-based comparisons.

With five years of student records in this study, we create four periods of academic growth. Each growth period needs a "starting score", (i.e., the achievement test score from the spring of one year) and a "subsequent score" (i.e., the test score from the following spring) to create the growth measure. To simplify the presentation of results, each growth period is referred to by the year in which the second spring test score is obtained. For example, the growth period denoted "2013" covers academic growth that occurred between the end of the 2011-2012 school year and the end of the 2012-2013 school year. Similarly, the growth period denoted "2016" corresponds to the year of growth between the 2014-2015 and 2015-2016 school years.

With five years of data, and six tested grades (3rd – 8th) as well as three end-of-course exams in math (EOCs), there are over 40 different sets of data each for Reading and Math. Each subject-grade-year group of scores (or, in the case of EOCs, subject-year group) has slightly different mid-point averages and distributions. Test scores for all these separate tests are transformed to a common scale. All test scores have been converted to "bell curve" standardized scores to allow year-to-year computations of growth.⁴

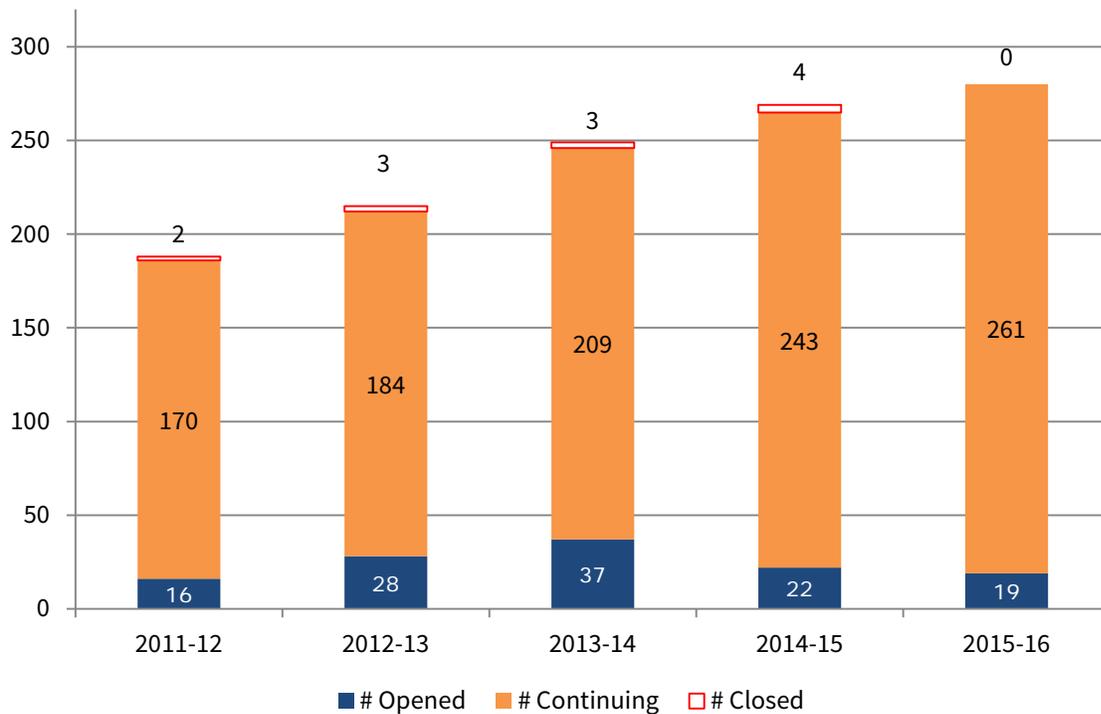
When scores are transformed, every student is placed relative to his own peers in New York. A student scoring in the 50th percentile in New York receives a z-score of zero, while a z-score one standard deviation above that equates to the 84th percentile. Students who maintain their relative place from year to year would have a growth score of zero, while students who make larger gains relative to their peers will have positive growth scores. Conversely, students who make smaller academic gains than their peers will have negative growth scores in that year. In this study it was possible to create virtual matches for 80 percent of the tested charter school students in reading and 76 percent in math.

⁴ For each subject-grade-year set of scores, scores are centered around a standardized midpoint of zero, which corresponds to the actual average score of the test before transformation. Then each score of the original test is recast as a measure of deviation around that new score of zero, so that scores that fall below the original average score are expressed as negative numbers and those that are larger receive positive values. These new values are assigned such that in every subject-grade-year test, 68 percent of the original test scores fall within a given distance, known as the standard deviation.

New York Charter School Demographics

Charter school enrollment in New York has grown markedly since their inception in 1998. Figure 2 below notes the newly opened, continuing, and closed charter school campuses from the Fall of 2011 (the Fall of the first potential growth period for the current study) to the Fall of 2015 (the Fall of the last potential growth period for the current study)⁵. According to the National Center for Education Statistics (NCES), there were 280 charter schools open in New York in the 2015-16 school year.

Figure 2: Opened and Closed Charter Campuses, 2011 to 2015



⁵ “Opened schools” opened as new schools in the fall of the displayed year. “Continuing schools” were opened prior to the fall of the displayed year and remain open into the next school year (i.e. a school listed as continuing in the 2015-16 column opened some time prior to 2015-16 and did not close in 2015-16) “Closed schools” cease operation by the spring of the displayed year (i.e. a school listed as closed in the 2015-16 column had its last year of operation in 2015-16 and closed at the end of that school year)

The demographics of the charter schools may not mirror that of the TPS of New York as a whole. This is because charter schools are able to choose their location and attract a set of students that differ demographically from the overall community profile. Further, charter schools may offer different academic programs or alternate school models, which may disproportionately attract particular groups of students relative to TPS. In addition, parents and

students who choose to attend charter schools select schools for a variety of reasons, such as location, school safety, small school size, academic focus, or special interest programs. The cumulative result of all these forces is that the student populations at charters and their TPS feeders may differ. Table 1 below compares the student populations of all New York's traditional public schools, those TPS that comprise the set of charter feeder schools, and the charter schools themselves in the 2015-2016 school year. Table 1 includes the 248 charter schools in which students took reading and/or math assessments during the 2015-16 school year. Note that NCES reports 280 charter schools open in New York in 2015-16. The number of charter schools listed in Table 1 is smaller than the NCES numbers because it excludes schools in which students were not tested.

Graphics Roadmap

The graphics in this report have a common format.

Each graph presents the average performance of charter students relative to their **pertinent comparison student**. The reference group differs depending on the specific comparison. Where a graph compares student subgroup performance, the pertinent comparison student is the same for both subgroups. Each graph is labeled with the pertinent comparison group for clarity.

The **height** of the bars in each graph reflects the magnitude of difference between traditional public school and charter school performance over the period studied.

Stars are used to reflect the level of statistical significance of the difference between the group represented in the bar and its comparison group of similar students in TPS; the absence of stars means that the schooling effect is not statistically different from zero.

Table 1: Demographic Comparison of Students in TPS, Feeders and Charters (School Year 2015-16)

	TPS	Feeders	Charters
Number of schools	4493	1347	248
Average enrollment per school	566	620	429
Total number of students enrolled	2,541,841	834,498	106,352
Students in Poverty	51%	73%	76%
English Language Learners	8%	13%	6%
Special Education Students	17%	19%	15%
White Students	47%	19%	6%
Black Students	16%	29%	58%
Hispanic Students	25%	39%	32%
Asian/Pacific Islander Students	9%	11%	2%
Native American Students	1%	1%	1%

The data from Table 1 show that the demographic profile of charter schools is quite different from that of the public school population in New York as a whole. As shown in Table 1, the demographics for the feeder schools are more similar to the charter population than the TPS population. This indicates that charter schools are not drawing the typical population seen in other New York schools. Since the charter students are not evenly distributed throughout the state, but rather are focused in urban areas, these differences are not surprising. The charter school population in New York differs from both the New York TPS and feeder populations on several in specific ways: charter schools have more Black students and fewer white and Asian/Pacific Islander students than the public school population. The proportion of students in poverty enrolled in charter schools is noticeably larger than in traditional public schools.

The proportion of students in charter schools receiving special education services is a continuing topic of focus and debate. As shown in Table 1, 19 percent of feeder school students and 17 percent of TPS students have special education needs respectively. In contrast, 15 percent of the New York charter school population has a designated special education status. It bears noting that the New York difference of 2 percent between charter schools and the feeder schools near them is smaller than other communities. Similarly, a lower proportion of New York’s charter school population is designated as English language learners than the feeder schools and all of TPS.

Table 2: Demographic Composition of Charter Students in the Study

Student Group	All Charter Students Tested		Matched Charter Students	
	Number	Percent	Number	Percent
New York Charter Students	97,118		68,493	
% Matched	68,493	71%		
Black Students	55,997	58%	39,860	58%
Hispanic Students	31,302	32%	22,603	33%
White Students	5,956	6%	4,014	6%
Students in Poverty	74,794	77%	54,353	79%
Special Education Students	16,082	17%	9,320	14%
English Language Learners	3,754	4%	2,146	3%
Grade Repeating Students	6,044	6%	1,084	2%

For this analysis, a total of 97,118 charter school students from 248 charter schools are followed for up to five years of charter school attendance.⁶ Matches were identified for 71 percent of tested students. The students are drawn from grades 3 – 8, since these are the continuous grades covered by the New York State achievement testing program for reading and math or by the state end-of-course assessments. High school students are included for reading and math whenever they take the end-of-course assessment sequence in consecutive years, e.g., Algebra I followed by Geometry or Algebra II in the next year. An identical number of virtual comparison records are included in the analysis in each subject.

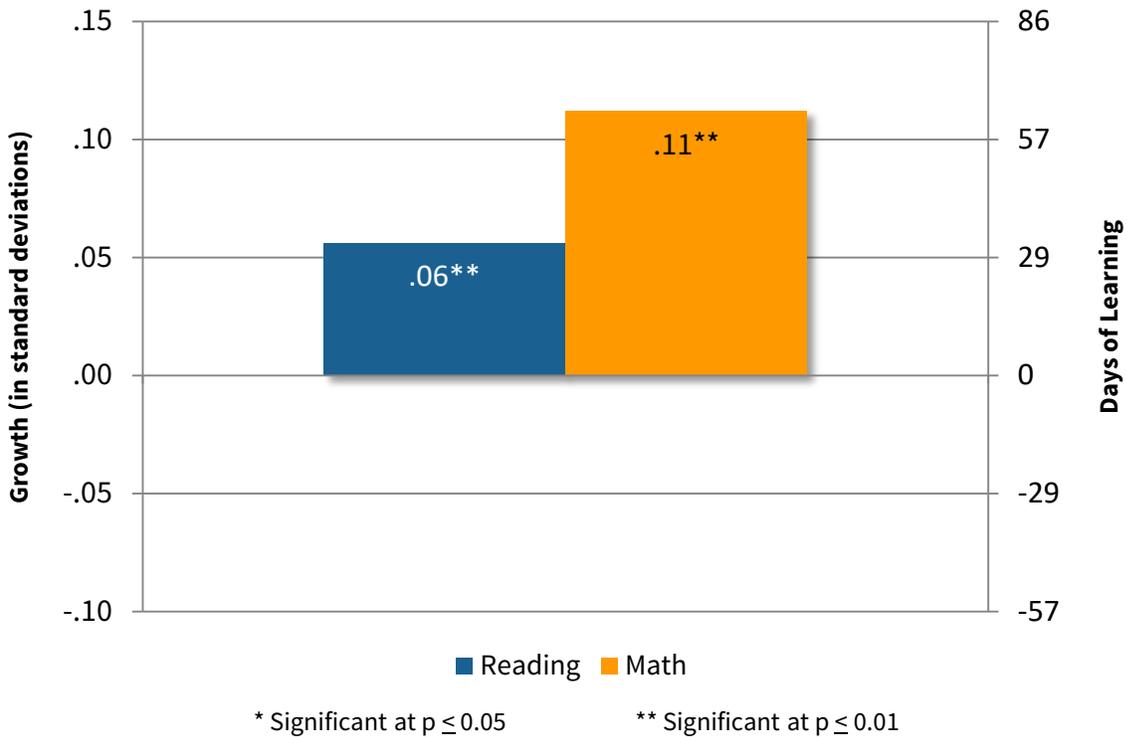
We treat each year a student is in school as a single observation. Collectively, there were 137,844 observations across five years of study, which equates to four growth periods. In New York, it was possible to create virtual matches for 77 percent of the tested charter school observations in math and 80 percent in reading. This proportion assures that the results reported here are reliably indicative of the actual performance of charter schools in New York. The total number of observations is large enough to have confidence that the tests of effect can detect real differences between charter school and TPS student performance at the statistically acceptable standard of $p < .05$. Each student subgroup examined also had an acceptable number of observations, as reported in Table 2. Additional descriptive demographics can be found in the Appendix.

⁶ Schools that opened recently or that only recently begun serving tested grades will not have four growth periods of experience to include; however, these schools are still included in the analysis for the years in which data are available

Overall Charter School Impact

A foundational question of the study is whether charter schools differ overall from traditional public schools in how much their students learn. To answer this question, we compare the one-year academic gains observed for charter school students in each of the four studied growth periods and compare their average performance with the same measure for the VCR students. Figure 3 displays the result. On average, students in charter schools in New York learned more than students in their VCR peers in TPS in both reading and math. Both results are statistically significant, as indicated by the stars next to the values.

Figure 3: Average Learning Gains in New York Charter Schools Compared to Gains for VCR Students



In our analysis, the growth data is analyzed in standard deviations units so that the results can be assessed for statistical differences. Unfortunately, these units do not have much meaning for the average reader. Transforming the results into more accessible terms is challenging and can be done only imprecisely. Table 3 below, presents a translation of various outcomes, but should be interpreted cautiously.

Table 3: Transformation of Average Learning Gains in Reading and Math

Growth (in standard deviations)	Gain (in days of math learning)
0.00	0
0.05	29
0.10	57
0.15	86
0.20	114
0.25	143
0.30	171
0.35	200

In order to understand “days of learning,” a student whose academic achievement is at the 50th percentile in one grade and also at the 50th percentile in the following grade the next year, the progress from one year to the next equals the average learning gain for a student between the two grades. That growth is fixed as 180 days of effective learning based on the typical 180-day school year.

We then translate the standard deviations of growth from our models based on that 180-day average year of learning, so that students with positive effect sizes have additional growth beyond the expected 180 days of annual academic progress while those with negative effect sizes have fewer days of academic progress in that same 180-day period of time.

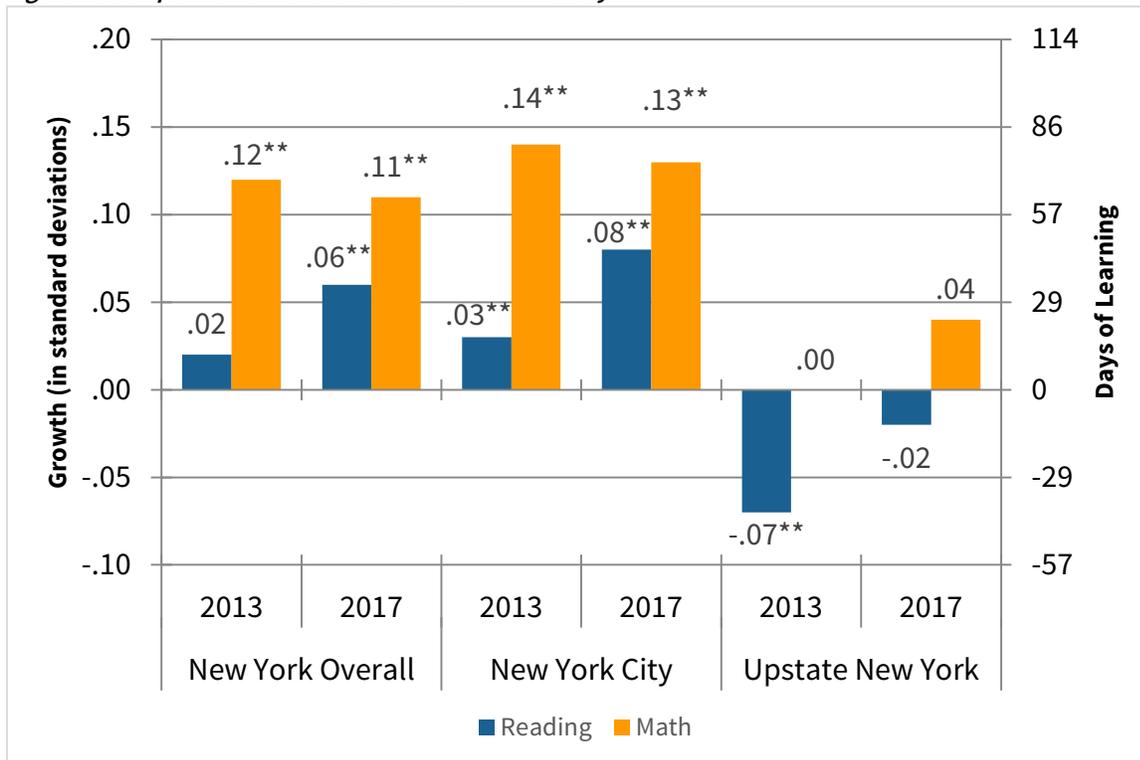
Using the results from Figure 3 and the transformations from Table 3 we can see that in a typical school year, charter students in New York exceed the growth of their TPS counterparts in reading and math. This advantage for charter students is equivalent to 34 more days of learning in a 180-day school year in reading and 63 days in math.

Charter School Impact for the 2011-2015 Cohort

This section provides a comparison between the performances of New York charter schools across two of CREDO’s studies on charter school effects. In 2013, CREDO released an updated and expanded study on national charter school performance⁷ and Upstate New York’ overall charter impact from this study is displayed in the very left column of Figure 4.

Figure 4 shows that New York charter schools have demonstrated strong academic growth in both reading and math. In the 2017 report New York charter schools made substantial improvement in reading, with growth equivalent to 34 days higher in reading than their TPS counterparts. This represents an increase of 22 days of extra learning per year compared to four years ago. The performance in math has continued to be strong, albeit with a slight decline to 63 days of learning per year. Similar results are seen for charter students in New York City schools, where reading performance has improved; math gains show continued strong performance even with a modest decline in growth. The greatest change over time occurred in the results for Upstate New York. Upstate charters have erased a strongly negative impact in reading from 2013 and now post results no different from their TPS peers. In math in Upstate charter schools, the results have not changed from parity with the TPS peers. Our analysis show that the New York state charters performance is mainly driven by the New York City charter school students.

Figure 4: Comparison of 2013 and 2017 New York Study



⁷ CREDO. *National Charter School Study* (2013). <https://credo.stanford.edu/documents/NCSS%202013%20Final%20Draft.pdf>

Charter School Impact by Growth Period

To determine whether performance remained consistent over all the periods of this study, the impact of attending a charter school on academic progress was examined separately for each of the four growth periods included in this study. Recall that a growth period is the measure of progress from the Spring of one school year to the next. Results are shown in Figure 5.

Figure 5: Impact by Growth Period, 2013-2016

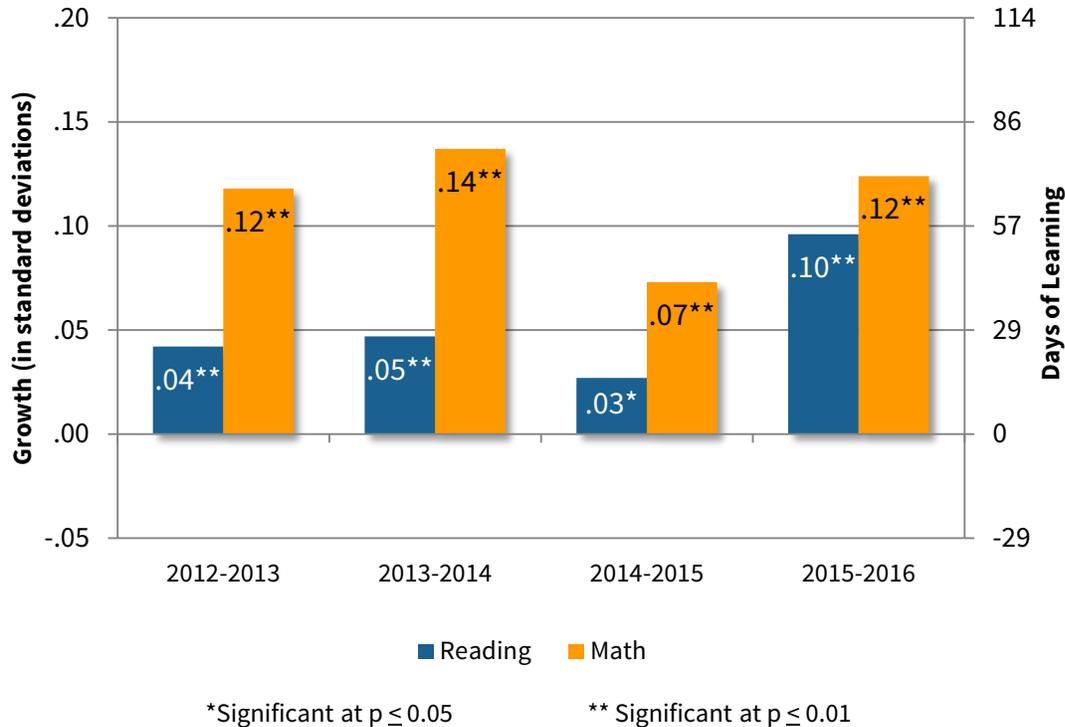


Figure 5 above, suggest that there were significant gains in learning across the growth periods for charter school students compared to their TPS peers in both reading and math. The trend overall is positive for reading but for math the results are uneven, though consistently positive. The 2015-2016 growth period illustrates that charter students experienced reading growth of approximately 57 more days of learning and 68 days of additional learning in math compared to their TPS peers. In the 2015-16 growth period charter students see their largest gains in reading.

Charter School Impact by School Locale

Depending on their locale, charter schools may serve different student populations, face different levels of available human capital or both. Though charter schools in urban areas may receive the bulk of media attention, charter schools in other locales may produce different results. The results in Figure 6 represent the disaggregated impacts of charter school enrollment for urban, suburban and rural charter schools. In this breakout, charter students in different locations are compared with their virtual twins in the same locale⁸.

Figure 6: Effect Size by School Location

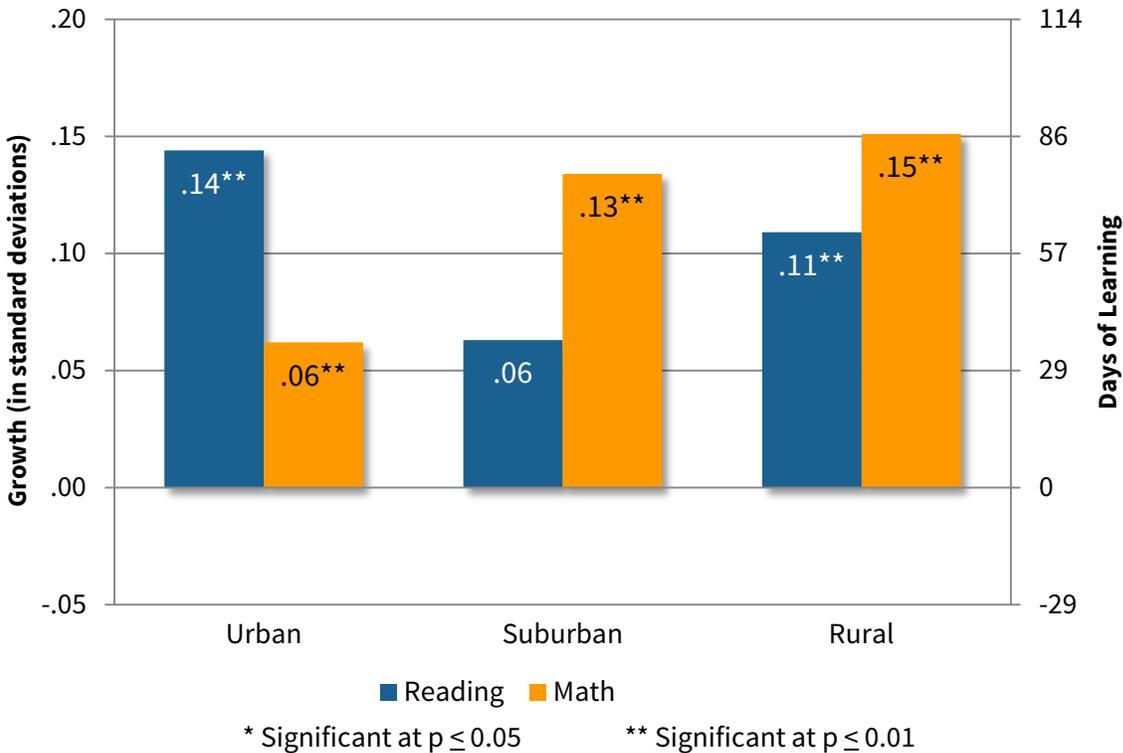


Figure 6 illustrates that charter school students are showing larger learning gains regardless of location; the one exception is seen with reading in suburban areas which is not different from the comparison group. Urban charter students have stronger growth in reading than their TPS counterparts, experiencing an additional 80 days of learning in reading and about 34 days in math. Charter students in suburban and rural settings exhibit 74 and 86 additional days of learning gains in math respectively. Charter students in rural areas experience 63 additional days of learning in reading. There are no charter schools in New York State with the town designation.

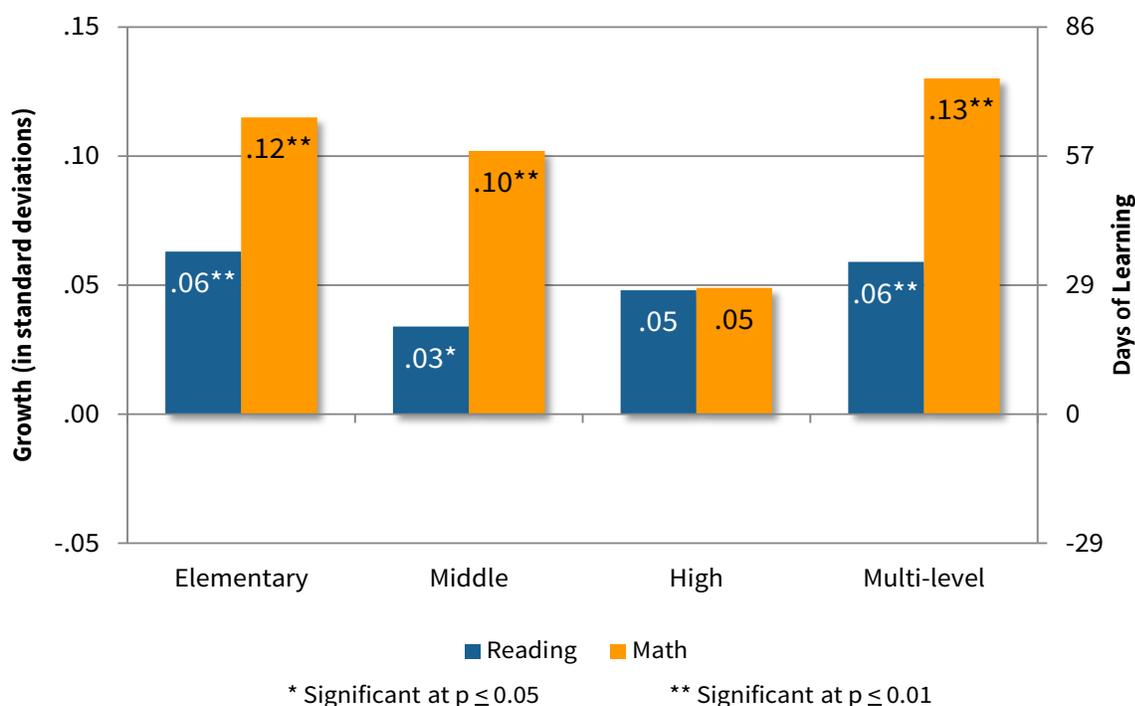
⁸ The National Center for Education Statistics defines 12 urban-centric locales which are divided into four main locale types: city, suburb, rural and town.

Charter School Impact by School Level

Charter schools often exercise their autonomy by choosing which grade levels to serve. Some charter operators focus on particular ages, some seek to serve a full range of grades, and others build by adding on a grade each year. For example, multi-level charter schools serve grade ranges larger than traditional elementary, middle or high schools. Such a configuration might contain a combination of middle and high school grades. In New York, schools are classified as multi-level if they serve both elementary and secondary students. We take the grade ranges from The National Center for Education Statistics. This allows us to disaggregate charter school impacts for different grade spans⁹.

The analysis examines the outcomes of students enrolled in elementary, middle, high, and multi-level schools. The results appear in Figure 6 below.

Figure 6: Impact by School Level



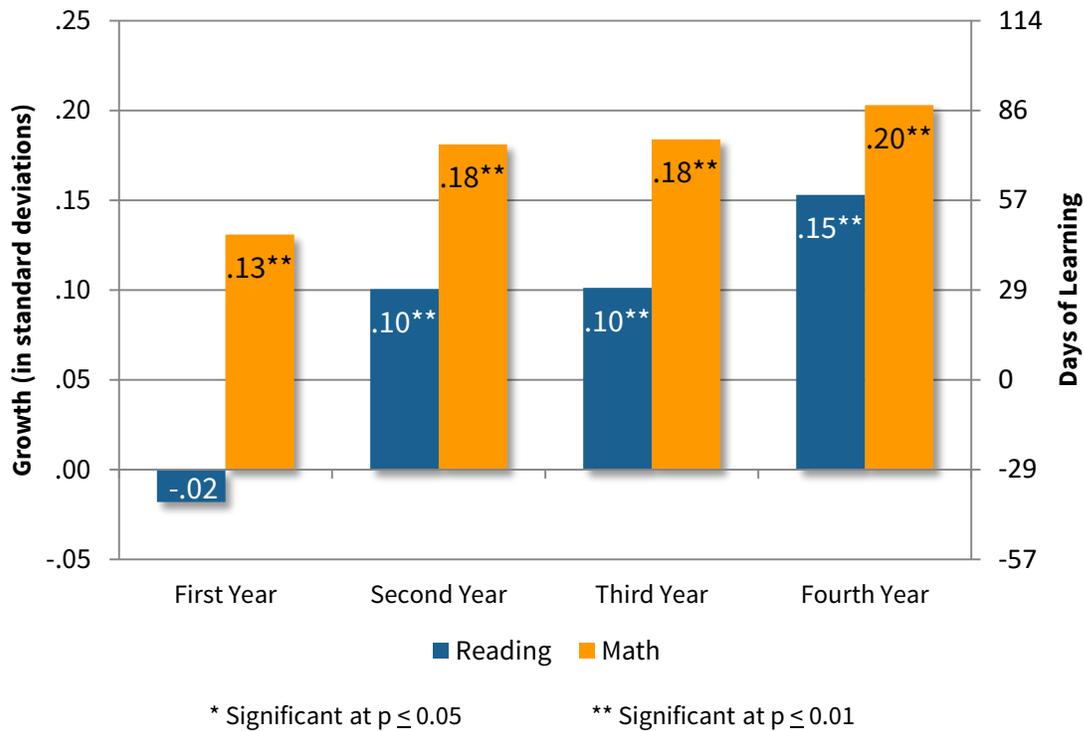
On average, charter school students see stronger growth than their TPS counterparts in reading and math at all levels except high school. This growth translates to 34 extra days of learning in reading and 68 additional days of learning in math for elementary schools. The growth for middle school students translates to 17 additional days of learning in reading and 57 additional days of learning in math. Charter students in multi-level schools show stronger growth in reading and math compared to their TPS counterparts. This translates to an additional 34 days of learning in reading and 74 days of learning in math. High school charter students and high school TPS students exhibit similar growth in reading and math.

⁹ CREDO does not assign school levels, but rather retains school levels that are assigned to schools by the National Center for Education Statistics (NCES). The sole exception is that CREDO considers a school to be a high school if the lowest grade served is ninth grade or above. NCES requires a school to serve 12th grade to be classified as a high school

Charter School Impact by Students' Years of Enrollment

Students' academic growth may differ depending on how many years they enroll in a charter school. To test the relationship between progress and length of enrollment in a charter school, we group students by the number of consecutive years they were enrolled in charter schools. In this scenario, the analysis is limited to the charter students who enroll for the first time in a charter school between the 2011-12 and 2014-15 school years. Although this approach reduces the number of students included, it ensures an accurate measure of the effect of continued enrollment over time. The results for this subset of the full study sample should not be directly compared with other findings in this report.

Figure 7: Impact by Students' Years of Enrollment



As depicted in Figure 7 above, the results suggest that New York charter school students realize increasing gains from extended periods of enrollment. In their first year students show similar growth in reading as their TPS peers but about 74 days of additional learning gains in math. The second year sees an increase in charter student growth, as charter students demonstrate 57 additional days of learning in reading and 103 additional days of learning in math. The third year results remain positive and significant compared to the TPS comparison group for both subjects maintaining the gains observed in the second year of enrollment. Charter school students in their fourth year of enrollment, outperform their TPS virtual peers in both reading and math. This translates to 86 days of additional learning in reading and 114 more days in math.

Charter School Impact by Race/Ethnicity

One of the enduring advances of the *No Child Left Behind Act* of 2001 is the recognition that average results may not be evenly distributed across all students. Attention to the differences in the performance of students of various racial/ethnic backgrounds and other attributes has become standard practice in most assessments of school performance. The effectiveness of charter schools across ethnic and racial groups is especially important given the proportion of charter schools that enroll significant proportions of educating historically underserved students. The impact of charter schools on the academic gains of Black and Hispanic students is presented below.

For each student subgroup, we present two related graphs. The following preview will describe the graphs and their relation to each other.

1. The first graph displays the growth of TPS students and charter students in the particular subgroup of interest compared to the growth of the "average White TPS student." In this comparison, the White student is male and does not qualify for subsidized school meals, special education services or English language learner support and is not repeating his current grade. The graph sets the performance of the average White TPS student to zero and shows how learning of students in the subgroup compares. The stars indicate the level of statistical significance. Thus, if there are no stars, we interpret the difference in learning gains as similar to the white TPS comparison student. If there is no difference in the learning gains, the bar would be missing entirely; if the learning of the student group in question is not as great as the comparison baseline, the bar is negative; and if the learning gains exceed the comparison, the bar is positive.
2. Graphs labeled "a" display a second comparison that tests whether the learning gains in the charter school student subgroup differ significantly from their VCRs in the same student subgroup. In these graphs, the performance of the TPS students in the subgroup are set to zero and the learning gains of the charter school students in the subgroup are measured against that baseline. As with the first graph, stars denote statistical significance.

Figure 8: Learning Gains of Black Students Benchmarked Against Learning Gains of White TPS Students

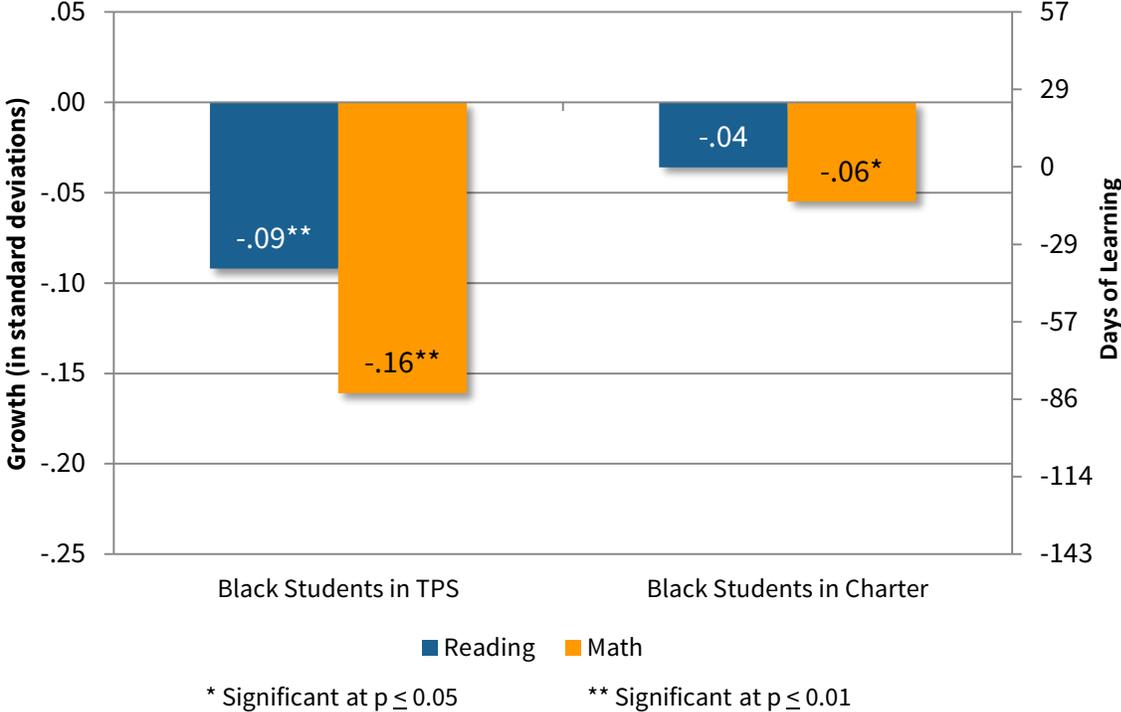
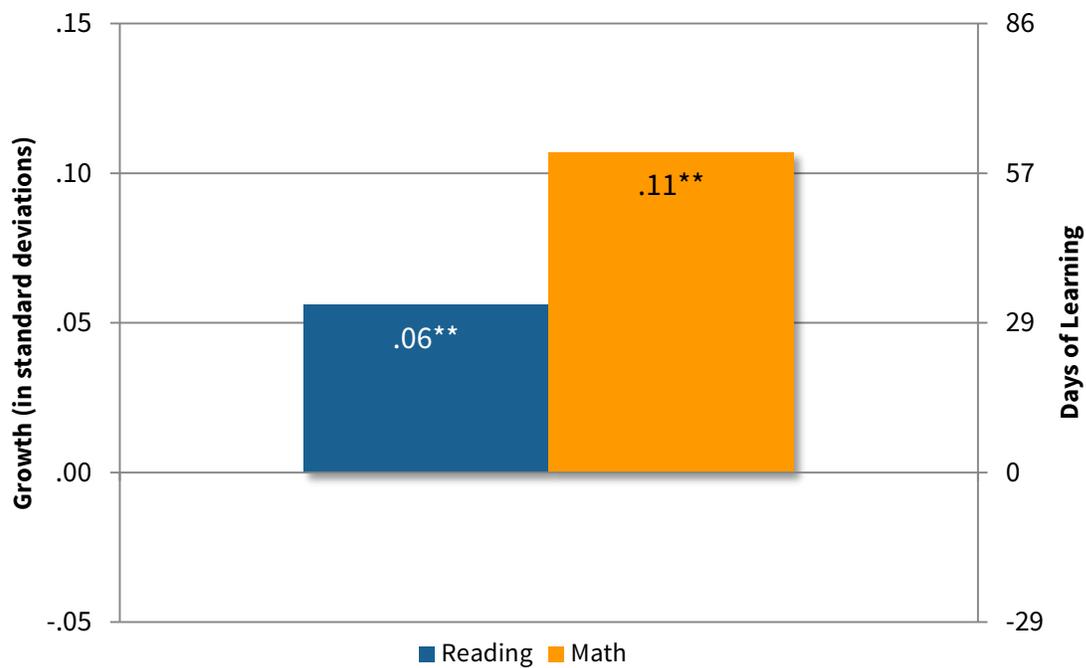


Figure 8 shows that Black TPS students in New York have significantly weaker academic growth in reading and math when compared to the average White TPS student. Black TPS students exhibit 51 fewer days of learning in reading and 91 fewer days of learning in math. Black charter students also experience smaller learning gains, experiencing 23 fewer days of reading gains and 34 fewer days of learning in math.

Figure 8a: Relative Learning Gains for Black Charter School Students Benchmarked Against their Black TPS Peers



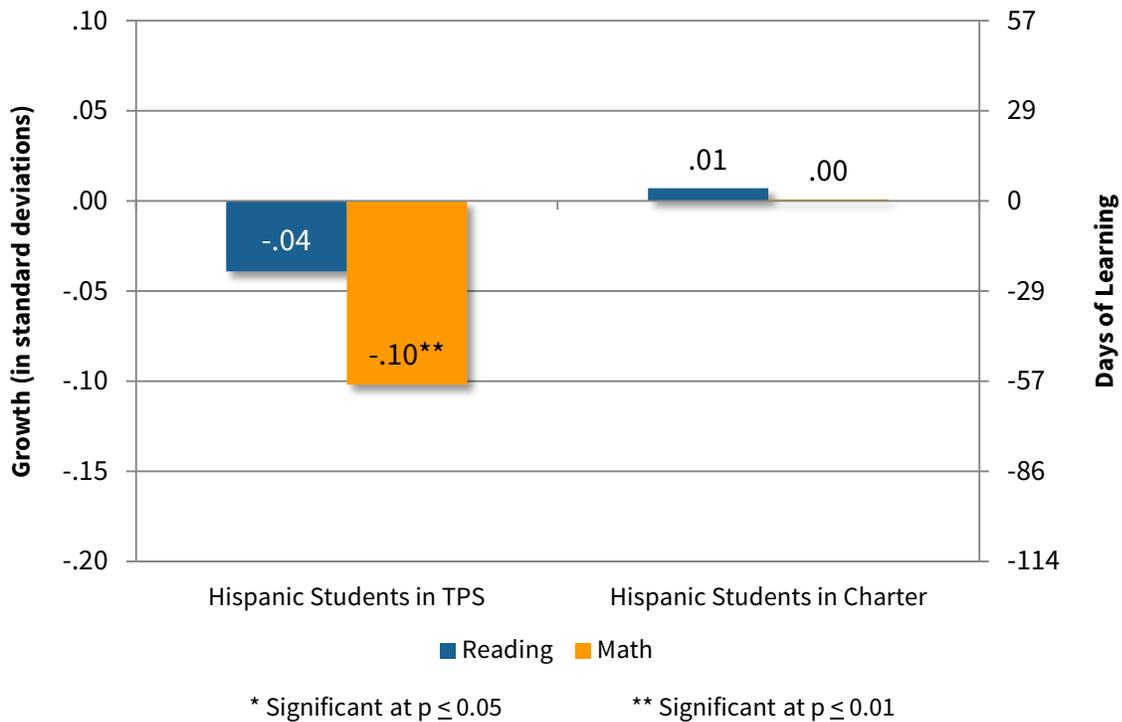
* Significant at $p < 0.05$

** Significant at $p < 0.01$

When the learning of Black students enrolled in charter schools is compared to that of Black students enrolled in TPS, the results reveal that New York Black charter students experience significantly greater progress compared to their TPS peers in both reading and math.¹⁰ The difference translates to 34 additional days of learning in reading and 63 days in math. Since Black students account for 58 percent of the charter school population in this study, these findings explain a substantial portion of the overall performance of charter schools in New York.

¹⁰ The results in Figure 8a vary slightly from the difference in values of Figure 8 due to rounding.

Figure 9: Learning Gains of Hispanic Students Benchmarked Against Learning Gains of White TPS Students

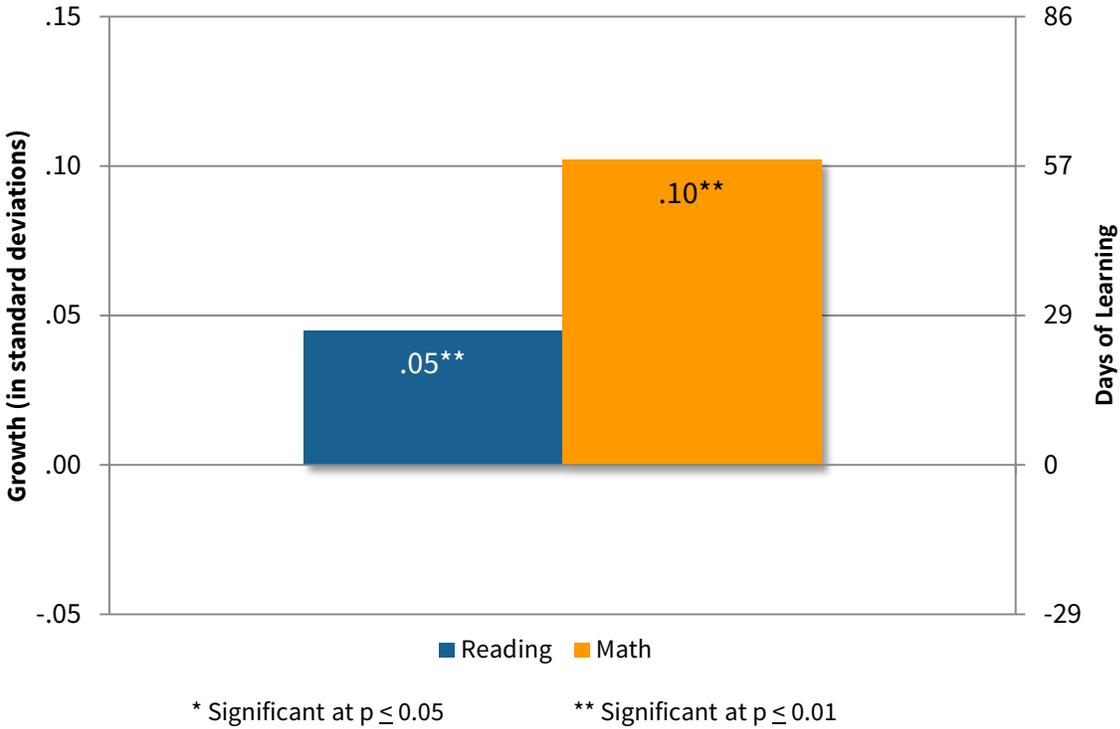


The picture of academic progress for Hispanic students in New York differs markedly from their Black peers. For the Hispanic students in this study who were enrolled in TPS, they have weaker academic gains than their White TPS peers, but the gap is only half what was seen for Black TPS students. Compared to White TPS students, Hispanic TPS students experience 23 fewer days of learning in reading and 57 fewer days of learning in math.

The performance of Hispanic students attending New York charter schools is distinct in two ways. Not only is the annual learning different from their Hispanic TPS peers, their learning shows no difference when contrasted with White TPS students. This result means that Hispanic charter school students do not experience an annual learning gap. Their academic progress is on par with their White TPS peers. This result is highly desirable and infrequently seen.

Figure 9a displays the relative differences in learning between Hispanic students enrolled in TPS and Hispanic students enrolled in charter schools. In both subjects, New York Hispanic students in charter schools perform significantly better than TPS Hispanic students. Hispanic charter students experience the equivalent of 29 and 57 more days of learning in reading and math, respectively, when compared to Hispanic students attending TPS. Like the results for Black charter school students, these findings weigh in the overall performance of charter schools, as Hispanic students make up 33 percent of this study’s charter school population.

Figure 9a: Relative Learning Gains for Hispanic Charter School Students Benchmarked Against their Hispanic TPS Peers



To summarize the race/ethnicity analyses, Black students in both charter schools and TPS make smaller annual academic progress than an average White TPS student in reading and math. Hispanic students in TPS post smaller gains as well, but the learning gap is half as big as seen for TPS Black students. Hispanic charter school students make equal gains as their White TPS peers. When the focus shifts to comparing the results of student subgroups to each other – TPS to Charter schools -- Black charter students outperform Black TPS students in reading and math. Similarly, Hispanic charter students outperform Hispanic TPS students in both reading and math. Thus, for Black and Hispanic students, the analysis indicates a significant academic advantage from charter enrollment.

Charter School Impact with Students in Poverty

Many charter school operators expressly aim to improve educational outcomes for traditionally underserved students, especially for students in poverty. CREDO’s 2013 National Charter Study found that students in poverty comprise 53 percent of the national charter population¹¹. In New York, 76 percent of charter students are eligible for subsidized school meals, a proxy for low income households, compared to 51 percent of TPS students. The annual academic gains for students in poverty are presented below.

¹¹ Cremata, Edward, D. Davis, K. Dickey, K. Lawyer, Y. Negassi, M. Raymond and J. Woodworth. *National Charter School Study 2013* (2013). <https://credo.stanford.edu/documents/NCSS%202013%20Final%20Draft.pdf>

Figure 10: Learning Gains of Students in Poverty Benchmarked Against Learning Gains of TPS Students not in Poverty

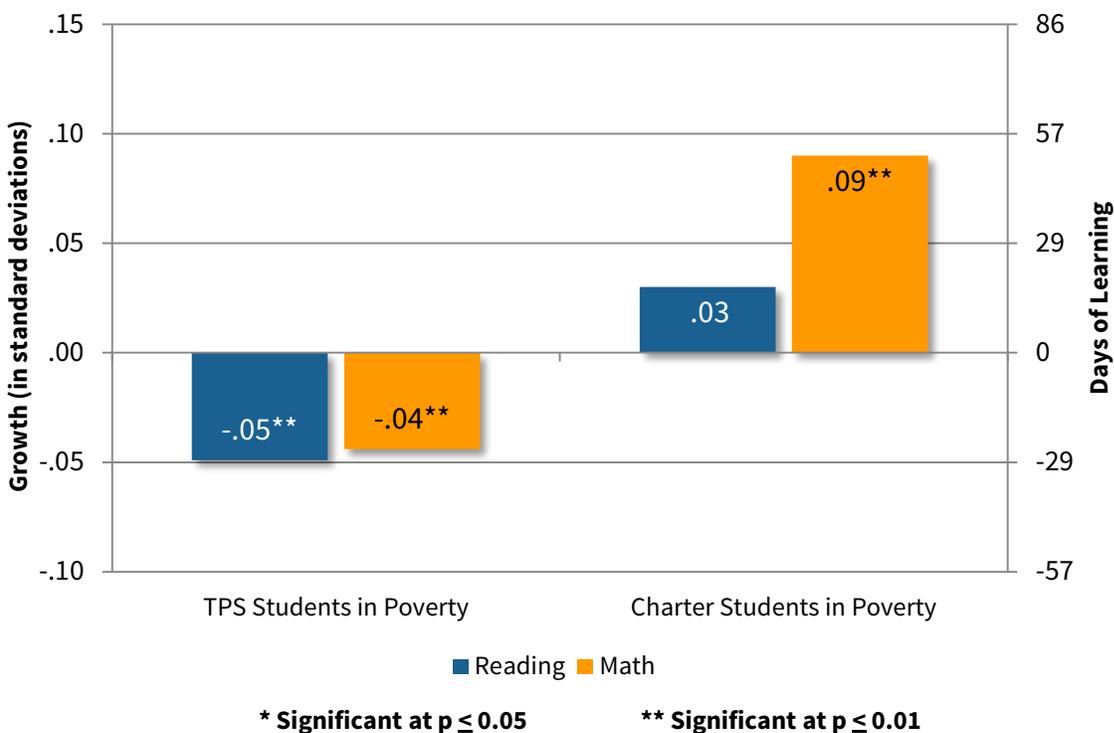


Figure 10 above presents the academic growth for students in poverty. It is important to note that in this graph, the baseline differs from the race/ethnicity graphs presented earlier: it is a student who is not eligible for free or reduced price school meals in TPS.¹² The study isolates the relationship between poverty and growth. This leaves a picture of the difference in the impact of charter attendance on students in poverty compared to similar students who are not in poverty. The bars on the right side of Figure 10 (.03 for reading and .09** for math) represents the impact of being a student in poverty and attending a charter school.¹³ The bars on the left side of Figure 10 above represents a TPS student in poverty. Both are compared to TPS students who are not in poverty, represented by the .00 line.

The results suggest charter students in poverty exhibit stronger growth than TPS students in poverty in math and are similar for reading. TPS students in poverty are shown to make smaller academic progress than their non-poverty TPS peers, by 29 days of learning in reading and 23 days of learning in math. In contrast, charter school students in poverty are making equivalent academic gains in reading compared to their non-poverty TPS peers and substantially more progress in math, a difference of 51 additional days. These results mean that charter school students in poverty have no learning gap in reading. More noteworthy is the charter school results for math growth for students in poverty: by exceeding the TPS non-poverty benchmark are actually closing the achievement gap based on socio-economic status.

¹² Free and Reduced Price Lunch (FRL) is a standard indicator of poverty. Although we acknowledge that FRL is not as sensitive as we desire, FRL is currently our best proxy for poverty.

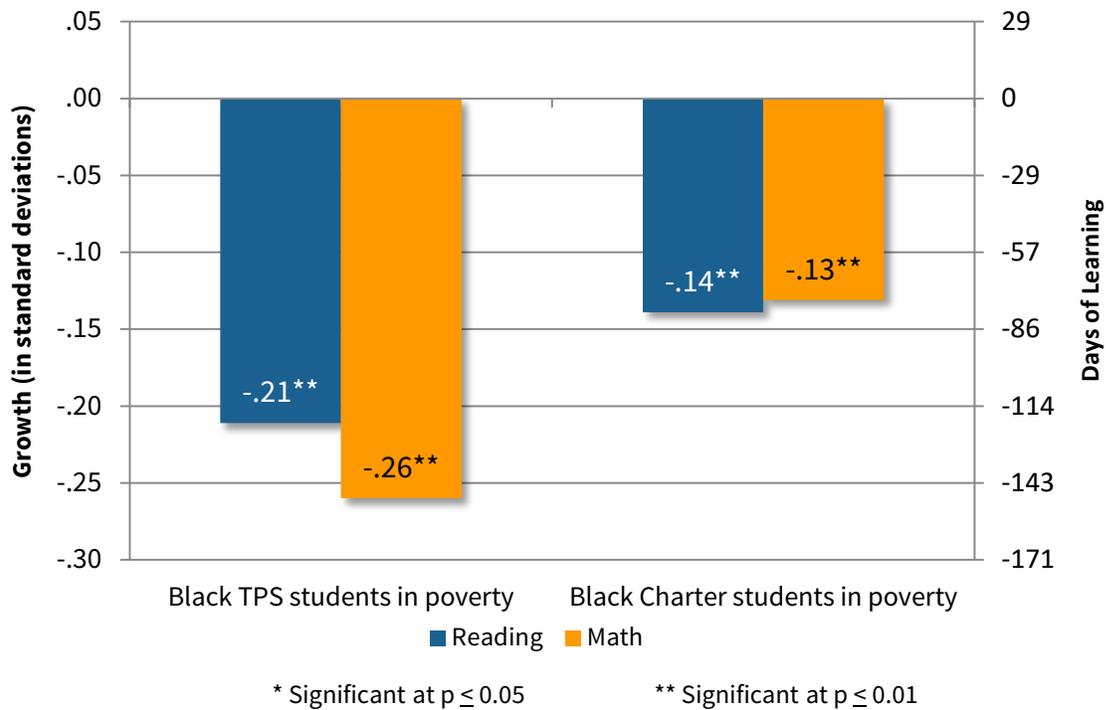
¹³ The effect for a charter student in poverty includes both the charter effect and a poverty effect.

Charter School Impact by Race/Ethnicity and Poverty

In public education, some of the most academically challenged students are those who are both living in poverty and also members of historically-underserved racial or ethnic minorities. These students represent a large subgroup, and their case has been the focus of decades of attention. Within the national charter school community, this group receives special attention.

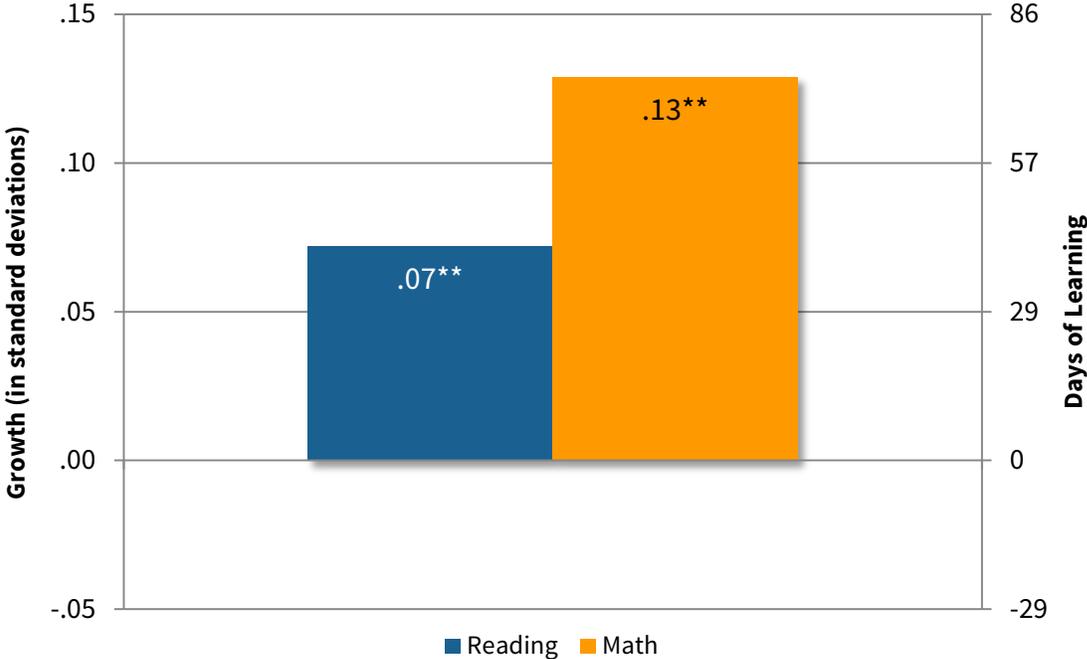
The impact of New York charter schools on the academic gains of Black students living in poverty is presented in Figures 11 and 11a. Similarly, Figures 12 and 12a present the impact of charter schools on Hispanic students living in poverty. In these graphs, the comparison student is a White TPS student who is not in poverty.

Figure 11: Learning Gains of Black Students in Poverty Benchmarked against Learning Gains of White TPS Students Not in Poverty



As shown in Figure 11, in both TPS and charter schools, Black students living in poverty make less progress than White students who are not in poverty. In New York, Black TPS students in poverty have approximately 120 fewer days of learning in reading and 148 fewer days of learning in math than White non-poverty TPS students. Black charter students in poverty have 80 fewer days of learning in reading and 74 fewer in math than White non-poverty TPS students. The magnitude of the differences is noteworthy. They show the compound effect of the dual status of these students: their results are larger than the sum of the separate impacts for Blacks and students in poverty.

Figure 11a: Relative Learning Gains for Black Charter School Students in Poverty Benchmarked against their Black TPS Peers in Poverty

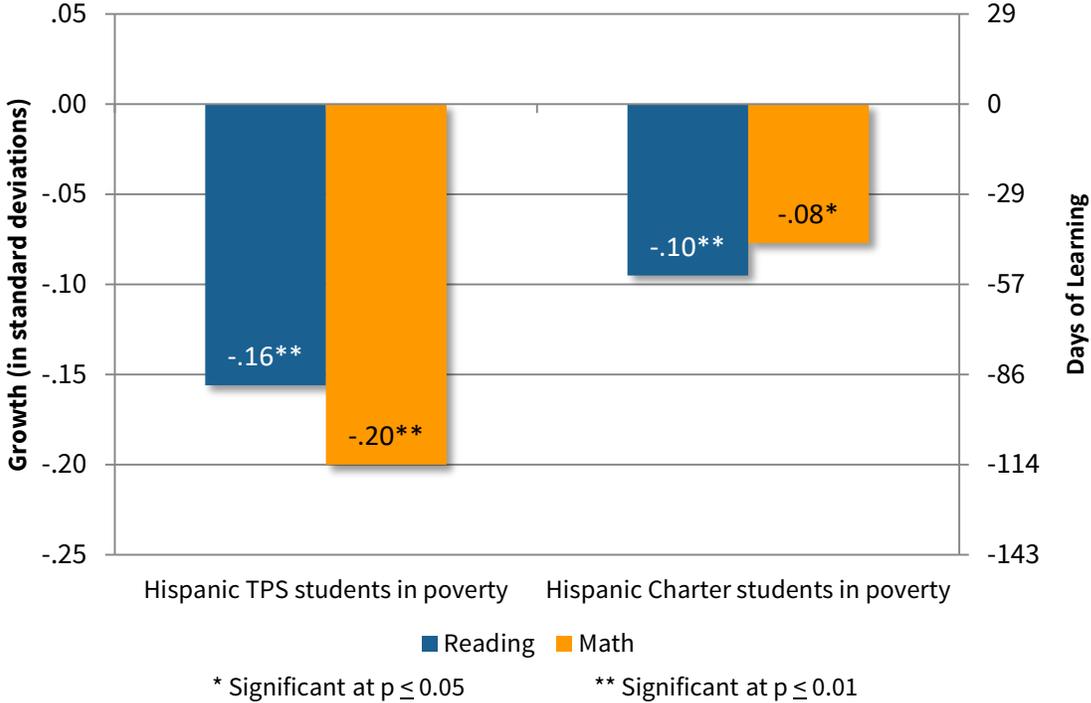


* Significant at $p \leq 0.05$ ** Significant at $p \leq 0.01$

Across all charter schools in New York, Black charter students living in poverty experience significant advantage to attending charter schools, as evidenced by stronger growth per year in reading and math compared to Black TPS students living in poverty. The results in Figure 11a translate to 40 additional days of learning in reading and 74 more days of learning in math.

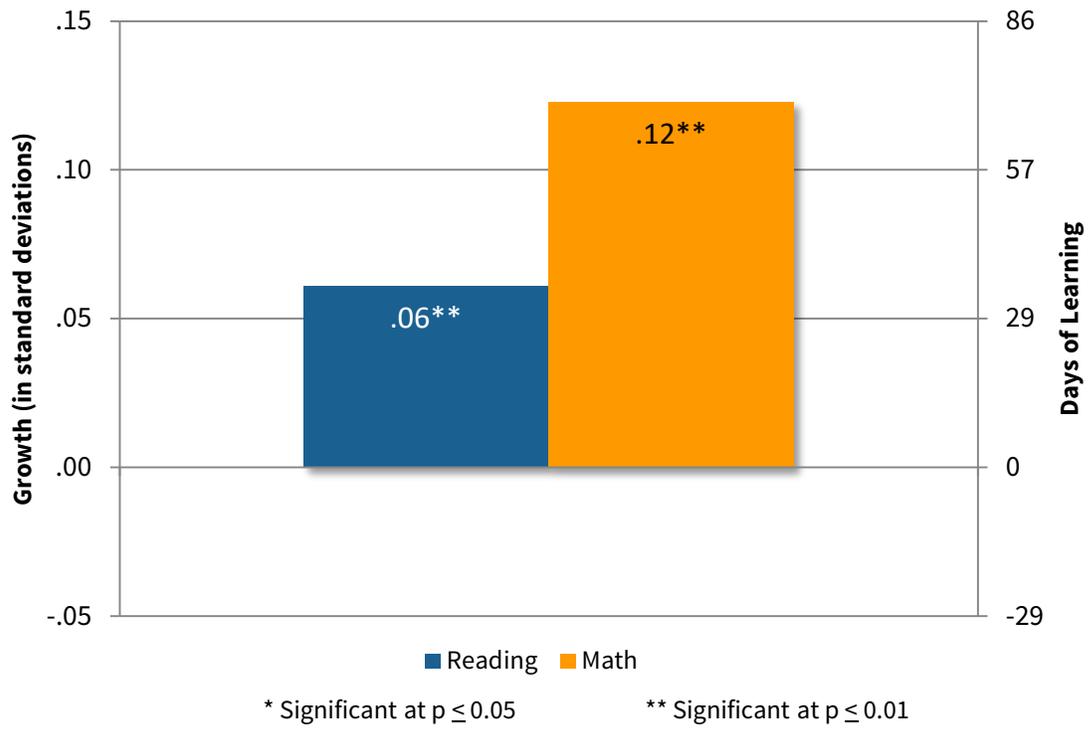
Hispanic students living in poverty exhibit weaker performance in both reading and math than White TPS students not living in poverty. Figure 12 below shows that Hispanic TPS students living in poverty experience on average 91 fewer days of learning in reading and 114 fewer days in math compared to TPS White students who are not living in poverty. Hispanic students in poverty attending charter schools have, on average, 57 fewer days of learning in reading and 46 fewer days in math, per year compared to TPS White students not living poverty.

Figure 12: Learning Gains of Hispanic Students in Poverty Benchmarked against Learning Gains of White TPS Students not in Poverty



The results in Figure 12a contrast the performance of Hispanic students in poverty across the TPS and charter school settings. The graph shows New York Hispanic students in poverty who attend charter schools experience 34 additional days of reading growth than Hispanic TPS students in poverty. In math, the gains are larger by approximately 68 more days of learning.

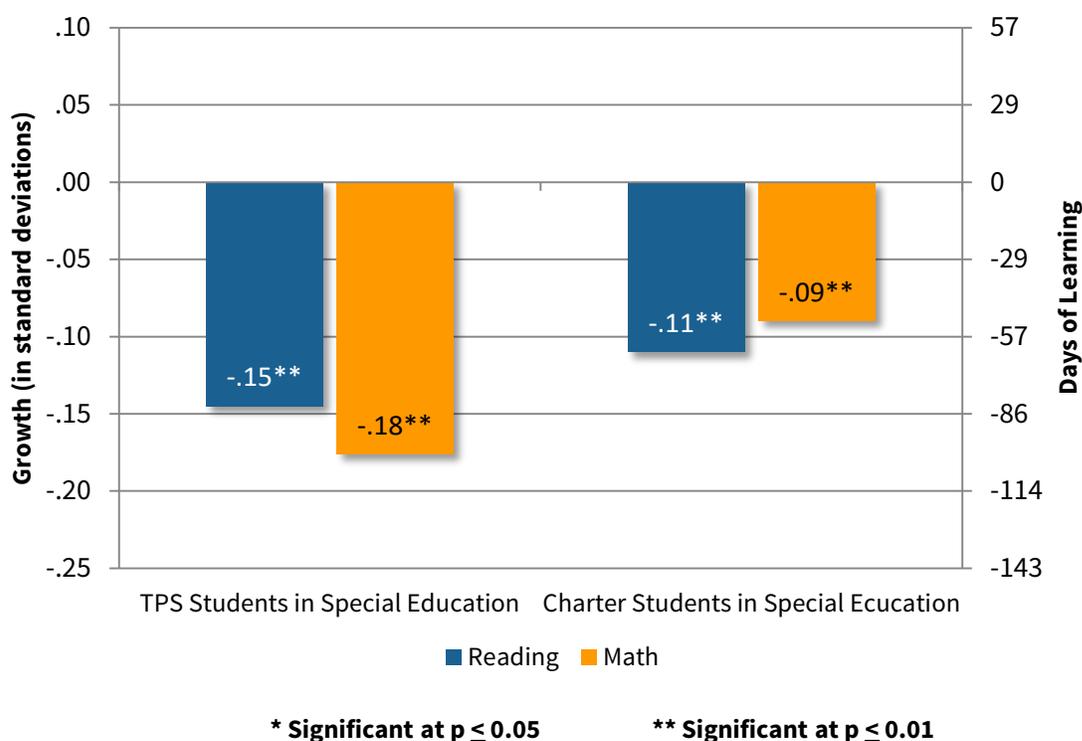
Figure 12a: Relative Learning Gains for Hispanic Charter School Students in Poverty Benchmarked against their Hispanic TPS Peers in Poverty



Charter School Impact with Special Education Students

Because of the differences in individual needs, comparing the outcomes of special education students is difficult, regardless of where they enroll. In the ideal, we would only compare students with the same Individual Education Program (IEP) designation, matching for it along with the rest of the matching variables. That approach faces real challenges, however, because of the large number of designations. The finer distinction leads to very small numbers of cases that match between charter schools and their feeder schools, which hinders the analysis. To obtain any estimates of charter school impacts for students with special education needs, it is necessary to aggregate across all IEP categories. It is important to consider this when viewing the results.

Figure 13: Learning Gains of Special Education Students Benchmarked against Learning Gains of TPS Students Not in Special Education

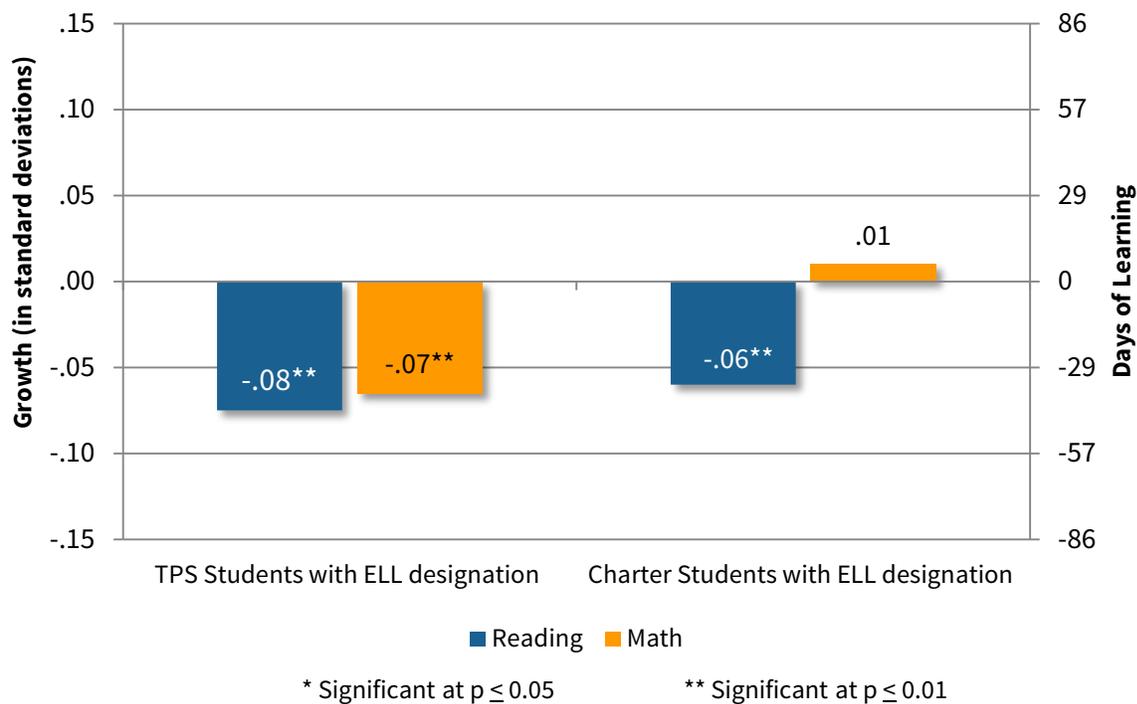


In Figures 13 and 13a, the baseline for comparison is the TPS student who is not receiving special education services. New York special education students enrolled in both TPS and charter schools have significantly weaker growth than students in TPS who do not receive special education services. Figure 13 shows TPS students in special education programs experience 86 fewer days of learning in reading and 103 fewer days of learning in math when compared to TPS students not receiving special education services. A special education student in charter schools also makes less progress than a non-special education student, but the gap is smaller, amounting to 63 fewer days of learning in reading and 51 fewer days in math. The difference between gains for special education students in charter schools and TPS schools favors charter school enrollment and is statistically significant for both subjects.

Charter School Impact with English Language Learners

There is a growing population of students enrolled in the public school system with a primary language other than English. Their present success in school will influence their progress in the world once they exit the school system. The 2015 National Assessment of Education Progress (NAEP) documented the gap in academic performance between English Language Learners (ELL) and their English proficient peers, with ELL students having weaker performance¹⁴. Even though the share of charter school students who are English Language Learners is only 4%, demographic trends in the United States point to larger shares over time. These early analyses can provide important baselines for comparisons over time.

Figure 14: Learning Gains of ELL Students Benchmarked Against Learning Gains of Non-ELL TPS Students



The comparison student for Figures 14 and 14a is a TPS student who is English proficient. English language learners in TPS schools show significantly weaker growth per year than non-ELL students, amounting to a gap of 46 days of learning in reading and 40 fewer days in math. Charter school students with ELL designation experience 34 fewer days of learning in reading and no difference in math learning as their their non-ELL TPS counterparts. Charter ELL students experienced stronger growth than TPS ELL students in math.

When the progress in ELL students is compared across school settings, charter students gain 11 extra days in reading. The difference of 46 additional days of learning in math for charter school ELL students is statistically significant.

¹⁴ The Nation’s Report Card. (2016) 2015 Mathematics and Reading Assessments http://www.nationsreportcard.gov/reading_math_2015/#mathematics/groups?grade=4

School-level Analysis

The analyses in the preceding sections have highlighted the performance of charter school students in New York overall and for separate student subgroups. Each of the student-level results represents the average impact for all the students in the group being studied. Individual students in the group have personal results that distribute around that average value. If those distributions were exactly the same in every charter school in New York, every school would have the same performance. Of course, this is not the case, so further examination of performance at the school level is desirable to identify how individual school – level performance aligns with the overall impacts.

Comparative School-level Quality To determine the current distribution of charter school performance, for each New York charter school we measure the average learning effects of each New York charter school for all their matched students in the two most recent growth periods (2015 and 2016). This measure is called the school’s “effect size” We compute the same measure for all the matched TPS VCRs; the result serves as the experience that students would have realized in their local traditional public schools.¹⁵ As with the overall and by-year impacts, school effect size is expressed in standard deviations of growth.

As noted in Table 1, charter schools are smaller on average than their corresponding feeder schools. Further, some charter schools elect to open with a single grade and mature one grade at a time. Consequently, care is needed when making school-level comparisons to ensure that the number of tested students in a school is sufficient to provide a fair representation of the school’s impact. Our criterion for inclusion is at least 60 matched charter student records over the two years or at least 30 matched charter records for new schools with only one year of data. Our total sample consists of 179 schools with reading scores and 194 schools with math scores in the 2015 and 2016 growth periods. Table 4 below shows the breakout of performance for the included New York charter schools.

Table 4: Performance of Charter Schools Compared to Their Local Schools in New York

Subject	Significantly Worse		Not Significant		Significantly Better	
	Number	Percent	Number	Percent	Number	Percent
Reading	22	12.3%	72	40.2%	85	47.5%
Math	33	17.0%	66	34.0%	95	49.0%

¹⁵ We chose to include only the two most recent growth periods in this analysis in consideration of the dynamic growth within some charter schools and to provide the most contemporary picture of performance possible..

In reading, nearly 48 percent of charter schools perform significantly better than their peer traditional public schools, while 49 percent perform significantly better in math. Each of these results is superior to the national average, where 25 percent of charter schools outperform their local counterparts in reading and 29 percent do so in math¹⁶. When looking at weaker performance, 12 percent of New York charter schools have reading results that are significantly weaker than the local TPS option, while 17 percent do so in math. Comparing to the national picture, 19 percent of charter schools pale against the local counterparts in reading and 31 percent do so in math. In reading, 40 percent of New York charter schools have results that do not differ significantly from traditional public schools in their communities. In math, 34 percent of charter schools have growth performance that is indistinguishable from their comparable TPS.

Impact of Growth on Achievement While the impacts of charter schools on academic growth relative to their local competitors is informative, we are also interested in how well students perform in absolute terms. Since many of the students served by charter schools start at low levels of achievement, the combination of absolute achievement and relative growth is vital to understanding student success overall.

For each school, the tested achievement of their students over the same two periods covered by the effect size analysis (2015 and 2016) is averaged and transformed to a percentile within the statewide distribution of achievement.¹⁷ The 50th percentile indicates statewide average performance for all public school students (traditional and charter). A school achievement level above the 50th percentile indicates that the school's overall achievement exceeds the statewide average. We use the effect sizes discussed above to measure growth. We display each school's achievement and growth effect size in a two-dimensional plot, displayed in Tables 5 and 6.

A Note about Tables 5 and 6

There are four quadrants in each table. We have expanded on the usual quadrant analysis by dividing each quadrant into four sections. The value in each box is the percentage of charter schools with the corresponding combination of growth and achievement. These percentages are generated from the 2015 and 2016 periods.

The uppermost box on the left denotes the percentage of charters with very low average growth but very high average achievement. The box in the bottom left corner is for low-growth, low-achieving schools.

Similarly, the topmost box on the right contains the percentage of charters with very high average growth and very high average achievement, while the bottom right corner contains high-growth, low-achieving schools.

The major quadrants were delineated using national charter school data. We would expect the majority of schools to have an effect size between -0.15 and 0.15 standard deviations of growth (the two middle columns). Similarly, we would expect about 40% of schools to achieve between the 30th and 70th percentiles.

¹⁶ CREDO (2013). *National Charter School Study 2013*. <http://credo.stanford.edu>.

¹⁷ Average achievement was computed using students' z-scores from the end of the growth period (e.g., spring 2014 and spring 2015), and the resulting school-level mean was then converted into a percentile.

Table 5: Reading Growth and Achievement

Growth (in Standard Deviations)	Low Growth, High Achievement		High Growth, High Achievement		
	-0.15	0	0.15		
	0.0%	1.1%	1.7%	6.1%	70th Percentile
	0.0%	9.5%	19.0%	12.3%	50th Percentile
	1.7%	17.3%	16.8%	7.3%	30th Percentile
	1.7%	2.2%	1.1%	2.2%	
	Low Growth, Low Achievement		High Growth, Low Achievement		

Table 5 presents the achievement and growth results for the 179 New York charter school included in this analysis. In the table, 118 of the 179 New York charter schools (66 percent) have positive average growth compared to their peer school. (This percentage is the sum of the eight squares in the blue and pink quadrants in the right half of the table). Thirty eight percent of charters have positive growth and average achievement above the 50th percentile of the state (i.e., the total for the blue quadrant on the top right). Over time, if the 28 percent of charter schools in the pink box maintain or improve their average growth, their achievement would increase, eventually moving them into the blue box.

About 34 percent of schools post smaller learning gains than their local peer schools (the sum of gray and brown quadrants on the left half of the table). If their growth remains steady or worsens, they will fall in the overall distribution of achievement as other schools pull away. About 50 percent of charters perform below the 50th percentile of achievement (the sum of the brown and purple cells in the lower portion of the table). The area of greatest concern is the 23 percent of schools that fall into the lower left quadrant of the table. These schools are characterized by both low achievement and low growth.

Table 6: Math Growth and Achievement

		Low Growth, High Achievement		High Growth, High Achievement	
		-0.15	0	0.15	
Growth (in Standard Deviations)		0.0%	0.0%	3.1%	6.7%
		0.0%	5.2%	10.8%	18.6%
		2.1%	11.3%	20.1%	7.7%
		7.2%	3.6%	2.6%	1.0%
					70th Percentile
					50th Percentile
					30th Percentile
		Low Growth, Low Achievement		High Growth, Low Achievement	

In math, 138 of the 194 New York charter schools (nearly 71 percent) have positive average growth in math, as seen in the combined orange and pink quadrants in the right half of the table. Thirty nine percent of charters have positive growth and average achievement above the 50th percentile (the orange quadrant in the upper right of the table). Approximately 56 percent of charters post achievement results below the 50th percentile of the state for math (the sum of cells in the lower half of the table); these findings are similar to those presented in Table 5 for reading. In the pink quadrant in the lower right of the table, 31 percent (60 schools) of the 194 schools classified as having low achievement have high growth and appear to be on an upward trajectory. As in the previous table, the schools of greatest concern are those schools in the lower left (brown) quadrant that have both low achievement and low growth; they account for 24 percent (47 schools) of the charter schools in New York.

Impact of Charter Management Organizations

Charter Management Organizations (CMOs) are networks of schools that operate multiple schools, sharing common leadership and practices. We identify CMOs using two criteria. First, CMOs are organizations operating three or more schools. Second, CMOs hold the charters for the schools they operate. Since the enabling legislation for charter schools in New York prohibits for-profit charter firms, all the CMOs are non-profit. CMOs have some operational advantages in their ability to spread administrative fixed costs over a larger number of schools or students, thus providing the possibility of greater efficiency (i.e. the cost per student or per school is lower). In addition, with more schools and students than a single charter school, CMOs may be able to support additional programs and more robust staffing in their networks. Whether these organizations lead to better student outcomes is a matter of interest across the United States.

Identifying all the CMOs in New York and associating them with their schools and students is not straightforward. This analysis only includes schools located in New York, even if a CMO also operates schools in other states. The CMO analysis includes 73 charter schools from 16 CMOs. The analysis looks at the comparative performance of charter schools, divided by CMO affiliation or independent status. As with the earlier statewide graphs, each graph in this section displays two distinct comparisons:

1. The first graph compares the performance of charter students in CMO-affiliated schools and charter students in independent charter schools to the performance of the "average statewide student in TPS."
2. The second graph compares the difference in learning between charter students who attend CMO charter schools and those who attend charters that are not part of CMOs.

Figure 15 illustrates the impact of CMO charter schools and non-CMO charter schools on their students' math and reading growth. This growth is benchmarked against growth of an average White TPS student.

Figure 15: Average Student Learning Gains of CMO Charter Schools and Non-CMO Charter Schools Benchmarked Against the Statewide Average TPS Student Learning Gains

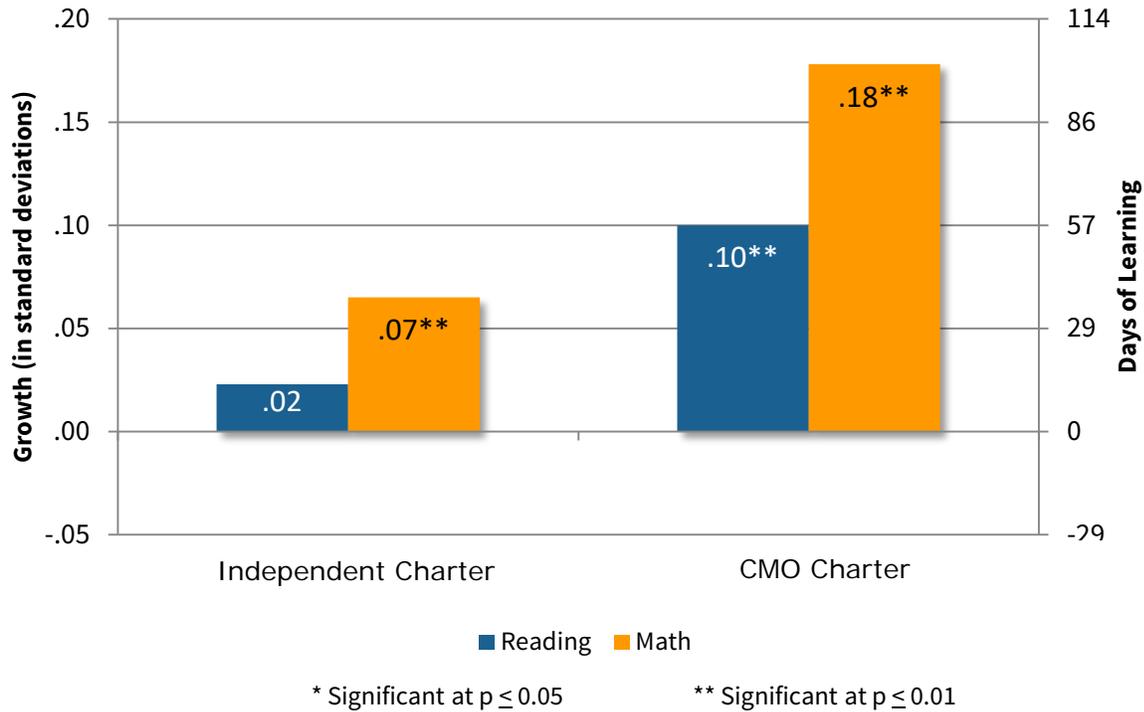
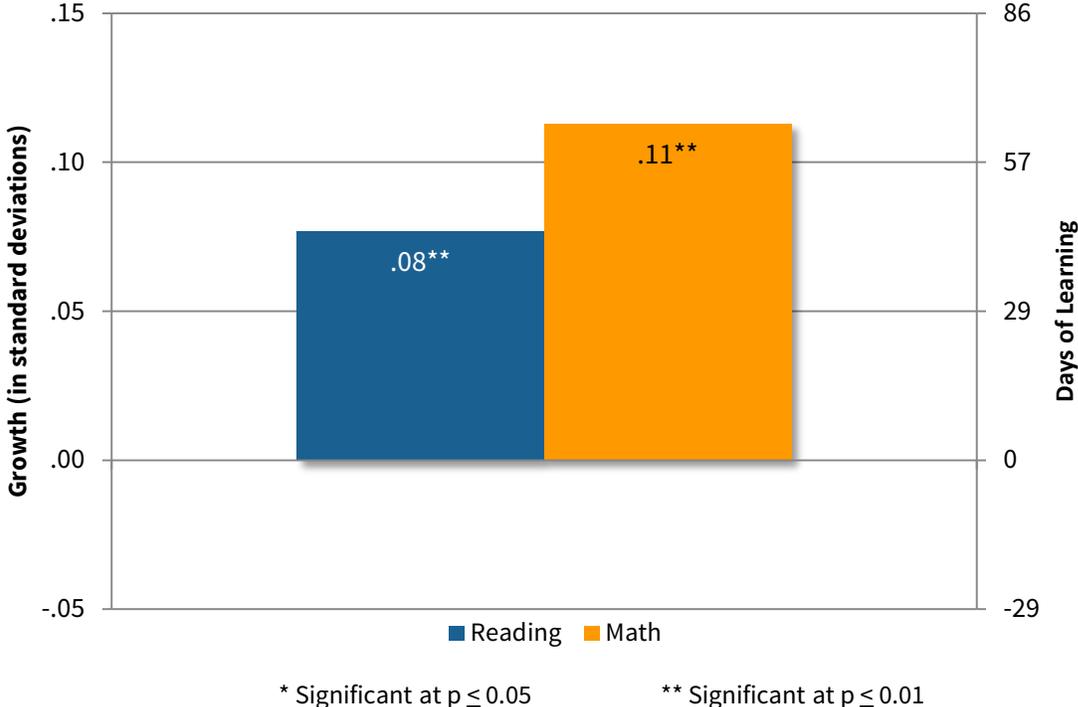


Figure 15 shows the impact CMOs are having with their students. In both reading and math, New York students enrolled in a CMO charter exhibit stronger average growth translating to approximately 57 more days of learning in reading and 103 more days in math compared to their TPS peers. The graph also shows that students enrolled in a charter that is not part of a CMO perform similarly to their TPS peers in reading but experience 38 days of additional learning in math.

Figure 15a displays the learning difference between students who attend CMO charters and those who attend non-CMO charters. The figure shows that CMO charter students exhibit stronger growth translating to approximately 46 more days of learning in reading and 63 more days in math compared to non-CMO charter students. The dramatic difference is statistically significant in both subjects and contributes to the overall positive effect observed for New York charter schools.

Figure 15a: Relative Student Learning Gains of CMO Charter Schools Benchmarked Against Learning Gains of Non-CMO Charter Schools

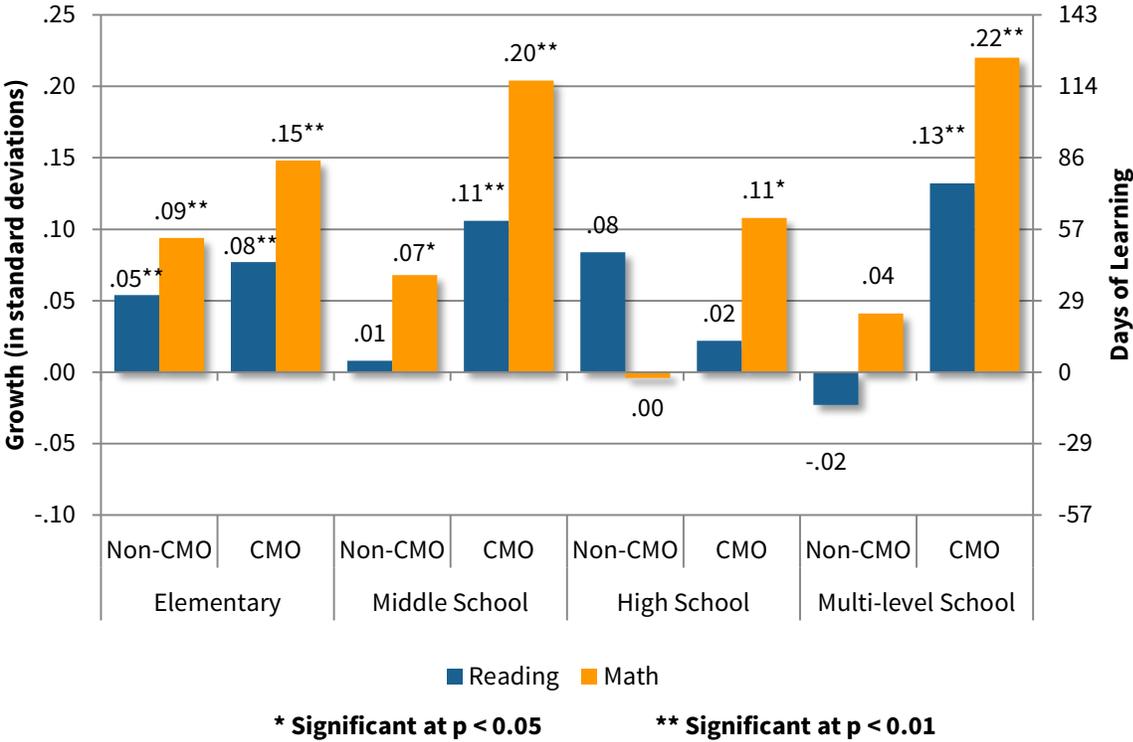


To better understand the performance of charter schools associated with CMOs, differences in performance were further contrasted by the grade span of the school. Figure 16 shows that charter elementary school students, both CMO and non-CMO, perform better than students in TPS elementary schools in both reading and math. CMO elementary students outperform their TPS peers with an additional 46 days of learning in reading and 108 additional days in math.

In middle school, students enrolled in CMO charters outperform their TPS and charter non-CMO peers in both reading and math. This translates to an additional 63 days of learning in reading and 114 additional days in math compared to TPS middle school students. Students enrolled in non-CMO charter middle schools performed similarly to their TPS counterparts in reading while gaining an additional 38 days of learning in math.

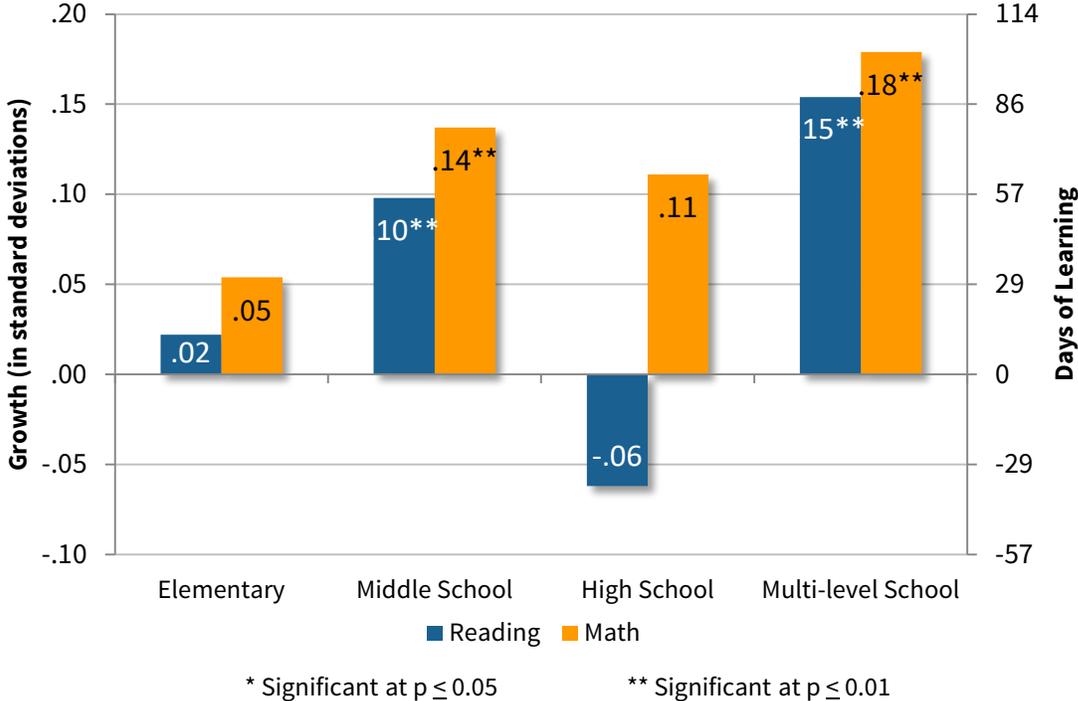
High school students enrolled in CMO charters experience similar growth to their TPS counterparts in reading but gained 63 additional days of learning in math. The students in non-CMO charter high schools perform similarly to their TPS counterparts in both math and reading. Students in CMO charter multi-level schools exhibit a learning gain of 74 days in reading and 125 days in math which is the largest gains across all grade spans. Students enrolled in multi-level non-CMO charter schools exhibit similar growth to their TPS peers in both subjects.

Figure 16: CMO and Non-CMO Student Learning Gains by School Level Benchmarked Against TPS Learning Gains by School Level



As shown in Figure 16a below, charter elementary and high school students perform similarly in math and reading whether or not the charter school is affiliated with a CMO. Middle school students enrolled in a CMO charter have stronger growth than their non-CMO peers, translating to 57 extra days of learning in reading and 80 days more in math. Similarly, CMO charter multi-level school students outperform non-CMO charter schools by a larger margin, gaining 86 extra days of learning in reading and 103 days more learning gains in math.

Figure 16a: Relative Learning Gains of Students in CMOs by School-Level Benchmarked against Learning Gains of Non-CMO Charter School Students by School Level



Students attending charter schools that belong to CMOs exhibit stronger growth than an average TPS student in both reading and math. Similarly, students attending CMO charter schools on average have stronger growth in both reading and math compared to their peers attending independent charter schools. When separated into school levels, CMO charter students show stronger reading and math growth in elementary, middle, and multi-level schools than an average White TPS student. However, for the high school grade span students gain additional learning only in math. Students attending non-CMO schools exhibit stronger math and reading growth in elementary school than an average TPS student. In middle, high, and multi-level schools, these non-CMO charter students exhibit similar growth in both reading and math compared to the average TPS student.

Impact of Charter School Networks

A charter school network is a single organization which oversees the operations of three or more charter schools. New York State law allows for charter management organizations (CMOs) which holds the charter to their schools and operates the schools directly. It does not permit charters to engage education management organizations (EMOs) to operate a charter school on behalf of the party who holds the charter. This study looks at the 28 charter networks in New York, that encompass 92 charter schools representing about 47 percent of New York's charter student population at the time of this study.

Table 7 includes results of charter schools networks, unless a network has fewer than three charter schools with tested grades during the course of the study. Networks with fewer than three schools with tested grades have been removed from Table 7, consistent with CREDO's policy of not identifying individual schools.

Table 7: Performance of Charter School Networks in New York based on Growth Effect Size

Network Name	Growth Effect Size	Days of Learning	Number of NY Schools	Number of Students
Reading				
Harlem Success	.27**	152	12	1,044
KIPP NYC	.17**	96	5	1,800
Achievement First	.15**	84	6	2,189
Uncommon NYC	.13**	76	12	3,691
Icahn	.12**	68	3	133
Democracy Prep	.12**	66	5	1,441
Uncommon Rochester	.11**	63	3	851
Ascend Learning	.07**	37	3	1,153
Victory	.05**	26	12	1,899
New Visions	.02	10	5	116
Explore Schools	-.02	-10	4	854
National Heritage Academies	-.02	-11	6	1,869
Math				
Harlem Success	.44**	249	12	628
Icahn	.32**	181	3	124
Achievement First	.30**	172	6	2,457
Democracy Prep	.27**	152	5	1,943
Uncommon Rochester	.26**	150	3	797
KIPP NYC	.26**	148	5	1,987
Uncommon NYC	.18**	102	12	3,648
New Visions	.11*	64	7	1,517
Victory	.10**	59	12	1,942
Ascend Learning	.09**	50	3	1,203
Explore Schools	.02	11	4	849
National Heritage Academies	.01	5	6	1,834

Note: Number of students reflect 2015-16 tested enrollment figures

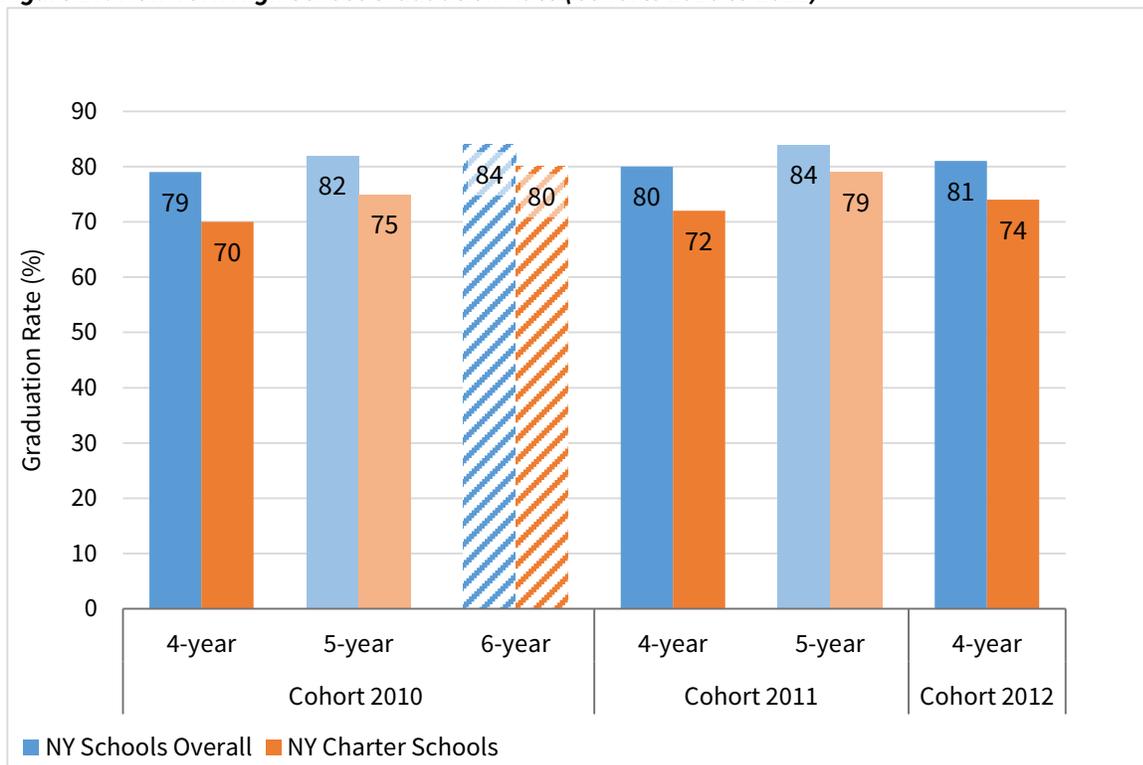
Table 7 displays performance of charter school networks (CMO or EMO) based on their effect size in reading and math. In reading, students in the top performing network experience approximately 152 extra days of learning and approximately 249 additional days of learning in math. Conversely, students attending charter schools in the lowest-performing networks are not significantly different from the comparison group.

New York High School Graduation Rate

One of the useful metrics to measure the effectiveness of high schools is the graduation rate. It is the ultimate measure of attainment in the secondary school system and traditionally signaled a degree of cognitive skills and fundamental knowledge. Individuals with a high school diploma are better employed and better compensated than those with it. The diploma is also a pre-requisite for many post-secondary opportunities.

The New York high schools report 4-Year, 5-Year, and 6-Year graduation of their students. The 4-Year graduation rate reflects percentage of students who graduated in 4 years after their first time enrollment in 9th grade. The 5-Year and 6-Year graduation rates reflect percentage of students who graduated after five and six years in high school respectively. Each cohort is identified by the year the students enrolled in ninth grade. Since the two most recent cohorts have only recently reached the 4-year mark, their results beyond the 4-year graduation date are incomplete. The graduation rates used in this analysis includes the August graduates for each cohort.¹⁸

Figure 17: New York High School Graduation Rate (Cohorts 2010 to 2012)



Source: <https://data.nysed.gov/downloads.php>

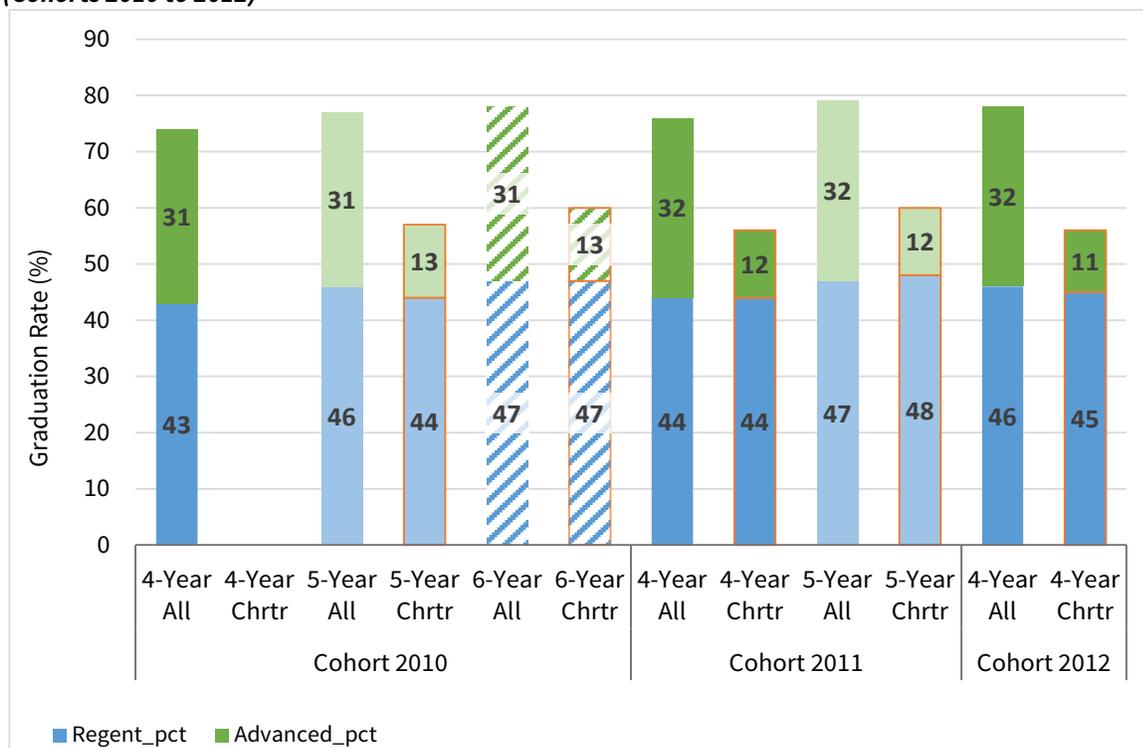
Considering the differences in school location and populations served, it may seem unfair to pitch the graduation rates of charters against the full collection of public high schools across New York State. We take a different view: since we did not have sufficiently refined graduation data to do a head-to-head comparison of similar schools, the differences in graduation rates are noteworthy for being as small as they are.

¹⁸ The 6-year graduation rate is available only for June graduates

Figure 17 show New York 4-Year for all public schools (TPS and charter combined) and for charter high schools. Statewide high school graduation rates show a slight uptick from 79 percent of the 2010 cohort graduating in 4 years to 81 percent in the 2012 as seen in the darker bars. The 5-Year graduation rates appear in lightly colored bars) and 6-Year graduation rates are represented by striped bars. These rates have more limited series, but follow similar trends for state as a whole. For charter schools, the 4-Year high school graduation rate has increased from 70 percent for 2010 cohorts to 74 percent for cohort 2012. New York charter schools 5-Year graduation rate saw a 4-percentage point increase from the 2010 to 2011 cohorts. The comparisons reveal that charter schools made progress in recent years enabling their students to graduate on time.

While overall graduation figures are informative, New York offers a variety of graduation credentials which are not equal in stature or rigor. In addition to the above graduation analysis, we present the data broken out by Regents and Advanced Regents graduation data for cohorts 2010 to 2012 for New York schools. This analysis provides more depth in understanding the high school graduation rate differences between the overall New York schools (TPS and charters) versus New York students who get a Regents or Advanced Regents diploma. The percent of students who receive a standard Regents diploma is in blue; the percent receiving an Advanced Regents diploma is in green.¹⁹

Figure 18: Overall NY Schools versus NY Charters: Regents and Advanced High School Graduation Rates (Cohorts 2010 to 2012)



Source: <https://data.nysed.gov/downloads.php>
 4-Year Charter for Cohort 2010 was not available

¹⁹ Percentage of students receiving a Local diploma can be calculated by subtracting the percent receiving Regents and percent receiving Advanced Regents from total graduation rate in Figure 17.

Figure 18 shows the graduation rate with a standard Regents diploma (blue bars) is similar between the New York charter schools and the overall New York public schools (TPS and charter combined). This is true across all periods and cohorts. The percentage of graduates receiving an Advanced Regents diploma (green bars) is lower for New York charter schools across all the cohorts. By deduction, the percentage of student graduating from charter schools with local diplomas must then be higher than for TPS schools. The results in Figure 18 tell a much different story from that in Figure 17. Looking at Figure 17, the two sectors look to have similar success in graduating students with charter schools lagging somewhat behind all schools, but slowly closing the gap. However, the breakout in Figure 18, reveals differences in the rigor of diplomas being earned by charter students and the overall graduation level. A much larger portion of charter students are graduating with a weaker graduation credential.

Synthesis and Conclusions

In this study, we examined the one-year academic progress of students in New York charter schools compared to the gains of identical students in the traditional public schools (TPS) the students otherwise would have attended. The study period covered five years of annual data ending in the 2015-2016 school year, which was used to create four year-to-year measures of progress. The year-to-year measure is referred to as growth or gains. Students in New York charter schools experienced more learning gains in a year, on average, than their TPS counterparts. The benefits for charter students are as if the students received 34 days of additional learning in reading and 63 additional days in math in the course of a school year. Over the four growth periods, the annual gains of students in New York charter schools increased.

Beyond the overall results, the analysis probed the consistency of charter school performance over many dimensions. Students in New York charter elementary, middle and multi-level schools exhibit stronger growth in both reading and math compared to their TPS peers. Charter students in high schools, however, experience similar growth in reading and math compared to their TPS peers. The lack of difference at the high school level is partly due to the small number of charter high schools.

The results for all demographic subgroups showed stronger growth compared to their peers attending TPS. Black students, Hispanic students, students living in poverty and special education students realize significantly greater academic progress in a school year compared to their same-subgroup peers in TPS. Black charter students in poverty have stronger growth relative to Black TPS students in poverty in both reading and math. The difference translates to an additional 38 days of learning in reading and 74 days of learning in math. Hispanic charter students in poverty exhibited stronger growth than Hispanic TPS student in poverty. The difference is equivalent to an additional 29 days of learning in reading and 68 days of learning in math.

Students with special education needs and English language learners are also among the sub-populations with significant impact from charter school attendance. In New York, being a charter student with special education needs leads to significantly better learning gains compared to a special education student in TPS. Similarly, the full effect of being a charter ELL student exhibit stronger growth in reading compared to TPS ELL students, while it exhibit similar growth in math.

In New York, 47 percent of charter schools belong to a Charter Management Organization (CMO) or other network. The students in schools affiliated with Charter Management Organizations (CMOs) have significant academic gains on average compared to their non-CMO charter counterparts. Once separated by school grade span (elementary, middle, high, multi-level) the analyses reveal that middle and multi-level school students in CMO charters have stronger growth than their non-CMO charter peers in both reading and math. In elementary and high school, CMO charter students exhibit similar growth to their peers attending non-CMO charter schools. Several CMOs were seen to produce outstanding academic progress in their students in both reading and math year in and year out.

Looking at the results at the school level, that analysis shows that the share of New York charter schools outpacing their local TPS peers in academic learning gains is close to half for both reading and math. Forty-eight percent of New York charters outpace the learning impacts of TPS in reading and 49 percent do so in math. Still, 12 percent of charter schools have results that are significantly worse than TPS for reading and 17 percent of chart schools in math are underperforming relative to their local TPS peers.

In this study the school-to-school and student-to-student results show that students in New York charter schools make superior gains in a year's time compared to the local alternatives. Considering the commitment of many charter school teams to serve students with various education disadvantages, the complementary question of whether charter schools are helping students achieve at high levels is also important. Fifty percent of charter schools in New York fall below the 50th percentile in achievement in reading and 56 percent of charters fall below the 50th percentile in achievement in math. These findings are of course influenced by locational decisions and the starting points of the students they serve. In New York, 118 charter schools (66 percent) have positive academic growth in reading and 138 (71 percent) have positive academic growth in math. In both reading and math, slightly a slight majority of the schools below the 50th percentile of achievement exhibit positive growth. With positive and sustained growth, these schools will likely post achievement gains over time. The outlook for the nearly quarter of charter schools with below-average growth and low achievement is more worrisome.

Finally, with a limited analysis of graduation rates at 4 years, 5 years and 6 years, charter high schools are graduating students at rates that are close to the average for all high schools across the state. Since the full set of New York high schools includes schools that enroll more advantaged students, the fact that the rates are as similar as they are is worth taking note.

Implications

There are several implications for charter school policies based on this analysis. First the significant charter effects in New York are mostly driven by the performance of charter schools in New York City. The strong performance of some networks, even those not in New York City, is evidence that quality education can be expanded to help students achieve their long term goals. Sharing and replicating the practices of the successful operators can help other schools regardless of sector. Since all charter schools are public schools, their mission of public service can reasonably be expected to include helping other schools improve. There are many ways dissemination could occur and the opportunity to explore them should not be overlooked.

At the other end of the performance spectrum, policies are needed to address schools that post substantially inferior results. It takes only a few years of poor academic progress to hinder a student for the rest of their K-12 experience. Other states have adopted accountability practices that include a presumption of closure for underperforming schools absent a compelling reason to continue. New York can learn from other states. Given the small number of authorizers, collaboration towards a consistent approach is both feasible and needed.

In addition, undertaking further analysis, using other outcome measures, can help improve our understanding of the positive results shown in this study and can be a useful addition to the improvement of New York State public schools. Charter providers on average have much more success supporting traditionally under-served populations such as minority students and students in poverty. Gaining a better view of the wider academic and non-academic outcomes of charter school students can be instrumental to supporting more students in more ways, with the goal of eventual success in college, career and society.

Table 8 presents a summary of the results from the various analyses in this report.

Table 8: Summary of Statistically Significant Findings for New York Charter School Students

	Reading	Math
New York Charter Students	Positive	Positive
Charters in 2012-2013	Positive	Positive
Charters in 2013-2014	Positive	Positive
Charters in 2014-2015	Positive	Positive
Charters in 2015-2016	Positive	Positive
Elementary School Charter Students	Positive	Positive
Middle School Charter Students	Positive	Positive
High School Charter School Students	Similar	Similar
Multi-Level School Charter Students	Positive	Positive
Urban Charter Students	Positive	Positive
Suburban Charter Students	Similar	Positive
Rural Charter Students	Positive	Positive
First Year Enrolled in Charter School	Similar	Positive
Second Year Enrolled in Charter School	Positive	Positive
Third Year Enrolled in Charter School	Positive	Positive
Fourth Year Enrolled in Charter School	Positive	Positive
Black Charter School Students	Positive	Positive
Hispanic Charter School Students	Positive	Positive
Charter School Students in Poverty	Positive	Positive
Black Charter School Students in Poverty	Positive	Positive
Hispanic Charter School Students in Poverty	Positive	Positive
English Language Learner Charter School Students	Similar	Positive
Special Education Charter School Students	Positive	Positive
Charter CMO	Positive	Positive
Charter Non-CMO	Similar	Positive
Charter CMO Elementary Schools	Positive	Positive
Charter Non-CMO Elementary Schools	Positive	Positive
Charter CMO Middle Schools	Positive	Positive
Charter Non-CMO Middle Schools	Similar	Positive
Charter CMO High Schools	Similar	Positive
Charter Non-CMO High Schools	Similar	Similar
Charter CMO Multi-level Schools	Positive	Positive
Charter Non-CMO Multi-level Schools	Similar	Similar

Technical Appendix

The table below presents the number of charter observations associated with the corresponding results in the report. An equal number of VCRs were included in each analysis.

Appendix Table 1: Number of Observations for All Results

Student Group	Matched Charter Students	
	Reading	Math
New York Charter Students	120,614	137,822
Students in Charters in 2012-2013	21,565	24,719
Students in Charters in 2013-2014	28,699	32,557
Students in Charters in 2014-2015	33,428	38,234
Students in Charters in 2015-2016	36,922	42,312
Students in Urban Schools	112,713	129,474
Students in Suburban Schools	7,596	8,055
Students in Rural Schools	305	293
Students in Elementary Schools	57,160	55,178
Students in Middle Schools	26,027	27,302
Students in High Schools	895	10,897
Students in Multi-level Schools	36,532	44,333
Students First Year Enrolled in Charter School	21,067	26,642
Students Second Year Enrolled in Charter School	11,955	14,446
Students Third Year Enrolled in Charter School	5,831	6,466
Students Fourth Year Enrolled in Charter School	1,517	1,747
Black Students	72,671	80,801
Hispanic Students	37,913	45,524
White Students	6,588	7,609
Students in Poverty	94,867	109,144
Black Students in Poverty	56,972	63,766
Hispanic Students in Poverty	31,774	38,307
Special Education Students	16,169	17,563
English Language Learners	2,978	3,655
Grade Repeating Students	1,357	2,070

Appendix Table 2: Starting Deciles in New York Charter Schools

Student Group	Matched Charter Students	
	Reading	Math
Students in Decile 1	7,051	7,669
Students in Decile 2	11,697	12,295
Students in Decile 3	14,207	15,304
Students in Decile 4	15,529	16,578
Students in Decile 5	16,861	18,644
Students in Decile 6	15,123	18,748
Students in Decile 7	15,031	17,406
Students in Decile 8	13,894	15,982
Students in Decile 9	8,235	10,319
Students in Decile 10	2,986	4,877